

A BIBLIOGRAPHIC REVIEW OF CHINA'S ECONOMIC DEVELOPMENT FROM 1949 TO 2023

Cai Jing^{1,a}, Neszmélyi György Iván^{2,b,*}

¹ University of Applied Sciences, Budapest Business School, Budapest, Hungary

² Milton Friedman University, Budapest, Hungary

^aCai.Jing.64@unibge.hu, ^bneszmelyi.gyorgy@uni-milton.hu

*Corresponding authors

Cite as: Cai, J., Neszmélyi, G.I. (2023). A literature review of China's economic development from 1994 to 2023, *Ekonomicko-manazerske spektrum*, 17(1), 87-103.

Available at: dx.doi.org/10.26552/ems.2023.1.87-103

Received: 6 April 2023; *Received in revised form:* 25 May 2023; *Accepted:* 3 June 2023; *Available online:* 30 June 2023

Abstract:

Research background: Ever since Deng Xiaoping introduced the reform and opening-up sub-policy in 1978, China has been able to carve out a distinct socialist economic development path with Chinese characteristics. This trajectory has been instrumental in propelling China towards unprecedented levels of economic growth, albeit accompanied by a host of complex and deeply ingrained challenges. As such, China must now take the onus of transforming its economic development paradigm to unlock new growth opportunities and overcome the persisting issues that have emerged in the wake of this rapid growth.

Purpose of the article: The authors furnish a thorough and meticulous description of China's past and present voyage towards economic growth and evaluate the diverse impediments that China encounters in its quest for economic development. The authors' intention is to serve as an example for other developing nations to follow suit and learn from China's experience.

Methods: This scholarly paper employs the literature review method to scrutinize the articles published in international and Chinese domestic academic journals that discuss China's economic development spanning from 1949 to 2023.

Findings & Value added: The economy is undergoing a transition from expanding production capacity to improving production efficiency. China's economic growth is now driven by innovation and enhanced production efficiency, supported by the government's innovation-driven development strategy. While the government's future priorities include promoting the digital economy and sustainable development, the current focus is on stabilizing growth, employment, and prices amid the Covid-19 pandemic. To achieve this, the government must implement proactive fiscal policies and cautious monetary policies to ensure financial stability and encourage the dynamism of the micro economy through macroeconomic management.

Keywords: China, Economic Development, Regional economies analysis, Macroeconomics

JEL Classification: E60; F71; R51; N15; O11; P21

1 Introduction

The People's Republic of China was founded on 1 October 1949, ending the prolonged war. In the 30 years between 1949 and 1978, economic development recovered rapidly but slowed as political movements continued to fluctuate (Q. Li, 2020; Lin, 2002; Walder, 1995; Zhu,

1999). In December 1978, the Chinese government held the Third Plenary Session of the Eleventh Central Committee of the Communist Party of China. China began the comprehensive reform process and opened up a new stage of economic development (Ploberger, 2016; Qian, 2000). Over the past 40 years, China has created a socialist economic development path with Chinese characteristics in terms of economic development. The institutional benefits of the socialist system with Chinese characteristics, large-scale government investment, private capital (rural township enterprises and individual urban economy), and the introduction of foreign investment are the sources of the impetus for China's economic development (Vogel, 2011). Then, China became the world's second-largest economy in 2010. Over the past forty years of reform and opening up, China has experienced rapid economic growth, while deep-seated conflicts have come to the fore. From the economic growth perspective, the slowdown in total factor productivity growth has led to a decline in the potential growth rate. China has been responsible for the main supply of low-end products in the international division of labor. Despite continuous economic growth, China's independent innovation capacity needs to be improved, the added value of products is not high, and the competitiveness of products could be more assertive (Xu and Ge, 2017). The low-level industrial structure not only locks China in the middle and low end of the global industrial chain but also creates an imbalanced economic structure in the domestic demand structure, income distribution structure, and urban-rural structure (Zhang and Idris, 2021).

From the perspective of social development, the disparity in income and the imbalance in regional development have gradually become serious problems threatening social security. In ecology and environment, the growing energy and resource crisis and the gradual degradation of the ecological environment have become constraints to economic development (Lu et al., 2015; Rao et al., 2023; Yu et al., 2019; Zhang et al., 2021)

China's economy has shifted from a stage of high-speed growth to a stage of high-quality development since 2017. It is a critical period of transforming its development mode, optimizing its economic structure, and shifting its growth momentum. Today, China's economic development is entering a "new normal," a phase characterized by a slowdown in economic growth, a shift in the dynamics of economic growth, and the optimization of the economic structure (Yu and Zhang, 2015). China's international status has been rising with further openness to the outside world. Low-end manufacturing has lost its original advantage, and many investors have set their sights on Southeast Asian countries where labor costs are lower than in China. China's previous human capital and investment-driven approach to economic development is facing severe challenges (Dai et al., 2021; Zhu & Pickles, 2014). In addition, China's historical conflicts and real-life conflicts with neighbouring countries continue to emerge frequently, followed by the escalating US trade war with China, especially during the Trump administration, which has continuously provoked trade wars with China and stirred up disputes in Northeast Asia, creating economic and political tensions (Kwan, 2020; Tankersley & Bradsher, 2018).

As a result, China must therefore transform its economic development to gain more growth opportunities. So, what about the current development of the Chinese economy? What are the challenges and opportunities for China's economic development? What kind of economic development path will China pick? Since China's economic development has made outstanding achievements in the world and the future direction of its economic development will not only concern China itself but will also have a meaningful impact on the world economic situation (Erdei-Késmárki-Gally & Neszmeily, 2017; Neszmeily, 2001; Tarrósy, 2008) the research for this field is critical. So, the researcher has reviewed the relevant papers (international and Chinese academic journals) on China's economic development from 1949 to 2023.

2 Methodology

2.1 Objectives of the Research

In the course of industrialization and modernization, countries, whether developed, developing, or underdeveloped, invariably face the challenges of economic transformation and the sustenance of sound, well-coordinated and sustainable economic development. These challenges demand comprehensive evaluation and scholarly inquiry, both theoretically and practically.

Hence, the present study delves into the historical progression of China's economic evolution and the paradigm shift in its economic development approach from 1949 to 2023. The primary objective of this research is to provide a comprehensive, systematic, and scholarly analysis that would facilitate China's economic and social growth and facilitate other developing countries in their pursuit of local economic development. The article places particular emphasis on the alterations in China's economic trajectory that were instituted following the initiation of the reform and opening up policy.

The present study employs the literature review approach to investigate the research subject matter. The authors undertake a comprehensive examination and assessment of the English and Chinese literature, as delineated in the ensuing exposition.

2.2 Chinese literary analysis and data sources

The authors conducted an extensive search of Chinese literature on the topic of "Regional Economic Development" and "Chinese Economic Development" by utilizing the China Knowledge Network (CNKI) database. The search included SCI-source journals, EI-source journals, Peking University Core Journals, Chinese Social Science Citation Index (CSSCI), and CSCD-source journals without any limitations on the publication year. As a result, the authors obtained a comprehensive collection of 4989 journal articles.

