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China's Catch-up through the Lens of the Flying Geese Model

Abstract: This paper explores China's economic development and catch-up processes vis-à-vis Japan's historical experiences within the Flying Geese model. The model offers insights into the transition of catching-up economies by illustrating the movement of industries from developed to developing countries. Through a comparative analysis, Japan serves as a historical example of successful industrial development, progressing through various stages and climbing the value chain. Similarly, China initially focused on labor-intensive industries before advancing into high-tech sectors, such as technology, telecommunications, and artificial intelligence. The paper emphasizes China's dynamic catch-up strategy, which adapts to economic conditions, global trends, and geopolitical factors. It highlights the country's transition towards a consumption-driven economy alongside its technological advancements. Overall, this comparative analysis provides insights into the stages of industrialization and economic growth in China and Japan within the Flying Geese model framework.

Keywords: China; Japan; catch-up strategy; economic development; Kaname Akamatsu.

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Догоняющее развитие Китая через призму модели «летающих гусей»

Аннотация: В этой статье рассматриваются экономическое развитие и процессы догоняющего развития Китая в сопоставлении с историческим опытом Японии в рамках модели «летающих гусей». Эта модель дает представление о развитии стран с экономической догоняющей типа, иллюстрируя перемещение индустрий из развитых стран в развивающиеся. В результате сравнительного анализа Япония служит историческим примером успешного индустриального развития, проходящего через различные этапы и поднимающегося по производственно-сбытовой цепи. Аналогичным образом, Китай первоначально сосредоточился на трудоемких отраслях, прежде чем перешел к высокотехнологичным секторам, таким как высокие технологии, телекоммуникации и искусственный интеллект. В статье подчеркивается динамич-

ная стратегия догоняющего развития Китая, адаптирующаяся к экономическим условиям, мировым тенденциям и геополитическим факторам. В ней акцентируется внимание на переходе страны к экономике, ориентированной на потребление, наряду с ее технологическими достижениями. В целом, данный сравнительный анализ предоставляет понимание стадий индустриализации и экономического роста Китая и Японии в рамках модели «летающих гусей».

Ключевые слова: Китай, Япония, стратегия догоняющего развития, экономическое развитие, Канаме Акамацу.

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丹尼斯·列昂诺夫

从雁行模式看中国的追赶

摘要: 本文在雁行模式的框架内将中国的经济发展和追赶过程与日本的历史经验进行了比较。该模式通过展示产业从发达国家向发展中国家的转移，为经济追赶国家的发展提供了思路。通过比较分析可以认为，日本是经历了各个阶段并攀升到价值链顶端，获得工业发展成功的历史范例。同样，中国最初专注于劳动密集型产业，然后转向高科技、电信和人工智能等高新技术领域。本文强调了中国适应经济条件、全球趋势和地缘政治因素的动态赶超发展战略，并重点关注中国在技术进步的同时向消费驱动型经济的转型。总体而言，这一比较分析提供了在雁行模式框架内洞察中日两国工业化和经济增长阶段的见解。

关键词: 中国；日本；追赶战略；经济发展；赤松要。

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Introduction

Late in the 1930s, the Japanese economist Kaname Akamatsu (1962) first proposed the analogy of the V-shaped flying geese pattern of development with the intention of explaining the catching-up process of industrialization in latecomer economies [Kojima, 2000]. Akamatsu's original Flying Geese (FG) model focused on the catch-up process of Japan's economy. In his study of the textile industry, Akamatsu (1962) describes the pattern of eco-

conomic development of Japan that consists of four stages. During the first stage, the import and diffusion of new manufacturing consumer goods, products, and technologies into less advanced countries begin. Due to the substitution effect, imported manufacturing products may have a negative consequence on the domestic handicraft industry of less advanced countries [Widodo, 2008, p. 201]. In stage two, import substitution happens by importing techniques and capital goods to produce consumer goods [Heng, 2010, p. 383]. During this stage, the homogeneous market is established, and demand is large enough to reach the economies of scale, therefore making it possible for the start of domestic production [Widodo, 2008, p. 201-202; see also: Bernard, Ravenhill, 1995, p. 173]. In addition, competition between imported consumer goods and domestic production is present. The governments may use infant industry arguments to protect local industry via tariff protection or subsidies [Widodo, 2008, p. 201-202]. Stage three shows that less advanced countries acquire their capital goods industries and export manufactured products. The domestic consumer goods industry becomes an export industry [Widodo, 2008, p. 202]. In the last stage, local capital goods industries develop export capabilities, and the export of consumer goods declines [Bernard, Ravenhill, 1995, p. 173; Heng, 2010, p. 383].