The authors conducted a co-occurrence analysis of keywords in the selected sample of Chinese literature. This involves identifying patterns and relationships between words that frequently appear together in the text. By examining these co-occurring keywords, the authors can gain insights into the underlying themes and concepts present in the literature.

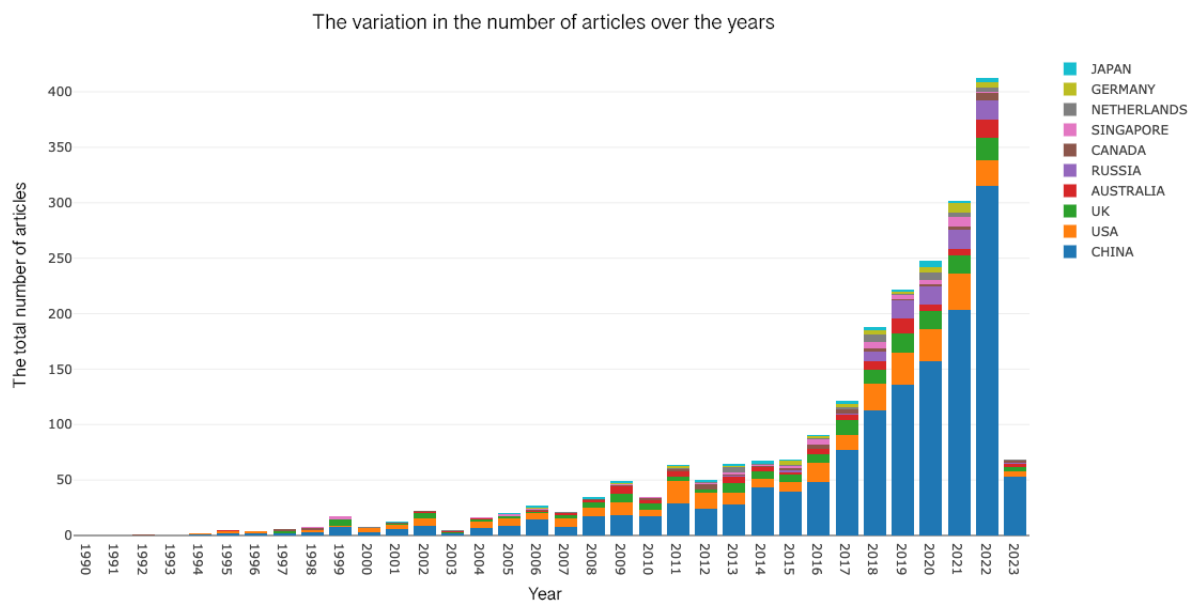
Regarding the research themes of the selected sample, Chinese scholars have displayed a shift in their research focus over time. Specifically, around the year 2000, the majority of Chinese scholars directed their research towards topics related to the 'national economy', 'market economy', 'economic growth rate', 'economic development', 'economic development' and 'economic development'. In contrast, by the year 2010, the research interests of Chinese scholars had expanded to include areas such as "FDI", "economic globalization", and "economic system reform". In more recent times, particularly since 2015, research on China's economic development has delved into topics such as "regional economic development", "sustainable development", "low-carbon economy", "industrial structure", and "industrial development". As for the year 2020, research on China's economic development has shifted to focus on topics such as the "Covid" pandemic, the "digital economy", the "Belt and Road" initiative, and the "political economy of socialism with Chinese characteristics", among others.

2.3 English literary analysis and data sources

Numerous research studies have been conducted both domestically and internationally to analyse the progress of China's economy after the initiation of the reform and opening-up policy. In an effort to procure data for an English literary collection, the researcher utilized the

Web of Science database and employed the search terms "Economy," "China," and "Chinese Economic Development" without setting any year restrictions. The search yielded a total of 2097 peer-reviewed journal articles which were then analysed using a bibliometric online analysis platform to obtain visual and quantitative analysis indicators. The analysis showed that the majority of articles on the subject were published by authors from China, followed by the United States, the United Kingdom, Russia, and Australia. It is evident that the world's leading economies are paying close attention to the impact of China's economic development on the global economy (details show in Figure 1 below).

Figure 1: The Variation in Article Volume for English Literature Over Time (Authors' Work)



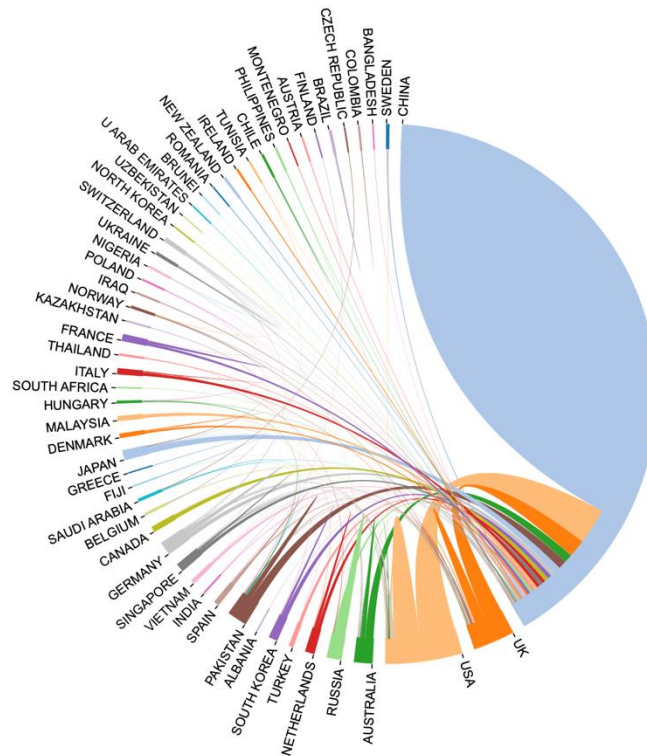
Source: All of the original data are from the Web of Science database

In reference to the collaboration amongst scholars in the illustrated nations (as depicted in Figure 2 below), it can be observed that both developed and emerging economies exhibit a trend of 'global cooperation' when it comes to academic research. Notably, China has established the most significant links with the USA, followed by the UK, Australia, Russia, Pakistan, and other nations. This trend is closely linked to China's role in the world's industrial chain, highlighting its significance in the global research community.

In this scholarly piece of writing, the selected sample has been utilized to showcase the prominent topics from different periods in English literature. As a result of selected references' prevalence, the system is designed to automatically exhibit frequent and highly discussed topics, along with their corresponding temporal phases. Based on the selected sample, the results show that the primary research themes of scholars around the year 2014 pertained to "market economy", "mainland China", and "transitional economy". In the following two to four years, the scholars shifted their focus towards "GDP", "urban development", "foreign direct investment", "environmental problems", and "sustainable development", among others. Since the year 2020, the studies on China's economic development have homed in on "digital economy", "technological innovation", "covid/pandemic", "sustainable development", and "high-quality development", among other topics. It can be inferred from the data that as time

has progressed, the research themes have evolved to reflect emerging issues and trends in the field of English literature.

Figure 2: The cooperative relationships between nations in the authors-made sample of English literature



Source: All of the original data are from the Web of Science database

2.4 Contribution & Limitation

The primary innovation of this study is twofold. Firstly, it organizes the content of the paper from the perspective of economics and history, conducting Chinese and English studies related to China's economic development from 1949 to 2023. This approach provides a comprehensive and systematic overview of the historical trajectory of China's economic development and transformation of its economic development mode. Secondly, this paper proposes reforming and improving the institutional mechanism as a breakthrough and promoting the supply-side structural reform as a means to transform into the road of "high-quality" development. Such proposals will provide theoretical guidance for the economic development and transformation of the economic development mode of China and other developing countries.

Due to the limitation in scientific research, there are still shortcomings. This paper is inevitably incomplete in the selection of domestic and foreign research literature. In the study of the current situation abroad and the actual situation in China, due to objective constraints (e.g., the authors cannot read and analyse the literature related to China's economic development in other languages), the authors have done some analysis in this paper, but they have not covered much of the literature related to China's economic development in non-Chinese and English languages in detail. Therefore, although the authors have done some analysis in this paper, they have not conducted much coverage and detailed research on the literature related to China's economic development in non-Chinese languages.

3 The historical path of China's economic development

3.1 Economic Development Overview

Between 1949 and 1965, the economy of China underwent two distinct stages of development, characterized by gradual recovery and significant fluctuations. During the initial period, from 1949 to 1957, China's national economy recovered at a rapid pace and successfully transitioned from a new democratic to a socialist economy. This period was marked by relatively fast-paced development. However, from 1958 to 1965, due to the disruptions caused by the "Great Leap Forward" and the communalization of the people, China's economic development experienced a severe downturn, leading to a rapid decline in the living standards of the masses. In response, the Central Committee of the Communist Party of China (CPC) introduced the "Eight-Character Policy" for the national economy, corrected the mistakes of the "Great Leap Forward" movement, and gradually brought the economy out of the doldrums, aiding in its gradual recovery.

In November 1978, the 3rd Plenary Session of the 11th CPC Central Committee marked a new beginning for China's modern socialist economy. This event served as a turning point that paved the way for comprehensive reform and opening up of China's economy. Some Chinese scholars have acknowledged the significance of this event in the economic development of China (Huang, 2008; Liu and Yang, 2009). Over the years, China has undergone various reforms such as rural reforms in the 1980s, state-owned enterprise and financial sector reforms in the late 1990s, and China's accession to the World Trade Organization in 2001. These reforms have facilitated China's economic growth and have laid a strong institutional and material foundation for building a moderately prosperous society. Greeven (2004) and Sheng and Zhao (2013) have also referenced these reforms as key contributors to China's economic development (Greeven, 2004; Sheng and Zhao, 2013). China's accession to the WTO marked a significant milestone in the intricate transformation of China's development. As we entered the new century, China found itself at a crucial crossroads as it accelerated towards rapid development. Industrialization has advanced to the middle and late stages, urbanization is experiencing a period of exponential growth, and the economic and social transformation necessitates a great deal of hard work. In addition, people's political participation has become more active, and there has been a collision of ideas and cultures. China's international status has also seen a rapid rise during this period (Jiang and Lin, 2012). These phases have presented a sizable emerging nation with a shaky base and huge volume with tremendous obstacles.

In the year 2003, China embarked on a transition from a conventional market-oriented economic system to a contemporary market economy system, thereby expediting the pace of economic advancement which culminated in the Gross Domestic Product (GDP) of RMB 11.70 trillion (Zhu and Ngok, 2007). Subsequently, in 2010, China outperformed the United States and secured its position as the world's second-largest economy (Barboza, 2010). This economic growth has reached unparalleled heights, resulting in a substantial enhancement in the living standards and quality of life of the populace.

Following the 18th Party Congress proposal in 2012, there has been a call to adapt to new changes both locally and internationally. The formation of a new approach to economic development has been accelerated, with emphasis placed on improving the quality and efficiency of development (XU, 2012). In order to achieve the new goal of building a moderately prosperous society in all aspects, including the doubling of GDP and per capita income of urban and rural residents compared to 2010 (Hong, 2022; Jin and Shen, 2019; Marinelli, 2018; Zheng and Wang, 2018). It is essential to transform China's economy from a quantitative and crude expansion approach to one that prioritizes quality and efficiency (Shen

and Ten, 2013). Therefore, China's economic transformation has become the most significant feature of China's economic trend since the 18th National Congress.

As a conclusion, China's progress towards socialism from 1949 to 1978 was mainly focused on the development of the economy, productive forces, and the standard of living of its people. However, the emphasis was more on the expansion of economic quantity and inputs, the speed of development, accumulation, and growth, especially in heavy industry. This was done under a strict planning system with the strategy of catching up and giving priority to heavy industry. As a result, the progress in economic quality, science and technology, development efficiency, consumption, and the development of agriculture and light industry was rather limited. The economic development mindset was centred on the pursuit of economic development speed. China's Gross Domestic Product (GDP) has experienced a significant increase from RMB 364.5 billion in 1978 to RMB 51.93 trillion in 2012, with an average annual growth rate of over 9.5%. This growth rate is higher than the world economy's average rate of 3.0% during the same period and even higher than the average rate of 6.1% between 1953 and 1978. Moreover, China's economic development rate is higher than the average growth rate of Japan and South Korea during their take-off stage, which were 9.2% and 8.5%, respectively. GDP per capita has also increased significantly, rising from 381 yuan in 1978 to 35,354 yuan in 2012, a nearly tenfold increase after deducting price factors. Since 1979, China has been implementing economic reforms, shifting from a planned economic system to a market-based economic system with a co-existence of planning. The economic reforms and opening up to the outside world have led to rapid economic development and significant improvements in people's living standards.

3.2 Background Examination of Current Economic Development Pathway Change

A Modification of the Primary Social Contradiction

The centennial anniversary of the Communist Party of China's establishment in 2021 coincides with a period of anticipated transformation in economic and social development spanning 2012-2021. The consensus among Chinese scholars is that a shift from high growth to high-quality development is an inescapable trajectory in China's economic advancement. The promotion of high-quality development is therefore deemed an obligatory imperative to adequately address the evolving main contradictions in Chinese society (Yang and Yan, 2018; Yang and Liu, 2019). As stated in the 19th National Congress of the Communist Party of China's report, the central contradiction in Chinese society has undergone a transformation, giving way to the discord between the populace's increasing demand for an improved standard of living and the uneven and inadequate development. Moreover, it mandates a targeted approach to tackle key concerns such as income distribution, employment, healthcare, pensions, and ecological well-being throughout the economic development process (S. Li et al., 2021; Wang and Shi, 2021). Moreover, the imbalanced and inadequate progress necessitates the nation to exert maximum endeavours in remedying the predicaments and disparities among regions, sectors, economic advancement, resources, and ecology, and to elevate the quality of economic development (Thanh, 2017).

Modifications to the National Political Environment

The present global political scenario is intricate and unstable owing to geopolitical disparities and various other factors. The UK's withdrawal from the European Union, the crisis in the Middle East, and the issue of North Korean nuclear weapons have introduced numerous uncertainties in economic development, making economic construction more complicated (Gong et al., 2023; Zhao, 2023). China has been assuming a progressively significant role in

the global arena. The policy of extensive external interactions has presented various prospects for development to China and has bolstered the rapport and communication between China and other nations. Nevertheless, it has also posed significant challenges to China's economic growth (Hong, 2016).