Shortly after the Second World War, Japan underwent rapid industrialization, starting with labor-intensive industries such as textiles and gradually moving into higher value-added sectors like electronics and automobiles. The country was viewed as an economic powerhouse and “lead goose” in Asia. Akamatsu later extended his model by describing the development of both advanced and less advanced countries [Heng, 2010]. In other words, the model has moved from a one-country model to a multi-country one. The FG model offers a framework for understanding the process of industrialization and economic development of less-advanced countries and latecomers in East Asia like China. The model proposes that as one country advances in technology, lower-value and labor-intensive industries move to less developed countries, creating a sequential pattern of industrialization.

In contrast, China's economic transformation gained momentum in the late 20th century. At first, following Deng Xiaoping's market-oriented reforms and welcoming foreign investments, China positioned itself as the world's factory. By attracting foreign investment and developing export-oriented industries, mainly in labor-intensive sectors such as textiles, China has initiated a period of rapid industrialization and economic growth. Over time, the Chinese government has aimed to catch up and advance technologically towards higher value-added industries in accordance with the dynamics of the FG model.

Historical Background

Before and after the Second World War, Japan relied on the West as the source of technical knowledge and financial investment. The reliance on Western knowledge led to the perception that Japan could only borrow and imitate, not invent [McClain, 2002, p. 228]. However, this misconception did not last long. The wholesale importation of proven and affordable technologies from the West was the fastest way for Japan to catch up with the advanced Western countries. McClain [Ibid, p. 229] explains that Japanese innovation emerged from emulation. For instance, by using Western technologies, Japanese textile

producers tinkered with them, adapted to local conditions, and even made them more efficient than foreign technologies. Industrialists like Shibusawa Eiichi, who is also known as the “father of Japanese capitalism”, took pride in building manufacturing enterprises that could compete with their Western counterparts for quality and efficiency. It was also permissible for Japanese industrialists to borrow Western technology. However, in the late Meiji period, a few self-made businessmen wanted nothing to do with a foreign philosophy of economic individualism that glorified personal gain. These industrialists viewed their work not from the perspective of self-interest but as devotion and loyalty to the state [Ibid, p.230]. Bernard and Ravenhill [Bernard, Ravenhill, 1995, p.190] note that before becoming one of the significant global economic players in the 1950s, Japan’s industrial economy already had an ‘indigenous innovative base.’ The authors [Ibid, 1995] used the cotton textiles industry as an example – the same industry upon which Akamatsu based his original model.

After the First World War, Japanese consumers used locally made textile machinery, such as the Toyoda power loom, that was technologically more advanced than the ones produced by the English manufacturers. Similar technological advancements were made in electronics and weapons research conducted by companies like Hitachi and Toshiba during the Second World War [Ibid, p. 190]. When the war was over, Japan embraced rapid industrialization, starting with labor-intensive industries such as textiles. For instance, Japan’s textile industry, mainly the rayon industry, was in shambles. Yet, the industry made a spectacular comeback and expansion. In the early 1950s, Japan also succeeded in developing its synthetic fiber industry. First, Japan surpassed West Germany, then England in 1956, which allowed it to become the second largest producer behind only the United States. Major synthetic fibers were invented in the West, for example, in the United States and England [Ozawa, 1980, p. 133]. The Japanese firms adopted the Western technologies that were used in the industry at that time. These acquisitions of foreign technology by firms have been closely controlled and monitored by the Japanese government [Ozawa, 1980, p.133]. These developments helped Japan to establish the institutional structure and expertise that would prove so crucial in the post-war era of indigenizing foreign technology [Bernard, Ravenhill, 1995, p. 190]. Between 1950 and 1973, the Japanese economy had rapid growth, doubling in size every year. However, in the early 1990s, Japan ‘lost its status as an economic juggernaut’ [Crawford, 1998].