Substantial Improvement of Market Demand Structure

One of the factors influencing China's economic transition from fast growth to high-quality development is the ongoing improvement of the market demand structure (Gao et al., 2019). As China's national power continues to rise and the populace's standard of living improves, the social demand structure has undergone substantial enhancements. These enhancements are exemplified in several aspects. Firstly, the government's primary focus on modernizing agriculture is centred around improving labor productivity and integrating innovative technologies such as information systems, big data analytics, and cloud computing (Gao et al., 2019; Liu et al., 2019; Zhong and Liu, 2021).

Secondly, the improvement of agricultural mechanization management and service level, adoption of a novel agricultural approach, and facilitation of modern equipment and technology usage are the primary focus. In addition, comprehensive enhancements in urban infrastructure, essential public services development, and elderly facilities construction are necessary to promote a new type of urbanization (Tóth and Káposzta, 2021; Tu et al., 2018; Zhu et al., 2018).

Challenges to Sustainable Development

The challenges to sustainable economic development are a direct result of China's shift from high growth to high-quality development. A number of scholars have predicted that China's economy is likely to encounter multiple difficulties in the near future. Specifically, the stock and carrying capacity of natural resources such as land, water, and energy are diminishing rapidly (Sun et al., 2017). Secondly, there is a decline in food self-sufficiency, and there is room for optimism regarding food safety. (Y. Li et al., 2021). Furthermore, the task of regulating pollution within the natural ecological framework and allocating resources towards it presents a growing impediment. Additionally, the aging population is a significant concern, necessitating the need to address the social implications of this demographic shift (Lu et al., 2015; Yu et al., 2019; Zhang et al., 2021). The most disconcerting issue at present revolves around a conspicuous deficiency in labor amongst the appropriate cohort, which will ultimately culminate in a scarcity of human capital and an escalation in labor expenses (Liu and Sun, 2015). Infrastructure development has experienced a significant decrease following the process of urbanization. Furthermore, multiple social distribution systems, such as those relating to pensions, medical care, education, and industry income inequality, will likewise encounter challenges in the near future (Lu and Xia, 2016; Zhang et al., 2021).

4 The Current Path of China's Economic Development

Analysing the outcomes of China's new economic development strategy

In the current era, the Chinese government has been led by the Party to combine theory and practice to speed up the transformation of the economic development mode. As a result of the reform, China's economy is now displaying signs of high-quality economic development. Firstly, the economic structure is being optimized, specifically, the industrial structure is being refined, with agriculture playing a more fundamental role in economic development than before. Additionally, the proportion of the tertiary sector in the economy is increasing every year. According to the 2018 China Statistical Yearbook, the tertiary sector accounted for 51.6%

of GDP in 2017, which is a significant increase from 39.8% in 2000. Optimization has led to a reshaping of the regional structure and implementation of strategies such as promoting urbanization, synergizing the development of the Beijing-Tianjin-Hebei region, revitalizing the old industrial bases in the northeast, and pursuing the development of the west. These strategies have helped to break down the dual structure of urban and rural areas.

Additionally, China has been strengthening its scientific and technological innovation capabilities, leading to the production of innovative outcomes. Through increased investments in science and technology and enhancement of scientific and technological prowess, China has achieved significant advancements in various crucial fields (Li, 2018). As an illustration, China's high-speed rail innovation consistently demonstrates the added value of scientific and technological advancement (Xu, 2018). Thirdly, it is worth noting that the capacity for supply has been substantially bolstered. This can be attributed to the advancement of productivity, which has caused an ongoing enhancement in product performance. The primary industry and infrastructure have also made significant strides forward. As a result, the capability to meet the populace's demands for an improved standard of living is progressively increasing (Bei, 2018; Kozak et al., 2020; Ye, 2018b).

In addition to the aforementioned factors, it is noteworthy that the living standard of the populace has witnessed a marked improvement as of late. The conditions of habitation for inhabitants have undergone a significant amelioration, while there has been a noticeable proclivity towards upgrading the consumption patterns. The ongoing battle against indigence has yielded palpable outcomes, with the achievements in poverty alleviation garnering global acknowledgement. Furthermore, there has been a persistent advancement in the social security endeavors, with the social security framework being subject to continuous improvement (Guan et al., 2018)

Fifth, "One Belt, One Road" construction has been feasible and international investor cooperation has grown quickly (Cai, 2018). In addition, it spearheaded the formation of the Asian Infrastructure Investment Bank and the Silk Road Fund. It effectively organized the Belt and Road Summit on International Cooperation, the Asia-Pacific Economic Cooperation (APEC) Beijing Summit, the G20 Hangzhou Summit, and the Boao Forum for Asia, providing Chinese insights and approaches towards the restructuring of the worldwide governance structure (Chin and Dobson, 2015).

The Path of Chinese Economic Development Turning

In October 2017, during the 19th National People's Congress of the Party, General Secretary Xi Jinping acknowledged that the primary contradictions of Chinese society had transformed. The country had transitioned from its high-speed growth stage to a stage of high-quality development. Going forward, it was essential to prioritize quality and efficiency by adhering to the new development concept. The focus of economic development should shift towards improving quality and promoting the economy to achieve high quality, high efficiency, and sustainable development. This marked a significant shift for China as it transitioned to the stage of high-quality development.

The National Conference on Development and Reform was convened by the Chinese government on 22 December 2017, during which the development and reform system presented a detailed list of specific initiatives aimed at promoting high-quality development. In 2018, China focused on implementing pilot projects related to digital economy and artificial intelligence innovation and development, while also laying out plans for the construction of a comprehensive national innovation centre for emerging industries. Furthermore, the Chinese government established a national strategic emerging industries development fund and

comprehensively implemented major projects aimed at promoting strategic emerging industries, including doubling the bio-industry. Additionally, China accelerated civil aerospace development, formulated a national logistics hub layout and construction plan, and vigorously developed modern supply chains (Wang, 2021).

Evaluation on the Performance of China's New Economic Development Path

China's economy has made progress in attaining high-quality development, with an emphasis on enhancing economic structure and industrial optimization to ensure lasting economic growth and social stability. Nonetheless, transitioning from high growth to quality development will require a significant investment of time. At present, China has only achieved preliminary and partial success in this endeavor (Jin et al., 2019).

Based on the 2018 China Statistical Yearbook, the contribution of the primary industry to the GDP accounted for 7.9%, while the secondary industry and tertiary industry accounted for 40.5% and 51.6%, respectively. In contrast, the tertiary industry in developed nations constitutes 70% to 80% of the entire GNP, indicating a need for further optimization of China's industrial structure. Although China's carbon dioxide emissions per capita is 7.544 metric tons, higher than the world's per capita emissions of 4.97 metric tons, a stronger effort to conserve resources and protect the environment is imperative. Despite the progress in the country's development, the production capacity remains backward, the overall industrial level is low, the human capital is inadequate and insufficient, the capacity of independent innovation is limited, and the resources and environment are overburdened. These factors continue to impede the quality development of the economy.

Hence, although acknowledging the accomplishments of progress, it is also imperative to recognize the deficiencies in the economic growth trajectory and comprehend that there is still a considerable distance to cover before accomplishing the objective of high-grade development. Firstly, China must prioritize the three significant battles of preventing and managing significant risks, eradicating poverty with precision, and preventing and managing pollution. Secondly, it should persistently advance comprehensive reforms and reform impractical factors in the economic development process to eliminate impediments and enhance the quality of economic development.

5 Principal Obstacles to Chinese Economic Development

Overcapacity

China's overcapacity manifests in three distinct forms, as follows. The foremost is the absolute overcapacity observed in the pertinent industries, attributable to factors such as a deceleration in the pace of industrialization, urbanization, and other related phenomena (Hu et al., 2020; Lu, 2022). The second factor pertains to the relative overcapacity that is influenced by economic fluctuations or short-term modifications in the supply and demand dynamics. Additionally, the third factor constitutes a structural surplus, which is characterized by an excessive availability of low-end capacity and a dearth of high-end capacity (Xie et al., 2019). In February of 2016, the State Council of China released an official opinion piece regarding the steel and coal industries, aimed at resolving the issue of excess capacity and promoting development. The document outlines a plan to reduce coal production capacity by approximately 500 million tonnes over the course of three to five years, achieved through restructuring and downsizing efforts. Similarly, steel production capacity is slated to decrease by 100 to 150 million tonnes. While previous policies have made some headway in mitigating

the problem of obsolete production capacity in China, it is clear that a significant amount of time will be required to fully address this issue.

The Low Level of Industrial Hierarchy Generally

Although China's industrial structure is becoming more optimized, there are still challenges related to the overall low level of the industry. For instance, the primary industry's efficiency could be enhanced by improving agricultural production methods, promoting local agricultural mechanization, and strengthening agricultural infrastructure construction. It is crucial to make regional agricultural production more efficient, improve the quality and diversity of agricultural products, and increase the level of application of science and technology to raise the added value of agricultural products and boost export competitiveness. The low agricultural production efficiency contributes to inability to meet the various production and living needs of an enormous population, low degree of agricultural mechanization, and insufficient labor force to pursue non-agricultural activities. Thus, it is necessary to enhance agricultural efficiency to establish a sturdy foundation for China to accomplish high-quality development. Secondly, there is a need to enhance the level of development and capacity of the manufacturing industry (Zhu et al., 2018)

Currently, China has established itself as the foremost global manufacturing hub. Nevertheless, there remains significant scope for the industry's productivity and scientific and technological innovation to improve. China's manufacturing industry currently operates at the mid to low-end of the global value chain, resulting in a shortage of innovation capacity. Consequently, the country must rely on imports for many core technologies and high-end equipment. Furthermore, the industry's feeble innovation capacity contributes to low industrial profitability, exemplified by the modest 1.8% cut that China receives from the labor costs in the total selling price of Apple mobile phones (Chan et al., 2013). The long-term stable growth of businesses, the shift in the economic growth momentum in China, and increased effectiveness are all negatively impacted by these issues.

Furthermore, enhancing the proportion of the tertiary industry is crucial for the quality development of the Chinese economy. Even though China's tertiary industry has shown significant progress in recent years, its contribution to the GDP is still lower than that of developed nations. Additionally, the growth of emerging sectors such as electronics, information, biology, and new materials is sluggish in comparison to developed countries. The underdevelopment of the tertiary industry can adversely impact employment opportunities and limit the ability to provide improved services and support for the growth of the primary and secondary industries. Hence, it is imperative to strengthen the tertiary industry to achieve quality economic development in China (Guan et al., 2018). The collaborative promotion of the three industries is imperative for the sound progression of the economy, as any issues in any part of the industrial structure can have a profound impact on the overall economic development. In light of this, the inadequate level of industry can significantly impede the quality advancement of the economy in terms of agriculture, factor utilization efficiency, and labor supply.

Insufficient capacity for independent invention.

General Secretary Xi Jinping emphasized at the seventh meeting of the Central Leading Group on Finance and Economics that the development of social productivity and labor productivity is the decisive factor that determines the fate of national development. Only by promoting scientific and technological innovation, continuously developing social productivity, and improving labor productivity can we achieve sustainable and healthy economic and social

development. Therefore, improving independent innovation capacity is crucial for enhancing the quality of economic development. Although China has made significant progress in science and technology innovation, its independent innovation capacity needs to be fully adapted to the current economic development needs (Dou, 2017). The industrial structure will be improved and optimized with more independent innovation capacity (Chen and Yuan, 2007; Guan et al., 2006; Yam et al., 2004).

The mastery of critical core technologies is imperative for countries seeking to improve labor productivity and enhance the added value of their products. Failure to do so poses significant challenges to the rapid development of the three major industries, hindering the transformation and upgrading of the industrial structure. Consequently, the production capacity will not meet consumer demand, leading to an imbalance in the supply and demand structure, and ultimately, an unhealthy economic development (Lu, 2017). Subsequently, the insufficiency of autonomous inventive ability will inhibit the evolution of China's economic progress trajectory. The crux of expediting the transition of the progress trajectory is contingent upon science and technology, accentuating the enhancement of autonomous inventive capacity (Chen et al., 2018; Dang et al., 2021).

Insufficient independent innovation capacity can hinder the transformation of the economic development mode, making it difficult to overcome limitations posed by factors such as energy, capital, and human resources. This can ultimately impede efforts towards achieving intensive development (Zhang & Chen, 2020). The enhancement of independent innovation capacity is imperative for the effective utilization of resources. If China's economic progress does not depend on scientific and technological innovation to augment resource efficiency, the dearth of resources will become more conspicuous, and this will not foster sustainable economic development. In essence, the deficiency of independent innovation capacity considerably restricts the transformation of China's economy from "high growth" to "high-quality development."

The Covid Epidemic's effects

China's economy has not been exempt from the devastating effects of the Covid-19 outbreak (Fernandes, 2020; Wang et al., 2020). Scholars have conducted a comprehensive analysis of the impact of the Covid-19 epidemic on China's macroeconomy, focusing on various perspectives. In particular, researchers have examined the effect of the epidemic on the national economy. The strict measures implemented by the Chinese government, including the prohibition of inter-regional mobility and the imposition of restrictions on foreign visitors, were instrumental in mitigating the transmission of the novel virus.(Griffiths and Woodyatt, 2020; WTO, 2020). The most noticeable disadvantage for economic progress was the sudden and significant decline in the workforce (Y. Li, 2020). The situation after Covid pandemic has resulted in a deterioration of China's gross domestic product, as revealed by statistics from multiple sectors, including investment, industry, and consumption, which indicate escalated adverse forces exerted on the Chinese economy, a marked deceleration in its rate of expansion, and, in some cases, even a negative growth pattern.