Contrastingly, in China, after the Second World War, Mao Zedong was inspired by Joseph Stalin’s approach to building socialism in the Soviet Union in the late 1920s and 1930s. Mao believed that the Soviet experience and its economic model during that time could be used as a template for China’s development in the late 1940s and early 1950s. He planned to transform the capitalist economy and build socialist industrialization and collectivization by eliminating the existing economic structure in China at that time, including replacing private ownership with collective ownership [Li, 2006]. After the death of Stalin in 1953, both the Soviet Union and parts of Eastern Europe questioned the Stalinist approach to economic and social development. Mao, however, was committed to it and set about establishing it in China by 1956 [Ibid]. Between the early 1950s and 1970s, the Chinese government focused on promoting heavy industrialization in the interior regions on the coast. The government funded many projects in the areas like Hubei and Sichuan while

ignoring other parts of the country. Afterwards, most of these projects either failed or never reached completion [Ang, 2018, p. 428]. In the book “China’s Past, China’s Future: Energy, Food, Environment”, Vaclav Smil [Smil, 2003, p. 11] describes China’s economy during that time as one that was governed by the Stalinist-Maoist dogma of quantity, which prioritized overfulfilling plans over producing useful goods. During the same period, several radical economic and social campaigns and movements took place in China, notably the Great Leap Forward (also known as the Second Five Year Plan) between 1958 and 1962 and the Great Proletarian Cultural Revolution or the Cultural Revolution between 1966 and 1976. In the instance of the Great Leap Forward and its goal of ‘reconstruction’, Mao envisioned that China would first surpass the United Kingdom, then the United States as a leading global supremacy [Smil, 2003, p. 73]. On the contrary, it led to the ‘greatest famine in human history’ between 1959 and 1961 and numerous purges followed by ‘the grotesquely mislabeled Cultural Revolution’ [Smil, 2020, p. 483-484]. As a consequence, these events damaged China’s human capital and economic and social development.

Despite losing its great power position after the First Opium War (1839-1842), its defeat by Japan in 1895, and past social mismanagement and economic degradation during Mao’s rule, Smil [Ibid, p. 483-484] argues that China is the most extraordinary example of a ‘modern resurrection trajectory.’ In 1978, Deng Xiaoping focused on reforming China’s economy but leaving its political ideology intact. Deng led several large-scale economic reforms, such as opening the economy to foreign investment, market and trade liberalization, and partial privatization. Additionally, the government-initiated programs to foster entrepreneurship and let Chinese study abroad and gain foreign technological know-how. These reforms facilitated China’s rapid growth, becoming one of the world’s largest economies, reclaiming the status of great power while self-fulfilling the “Chinese dream”¹.

East Asia

Between 1965 and 1990, some East Asian states experienced rapid economic growth, earning “the East Asian Miracle” description by the World Bank. Such ‘miraculous growth’ is attributed to several East Asian economies, starting with Japan, followed by the Four Asian Tigers such as Singapore, South Korea, Taiwan, and Hong Kong, and the newly industrialized economies (NIE) like Malaysia, Indonesia, and Thailand [World Bank, 1993]. Due to Japan’s industrial structure transition from labor-intensive to high-tech sectors, productivity, economic performance and growth, the FG model appealed to many other East Asian states, including China. Applying the analogy of flying geese, the American historian of East Asia, Bruce Cummings (1984), describes that East Asian states follow one another in a developmental trajectory. Specifically, latecomers imitate the countries ahead of them in economic development.

Furthermore, Cummings [Cummings, 1984, p. 38] argues that industrial development in East Asian countries like Japan, South Korea and Taiwan cannot be considered as an

¹ The Chinese Dream refers to President Xi’s distinctive feature of his presidency – the goal to “rejuvenate” the Chinese nation and make it fully developed by 2049.

individual country phenomenon; instead, it is a regional phenomenon. In fact, this idea is an integral part of the FG model. A region as a whole becomes more economically developed through a cascading process. In this process, a more advanced country (the leader or ‘lead goose’) transfers capital, technology, and management skills to a less advanced country (a led or ‘follower goose’) to facilitate their economic development [Xu, Hubbard, 2018, p. 91]. The economic growth of the East Asian countries is seen as a process closely ‘linked to the emergence, maturation, and decline of particular industrial sectors’ [Bernard, Ravenhill, 1995, p. 171]. For example, Japan transferred the industries that were exhausting their competitive advantages and outdated technologies to emerging economies in East Asia, such as South Korea and Taiwan, and instead began to concentrate on more capital-and technology-intensive industries [Park, 2009, p. 158; Black, 2017].