Furthermore, a number of scholars have conducted an analysis of the repercussions of the Covid-19 pandemic on China's international trade. The outbreak has resulted in an escalation of the negative influence on China's foreign trade exports. The global implications of this pandemic have produced dissimilar levels of impact on the principal economies worldwide, posing a formidable challenge to global integration (May, 2020). The emergence of the Covid-19 pandemic has brought about a shift in certain countries towards an inward-looking economic development model. This model advocates the use of trade protectionism measures such as

import quotas and higher import tariffs to discourage the development of foreign companies and promote the growth of domestic companies. As a result, this shift may lead to a reversal of globalization, which would undoubtedly have a significant impact on the foreign export trade of major economies. The level of foreign export trade of key economies will therefore inevitably be impacted by the Covid-19 epidemic.

In recent times, researchers have discovered that small and medium-sized enterprises (SMEs) are experiencing immense pressure due to the adoption of stricter control policies and regulations, leading to the shutdown of a considerable number of these enterprises. This situation has resulted in high unemployment rates since these enterprises are essential employment providers. Despite a growth rate of 10.5% witnessed in April 2022 by the market players, there exists a turnover of old and new businesses. The newly established firms cannot contribute significantly to the economy and employment as much as the older ones. The Covid-19 pandemic has had an immediate impact on the economy and society, causing a severe imbalance in the total societal supply and demand (McKibbin and Fernando, 2021). The current epidemic has led to a dramatic surge in demand for medical supplies, daily necessities, and ancillary products that support the fight against the disease. This sudden increase in demand has resulted in a critical shortage of supplies and a subsequent escalation in prices. Conversely, the sectors impacted by the epidemic, such as tourism, are experiencing a surplus of supply in comparison to demand, which will ultimately lead to a varying degree of price reduction (Duan et al., 2020). To address the economic slowdown and fiscal deficit resulting from the Covid-19 pandemic, it is recommended that the government implement an accommodating monetary policy and an active fiscal policy. However, it is crucial to be mindful of the potential consequences of issuing an excessive amount of money, such as a decline in the currency's value and the possibility of renewed inflation.

Based on basis, several scholars have characterized the financial impact of Covid-19 on government budgets, attributing fiscal deficits or their expansion to the pandemic. The emergence of Covid-19 posed a significant predicament for local authors cities in China. During the outbreak, a large number of commercial establishments ceased operations, prompting a temporary loss of employment for laborers. In response, local governments were compelled to undertake two active fiscal measures, namely tax reduction policies and transfer payments. The tax relief provided by local governments will inevitably result in a significant decline in government tax revenues, with the attendant risk of increased expenses for subordinate government entities and institutions. Conversely, transfer payments will augment government expenditure rather than reduce it. These combined factors will exert substantial pressure on government expenditure, surpassing critical levels and leading to fiscal deficits (Yeh, 2021).

6 Conclusion

China's economy is experiencing a shift after 45 years of rapid economic growth. The changes in the external environment and endogenous conditions have impacted the original growth drivers, making them insufficient to support high double-digit growth. In terms of demand, external demand has weakened significantly since the international financial crisis. Consequently, the expansion of investment to meet external demand has slowed. Furthermore, the growth of investment in the manufacturing industry has significantly dropped, and the growth of real estate investment has slowed down as well. The level of debt is also limiting the expansion of infrastructure investment, and the pulling effect of investment and export on economic growth has weakened significantly.

In the context of supply, the manufacturing sector has been facing a significant overcapacity due to a change in domestic and international market demand, despite experiencing rapid expansion in recent years. This has resulted in a reallocation of resources and production factors towards the service sector. However, the productivity of labor in most service sectors is lower than in the manufacturing sector, leading to a decrease in overall economic efficiency. Furthermore, changes in demographic structure have resulted in a reduction of the working-age population, along with an increase in the population dependency ratio, and a decline in savings and investment rates. These elements have altered the dynamics of economic growth by slowing the increase of both labor and capital inputs.

The current state of the economy can be described as a gear-shifting period. The primary factors that were previously supporting economic growth have now shifted from a massive expansion of production capacity to an increase in production efficiency. The new drivers of China's economic growth are primarily focused on enhancing production efficiency. The Central Committee of the Communist Party of China and the State Council are currently emphasizing the implementation of an innovation-driven development strategy, which signifies the importance of innovation in China's future economic growth. Therefore, I believe that the future direction of China's economic development will favour government macro policy regulation to vigorously promote the development of the digital economy. Moreover, the government authorities will also give more attention to sustainable development. However, the current priority is for the government to regulate and foster the growth of the national economy by fully executing macro policies that can alleviate the negative impact on the economy stemming from the Covid-19 pandemic. Specifically, China must adopt a proactive fiscal policy and a cautious monetary policy with the primary objectives of stabilizing growth, employment, and prices. These steps are essential to bolstering the government's financial stability and encouraging the micro economy's release of dynamism through macroeconomic regulation and management.

Authors contributions: All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

Funding: This research received no external funding.

Data Availability Statement: No new data were created or analysed in this study. Data sharing is not applicable to this article.

Conflicts of Interest: The authors declare no conflict of interest.

References

- Barboza, D. (2010). China passes Japan as second-largest economy. *The New York Times*, 15. <https://picture.iczhiku.com/resource/paper/shiwaTFijSyAtNmc.pdf>
- Bei, J. (2018). Study on the “high-quality development” economics. *China Political Economy*, 1(2), 163-180.
- Cai, K. G. (2018). The one belt one road and the Asian infrastructure investment bank: Beijing's new strategy of geoeconomics and geopolitics. *Journal of Contemporary China*, 27(114), 831-847.
- Chan, J., Pun, N., & Selden, M. (2013). The politics of global production: Apple, Foxconn and China's new working class. *New technology, work and employment*, 28(2), 100-115.
- Chen, J., Yin, X., & Mei, L. (2018). Holistic innovation: An emerging innovation paradigm. *International Journal of Innovation Studies*, 2(1), 1-13.
- Chen, Y. Y., & Yuan, Y. J. (2007). The innovation strategy of firms: empirical evidence from the Chinese high-tech industry. *Journal of Technology Management in China*, 2(2), 145-153.
- Chin, G. T., & Dobson, H. (2015). China's presidency of the G20 Hangzhou: On global leadership and strategy. *Global Summitry*, 1(2), 151-170.

- Dai, Z., Shen, X. H., & Guo, L. (2021). Technological innovation on economic growth from the perspective of investment-oriented environmental regulations: considering the threshold effect of China human capital. *Applied Economics*, 53(40), 4632-4645.
- Dang, L., Li, X., & Shen, S. (2021). Manufacturing Digital Transformation and Its Export Technological Sophistication. *International Trade Issues*, 6, 32-47.
- Dou, X. S. (2017). Low carbon technology innovation, carbon emissions trading and relevant policy support for China's low carbon economy development. *International Journal of Energy Economics and Policy*, 7(2), 172-184.
- Duan, H., Wang, S., & Yang, C. (2020). Coronavirus: limit short-term economic damage. *Nature*, 578(7796), 515-516.
- Erdei-Késmárki-Gally, S., & Neszmélyi, G. (2017). Regional Development in the World—China's Role in Africa. *Romanian Review of Regional Studies*, 13(1), 13-26.
- Fernandes, N. (2020). Economic effects of coronavirus outbreak (COVID-19) on the world economy. IESE Business School Working Paper No. WP-1240-E.
- Gao, P. Y., Du, C., Liu, X. H., Yuan, F. H., & Tang, D. D. (2019). The construction of a modern economic system in the context of high-quality development: A new framework. *Economic Research Journal*, 54(4), 4-17.
- Gao, W., Zhang, G., Zhang, G., Huang, F., Wu, D., Tao, S., & Wang, M. (2019). Original innovation of key technologies leading healthy development of smart agricultural[J]. *Smart Agriculture*, 1(1), 8-19.
- Gong, X.-L., Feng, Y.-K., Liu, J.-M., & Xiong, X. (2023). Study on international energy market and geopolitical risk contagion based on complex network. *Resources Policy*, 82, 103495.
- Greeven, M. (2004). The evolution of high-technology in China after 1978: Towards technological entrepreneurship.
- Griffiths, J., & Woodyatt, A. (2020). 780 million people in China are living under travel restrictions due to the coronavirus outbreak. <https://edition.cnn.com/2020/02/16/asia/coronavirus-covid-19-death-toll-update-intl-hnk/index.html>
- Guan, J. C., Mok, C. K., Yam, R. C., Chin, K.-S., & Pun, K. F. (2006). Technology transfer and innovation performance: Evidence from Chinese firms. *Technological Forecasting and Social Change*, 73(6), 666-678.
- Guan, X. L., Wei, H. K., Lu, S. S., Dai, Q., & Su, H. J. (2018). Assessment on the urbanization strategy in China: Achievements, challenges and reflections. *Habitat International*, 71, 97-109.
- Hong, Y. X. (2022). To build the soul of the socialist political economy with Chinese characteristics. *China Political Economy (ahead-of-print)*.
- Hong, Z. (2016). The EU Global Strategy after Brexit—A Chinese View. *The International Spectator*, 51(3), 52-54.
- Hu, Y., Liu, Y., & Sun, H. (2020). Process and Factors of Urban Growth and Shrinkage: A Case Study of Mining Cities in Heilongjiang Province. *Scientia Geographica Sinica*, 40(9), 1450-1459.
- Huang, J. (2008). On the Spiritual Connotation of the 3rd Plenary Session of the 11th Central Committee of CPC. *Guangdong Polytechnic Normal University*, 10, 78-81.
- Jiang, Z., & Lin, B. (2012). China's energy demand and its characteristics in the industrialization and urbanization process. *Energy Policy*, 49, 608-615.
- Jin, G., & Shen, K. (2019). Economic Development of New China in the Past 70 years Evolution of Government Behavior and Change of Growth Momentum. *Journal of Macro-Quality Research*, 7(3), 1-16.
- Jin, P., Peng, C., & Song, M. (2019). Macroeconomic uncertainty, high-level innovation, and urban green development performance in China. *China Economic Review*, 55, 1-18.
- Kozak, T., Madlenak, R., & Neszmelyi, G. I. (2020). How the lean management decision influences the transportation cost in the supply chain? *Komunikácie*, 22(4).
- Kwan, C. H. (2020). The China-US trade war: Deep-rooted causes, shifting focus and uncertain prospects. *Asian Economic Policy Review*, 15(1), 55-72.
- Li, L. (2018). China's manufacturing locus in 2025: With a comparison of "Made-in-China 2025" and "Industry 4.0". *Technological Forecasting and Social Change*, 135, 66-74.
- Li, Q. (2020). Urbanization since 1949: history, current state and problems. *China's Development Under a Differential Urbanization Model*, 1-19.
- Li, S., Chen, J., & Teng, Y. (2021). Rural Revitalization on the Path of Common Prosperity: Problems, Challenges and Suggestions. *Journal of Lanzhou University (Social Sciences)*, 49(3).
- Li, Y. (2020). 新冠肺炎疫情全球大流行中的“脆弱性”与“脆弱群体”问题探析.[Exploring the Issue of "Vulnerability" and "Vulnerable Groups" in the Covid-19 Global Pandemic]. *International Political Studies*, 41(3), 208-229.
- Li, Y., Sun, Z., & Accatino, F. (2021). Spatial distribution and driving factors determining local food and feed self-sufficiency in the eastern regions of China. *Food and Energy Security*, 10(3), 296.

- Lin, G. C. (2002). The growth and structural change of Chinese cities: a contextual and geographic analysis. *Cities*, 19(5), 299-316.
- Liu, J. F., & Yang, Y. Q. (2009). From the Third Plenary Session of the 11th Central Committee of the CPC to the 17th: Evolution in heritage and transcend of China's reform ideas. *Journal of Jining University* (2), 104-107.
- Liu, S., Guo, L., Webb, H., Ya, X., & Chang, X. (2019). Internet of Things monitoring system of modern eco-agriculture based on cloud computing. *IEEE Access*, 7, 37050-37058.
- Liu, T., & Sun, L. (2015). An apocalyptic vision of ageing in China. *Zeitschrift für Gerontologie und Geriatrie*, 48(4).
- Lu, M. (2022). Ecological Risk of Capital Globalization and Its Avoidance. *Journal of Zhejiang Gongshang University*.
- Lu, M., & Xia, Y. R. (2016). Migration in the People's Republic of China. *ADB Working Paper 593*.
- Lu, Y. (2017). 出口技术复杂度对全要素生产率的影响: 跨国经验研究.[The impact of export technological sophistication on total factor productivity: a cross-country empirical study.]. *经济学家[Economist]*, 4(4), 51-58.
- Lu, Y. L., Song, S., Wang, R. S., Liu, Z. Y., Meng, J., Sweetman, A. J., Jenkins, A., Ferrier, R. C., Li, H., & Luo, W. (2015). Impacts of soil and water pollution on food safety and health risks in China. *Environment international*, 77, 5-15.
- Marinelli, M. (2018). How to build a 'Beautiful China' in the Anthropocene. The political discourse and the intellectual debate on ecological civilization. *Journal of Chinese Political Science*, 23(3), 365-386.
- May, B. (2020). World economic prospects monthly. *Econ. Outlook*, 44, 1-33.
- McKibbin, W., & Fernando, R. (2021). The global macroeconomic impacts of COVID-19: Seven scenarios. *Asian Economic Papers*, 20(2), 1-30.
- Neszemlyi, G. (2001). The Prospective of the Economic Cooperation between Hungary and the Republic of Korea Focusing on the Food and Agricultural Sector. *East European Studies*, 10, 1.
- Ploberger, C. (2016). China's reform and opening process: a new model of political economy? *Journal of Chinese Economic and Business Studies*, 14(1), 69-87.
- Qian, Y. Y. (2000). The process of China's market transition (1978-1998): The evolutionary, historical, and comparative perspectives. *Journal of Institutional and Theoretical Economics (JITE)/Zeitschrift für die gesamte Staatswissenschaft*, 151-171.
- Rao, M., Vasa, L., Xu, Y., & Chen, P. (2023). Spatial and Heterogeneity Analysis of Environmental Taxes' Impact on China's Green Economy Development: A Sustainable Development Perspective. *Sustainability*, 15(12), 9332.
- Shen, K. R., & Ten, Y. L. (2013). “结构性” 减速下的中国经济增长.[China's economic growth under "structural" deceleration] *经济学家[The Economist]*, 8(8), 29-38.
- Sheng, H., & Zhao, N. (2013). *China's state-owned enterprises: Nature, performance and reform* (Vol. 1). World Scientific.
- Sun, Y., Liu, N., Shang, J., & Zhang, J. (2017). Sustainable utilization of water resources in China: A system dynamics model. *Journal of cleaner production*, 142, 613-625.
- Tankersley, J., & Bradsher, K. (2018). Trump hits China with tariffs on \$200 billion in goods, escalating trade war. *The New York Times*, 17.
- Tarrósy, I. (2008). Sino-afrikai kapcsolatok a világpolitika rendszerében. Kölcsönös hasznok és lehetőségek a 21. században. *Külügyi Szemle*, 4, 81-93.
- Thanh, P. S. (2017). The 19th National Congress of the Communist Party of China: Preparation for a New Era.
- Tóth, T., & Káposzta, J. (2021). Successful Management of Settlements to Boost Rural Development. *European Countryside*, 13(4), 819-833.
- Tu, S., Long, H., Zhang, Y., Ge, D., & Qu, Y. (2018). Rural restructuring at village level under rapid urbanization in metropolitan suburbs of China and its implications for innovations in land use policy. *Habitat International*, 77, 143-152.
- Vogel, E. F. (2011). *Deng Xiaoping and the transformation of China* (Vol. 10). Belknap Press of Harvard University Press Cambridge, MA.
- Walder, A. G. (1995). Local governments as industrial firms: an organizational analysis of China's transitional economy. *American Journal of sociology*, 101(2), 263-301.
- Wang, D., Hu, B., Hu, C., Zhu, F., Liu, X., Zhang, J., Wang, B., Xiang, H., Cheng, Z., & Xiong, Y. (2020). Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus-infected pneumonia in Wuhan, China. *Jama*, 323(11), 1061-1069.
- Wang, L. (2021). Policies and Practices in China's High-Quality Development of Logistics. *Contemporary Logistics in China: Systemic Reconfiguration and Technological Progression*, 177-198.