Led “goose” or “leading dragon”: challenges and opportunities

There are some similarities between post-1978 China and Japan’s post-Second World War economic growth. It is especially evident in the context and application of the FG model. Up until 1990, Japan had the world’s highest savings rates and the latest industrial technologies and manufacturing with innovative capacity. It allowed Japan to join and successfully compete in ‘high-tech terrains’ initially dominated by the United States or European multinational companies (MNCs) [Heng, 2010, p. 384]. As a result of Japan’s continuous investment in research and development (R&D), filed patent applications, and advancement in robotics and automotive industries, it enforced its economic prowess on the world stage. There was a widely held opinion that the Japanese economy would overtake the economies of the United States and Europe [Abramovitz, 1986, p. 396; Smil, 2020, p. 484]. However, Japan’s rapid economic growth and achievement, large trade surpluses, and trade friction between the United States and Japan raised concerns in America. In 1985, then G5 nations (the United States, Japan, the United Kingdom, France, and West Germany) signed the Plaza Accord in New York, causing a significant devaluation of the U.S. dollar against the Japanese yen and other European currencies. The Plaza Accord was primarily designed to address the U.S. dollar crisis [Tsai, 2004]. According to some views, the Accord led to the yen’s rapid appreciation, forming an economic bubble, and eventually causing prolonged deflation in Japan in the 1990s [Ishikawa, 2015]. The long period of stagnation of the Japanese economy is often referred to as the “lost decade” [Hamada, Okada, 2009, p. 218]. Japan has become a ‘chronically underperforming economy and a fraying society beset by a multitude of challenges that have no readily deployable solutions’ [Smil, 2020, p. 483–484]. Indeed, Smil notes that post-1989 Japan should be an early example of a country that has experienced the challenges of a new, post-growth society and is currently facing new economic realities and demographic decline, including an aging population and a shrinking workforce, and technological competition in the region from countries like China or South Korea. He goes further by warning the Chinese leadership not to ignore the lessons of Japanese history, particularly after the Second World War and its economic transformation, growth, stagnation, and decline [Ibid.]. In fact, in 2006, China’s economic policymakers, headed by the Vice Chairman of China’s National Development and Reform

Commission, met their Japanese counterparts to discuss and learn from the mistakes of the Plaza Accord [The Japan Times, 2006].

In comparison to Japan and other East Asian economies in terms of the FG model and catch-up strategy, China was a latecomer to this process. As mentioned earlier in this paper, between the 1950s and 1960s, China attempted to industrialize its economy under the planned economy. However, only since 1978 and the adoption of the reforms and opening-up policy, China significantly benefited as a led or 'follower goose' in terms of receiving foreign direct investment (FDI) and know-how from more advanced economies like Japan, Hong Kong, and Taiwan [Xu, Hubbard, 2018, p. 91].

The FG model offers a win-win situation to involved and interested parties. For instance, advanced industrial economies, facing rising costs of production, look for emerging markets with cheaper labor and land to move labor-intensive industries. At the same time, less advanced countries with cheap labor may also benefit from the move. Compared to Japan and its relative protectionism towards foreign investment, China's opening its market to investments attracted many Western multinational companies. In exchange, companies had to set up factories, create jobs, and transfer technology and management skills. While at the same time letting China earn foreign exchange (FX). Many products made in China are made by American, European, Japanese, or other companies and produced under original equipment manufacturer agreements. In contrast, Japan placed restrictions on foreign investment and exported products to the West under their Japanese brands. China's approach to foreign investment has initially helped to avoid significant trade frictions [Heng, 2010, p. 386–387].

Both Japan, China, and other emerging economies have used and relied on export strategies to drive and promote their economic growth. These states often use earnings from exports to build up their FX reserves as a safeguard against any market speculative attacks [Heng, 2010, p. 390]. For instance, after the 2008 global financial crisis (GFC), China continued to grow and accumulate a large number of FX reserves. According to the States Administration of Foreign Exchange of the People's Republic of China (2023), by the end of September 2023, China's FX reserves reached over three trillion U.S. dollars. China uses these reserves to realize its dream of global leadership; for instance, the Belt and Road initiative is one of those dream strategies [Ozawa, 2018, p. 311]. Since the GFC, the United States has been increasing its pressure on China to reduce its trade surplus [Heng, 2010, p. 390]. The United States views China's huge trade surplus as the outcome of unfair trade practices and tries to influence it via trade negotiations or tariffs [Ozawa, 2018, p. 311].

After China acceded to the World Trade Organization (WTO) in 2001, American transnational and multinational companies have invested and are currently relying on China and its market. Companies like Boeing, Walmart, and Apple have heavily invested in China. Many American companies successfully used cheap Chinese labor and manufacturing facilities to strengthen their presence in the Chinese market. In return, China used its vast market to successfully negotiate and transfer high-tech and necessary skills in many crucial industries like airplanes and semiconductors [Heng, 2010, p. 390]. China uses industry targeting to advance its technological capability [Ozawa, 2018, p. 311]. For example, Chinese policymakers carefully studied the German concept of "Industry 4.0", which includes smart

manufacturing, for example, robotics, the Internet of Things (IoT), and artificial intelligence (AI), to make products and processes more efficient. Although industry targeting is against America's core market capitalist values, this concept is not new or unique to China. Japan also used neomercantilism and related policies to build its high-tech industries and capabilities between the late 1970s and 1980s, which raised concerns in Washington [Ozawa, 2018, p. 310–311]. According to Ozawa [Ibid], China today is an excellent example of the 'neomercantilism of national wealth creation.' However, its catch-up differs strategically and structurally from Japan and other East Asian countries. In 1978, recognizing the ineffectiveness of communist central planning in terms of economic development and growth, the Chinese leadership had to adopt a suitable model for economic development and growth with complete control of political affairs. The government has crafted and established a brand-new model, combining private (market capitalism) and state with the Chinese Communist Party as the sole political body across Mainland China. Some scholars have dubbed this economic development as the 'Beijing Consensus' as an alternative to the 'Washington Consensus' [Ozawa, 2018, p. 310; Arrighi, 2007; Halper, 2012], 'China model' [Breslin, 2015], 'socialist market economy' [Cui, 2012], or economic development with the 'Chinese characteristics' [Ma, Trautwein, 2013].

Besides industrial targeting and use of FX to promote and expand its ambitions, China has been accused of Intellectual Property (IP) thefts, computer hacking to steal technology, industrial espionage, and forcing companies to transfer technology to China. According to the U.S. IP Commission's 2017 report, the damage to the United States economy from Chinese counterfeit goods, pirated software, and theft of trade secrets is estimated at around 600 billion U.S. dollars annually [Ozawa, 2018, p. 311–312]. In March 2018, former U.S. President Donald Trump signed the Memorandum on Actions by the United States Related to Section 301 Investigation of China's Laws, Policies, Practices, or Actions Related to Technology Transfer, Intellectual Property, and Innovation, which announced that the United States would place tariffs on Chinese goods and took steps to counter China's 'theft of US intellectual property.' It, in return, has led to the China-U.S. trade war. China denied any "theft" behavior [Xu, Cao, 2019, p. 2]. The trade conflict between two of the world's largest economies has brought signs of a new cold war. Indeed, China's emergence as a superpower challenges 'the U.S.-led, Western values-based global system, both economically and politically', and its catch-up is now perceived as a threat not only to the United States but also to its allies [Ozawa, 2018, p. 300].

Xu and Cao [Xu, Cao, 2019, p. 5] argue that prior to opening its doors to the world, China did not have a 'conceptual notion' of IP rights (IPR) or a 'system for protecting them'. China was the net importer of innovation, technology, IP and IPR-intensive goods, whereas the United States was the net exporter. Subsequently, the United States heavily criticized China for failing to respect IPR and persuaded the state to establish better patent, copyright, and trademark protection [Xu, Cao, 2019, p. 5]. Despite passing several laws, such as trademark law, patent law, and copyright law, China continued to be criticized for having inadequate IPR protection. According to the authors [Xu, Cao, 2019, p. 5], China was forced to significantly change its IPR laws and protection standards before joining the WTO. To comply with the WTO Agreement on Trade-Related Aspects of Intellectual Prop-

erty Rights (TRIPS), China had to amend its trademark, patent and copyright laws and closely match the practices of the world's major trading partners. In line with its ambition to transition from manufacturing-based to knowledge-based production and build an innovation economy, China has started to play a more active role in the protection and enforcement of IPR, as it regards and sees IPR as a 'powerful engine for economic growth' [Xu, Cao, 2019, p. 5].