- Wang, Y., & Shi, G. (2021). "Post Poverty Alleviation Era" under the Framework of Targeted Poverty Alleviation: Research on the Prevention and Control of Urban Relative Poverty in China. *Contemporary Economic Management*.
- WTO. (2020). Considerations for quarantine of individuals in the context of containment for coronavirus disease (COVID-19).[Internet] Geneva: WHO; 2020 [cited Apr 18, 2020]. In.
- Xie, F. S., Gao, L., & Xie, P. Y. (2019). 全球生产网络视角的供给侧结构性改革.[Supply-side structural reforms from the perspective of global production networks - theoretical logic and empirical evidence based on political economy]. *管理世界.[Management World]*(11), 89-101.
- Xu, F. (2018). *The belt and road: The global strategy of China high-speed railway*. Springer.
- Xu, J., & Ge, X. (2017). Research on the Problems and Countermeasures of High-end Manufacturing Industry in China. In: *2017 International Conference on Economic Development and Education Management*, 107, 293-296.
- XU, J. H. (2012). 把发展的立足点转到提高质量和效益上来——十八大“实施创新驱动战略, 加快转型发展步伐” 集体采访现场侧记. [Turning the foothold of development to improving quality and efficiency - A sidebar to the collective interview on "implementing innovation-driven strategy and accelerating the pace of transformation and development" at the 18th National Congress]. *中国品牌与防伪.[China Brand and Anti-counterfeiting]*(12), 14-15.
- Yam, R. C., Guan, J. C., Pun, K. F., & Tang, E. P. (2004). An audit of technological innovation capabilities in Chinese firms: some empirical findings in Beijing, China. *Research policy*, 33(8), 1123-1140.
- Yang, X., & Yan, J. (2018). Top-level design, reform pressures, and local adaptations: an interpretation of the trajectory of reform since the 18th CPC Party Congress. *Journal of Chinese Governance*, 3(1), 25-48.
- Xiaoning, Y., & Mengying, L. (2019, May). The Thought of Sustainable Development in the Strategy of Revitalization in the New Era. In *2019 4th International Conference on Social Sciences and Economic Development*, 314, 498-503.
- Ye, X. (2018b). 新时代中国乡村振兴战略论纲.[Outline of China's Rural Revitalization Strategy in the New Era]. *Reformation*, 1, 65-73.
- Yeh, K. (2021). Economic Risks in P.R. China: A Fiscal Perspective. *Mainland China Studies*, 64(3), 1-47.
- Yu, C. Q., Huang, X., Chen, H., Godfray, H. C. J., Wright, J. S., Hall, J. W., Gong, P., Ni, S. Q., Qiao, S. C., & Huang, G. R. (2019). Managing nitrogen to restore water quality in China. *Nature*, 567(7749), 516-520.
- Yu, D. F., & Zhang, Y. J. (2015). China's industrial transformation and the 'new normal'. *Third World Quarterly*, 36(11), 2075-2097.
- Zhang, M., Liu, X. X., & Ding, Y. T. (2021). Assessing the influence of urban transportation infrastructure construction on haze pollution in China: A case study of Beijing-Tianjin-Hebei region. *Environmental Impact Assessment Review*, 87, 106547.
- Zhang, Y. J., & Idris, S. (2021). Research On the Upgrading Path of China's Manufacturing Industry from The Perspective of Global Value Chain. *Journal of Technology and Operations Management*, 16(2), 34-44.
- Zhang, Z., & Chen, Y. (2020). Building scientific and technological innovation system of adaptive to economic and social development trend. *Bulletin of Chinese Academy of Sciences (Chinese Version)*, 35(5), 534-544.
- Zhao, L. (2023). Global Value Chains in the Post-pandemic Era. In *Modern China and International Rules: Reconstruction and Innovation* (pp. 13-40). Springer. https://doi.org/10.1007/978-981-19-7576-9_2
- Zheng, F. H., & Wang, Y. B. (2018). The Transformation of Kinetic Energy in the New Era: the Priority of Quality and Benefit. *Journal of South China University of Technology (Social Science Edition)*, 20(2), 39-47.
- Zhong, Z., & Liu, Y. (2021). How Can Data as a Production Factor Empower Agricultural Modernization? *Instruction and Research*, 55(12), 53.
- Zhu, F., Zhang, F. R., & Ke, X. L. (2018). Rural industrial restructuring in China's metropolitan suburbs: Evidence from the land use transition of rural enterprises in suburban Beijing. *Land Use Policy*, 74, 121-129.
- Zhu, G., & Ngok, K. (2007). Marketization, globalization and administrative reform in China: A zigzag road to a promising future. *Revue Internationale des Sciences Administratives*, 73(2), 239-257.
- Zhu, J. M. (1999). Local growth coalition: the context and implications of China's gradualist urban land reforms. *International journal of urban and regional research*, 23(3), 534-548.
- Zhu, S. J., & Pickles, J. (2014). Bring in, go up, go west, go out: Upgrading, regionalisation and delocalisation in China's apparel production networks. *Journal of Contemporary Asia*, 44(1), 36-63.