Today, China's industrial landscape combines traditional manufacturing and emerging high-tech sectors. While still maintaining the position of the world's factory, China has intensified innovation and R&D, investing heavily in emerging technologies like artificial intelligence, biotechnology, and renewable energy. China may indeed become a leader in the V-formation of flying geese. Notably, the Chinese economy has exceeded the Japanese, with some predictions that it will surpass the United States by 2030 [Dezan Shira and Associates, 2023]. China has progressed and moved closer to becoming an innovative country, including increasing scientific outputs, R&D, patent applications and grants, and strengthening intellectual property rights protection. In the recent Global Innovation Index (GII), China is steadily approaching the top ten innovative economies. In just over a decade, China's rank of an innovative country, according to GII, has moved upward from 43rd rank in 2010 [INSEAD, 2011, p. xviii] to 11th in 2022 [WIPO, 2022a]. According to the same GII, China is among the top three innovative economies in South East Asia, East Asia, and Oceania, only falling behind South Korea and Singapore and first among upper-middle-income economies [WIPO, 2022a].

China's innovation prowess is most evident in areas such as R&D, high-tech products and items importation, high-quality publications, and tertiary employment [Xu, Cao, 2019, p. 2]. China has been increasing its R&D expenditures. According to Japan's National Institute of Science and Technology Policy report for 2022, after the United States, China had the second largest R&D expenditure in business enterprises, universities, and colleges and first in public organizations [NISTEP, 2022, p. 1]. China also had the most significant number of researchers in all these sectors [Ibid]. The nation also leads the world in scientific research output. As mentioned in the NISTEP report (2022), China overtook the United States and ranked first by the number of scientific papers published and first in the top one per cent of highly cited publications worldwide. In addition, China has been actively increasing its academic influence globally in various fields of science (such as basic, technical, and medical sciences). According to the recent report by the China Association for Science and Technology, by the end of 2021, there was a total of 5,071 sci-tech journals published in China covering different fields of science [Xinhua, 2023]. Of this total number, 4,482 sci-tech journals were published in Chinese, 420 were published in English, and 160 were combined in Chinese and English [Ibid]. Furthermore, the World Intellectual Property Indicators (WIPI) report showed that China surpassed the United States by leading in the number of patent applications in 2021 [WIPO, 2022b]. For instance, the China National Intellectual Property Administration (CNIPA) received 1.59 million patent applications in 2021, compared to the US Patent and Trademark Office (USPTO), which received 591,473 applications [Ibid, p. 9] – further indicating China's rapid transition to the knowledge and innovative economy.

Due to the increase in wages since 2008, China has the potential to become a lead goose or ‘a leading dragon’ [Lin, 2011] by transferring its light manufacturing jobs to other catching-up economies [Xu, Hubbard, 2018, p. 91; Maurer, 2017; Chiu et al., 2018; Zhou et al., 2022]. For instance, Xu and Hubbard’s study [2018, p. 93] focuses on rising labor costs in China and whether it forces owners of light manufacturing factories to relocate their production and jobs to low-wage developing countries. To reduce the pressure of rising labor costs, the authors [Xu, Hubbard, 2018, p. 93] explain that firms may deploy automation as a possible solution. However, automation depends on tasks that can be easily mechanized or whether it is profitable to replace labor with machines, as automation also involves a high cost [Xu, Hubbard, 2018, p. 93]. A similar study was conducted by Wang et al. (2020), who concluded that some labor-intensive industries and firms are more likely to relocate instead of upgrading or automating their labor or production as an alternative to the rising domestic labor costs. In the paper aimed to build theoretical foundations for a new paradigm of MNC-driven interactive growth, Ozawa [Ozawa, 2018, p. 308], for instance, sees automation and robotization as a practical measure because of the rise of labor costs. However, if such measures are not implemented, the increase in labor cost will force a shift of MNC’s labor-intensive manufacturing to still-low-wage economies. Indeed, China is currently in the stage of investing in basic manufacturing overseas. Some Chinese companies have already moved their light manufacturing production to other less-developed countries in ASEAN or Africa [Brautigam et al., 2018; Chiu et al., 2018]. However, there are many constraints or barriers for many Chinese firms to move their production to low-income, developing countries. These barriers include political risks, poor infrastructure, or low-level productivity that may affect and discourage many firms from moving to those countries. Alternatively, Chinese companies may transfer their production domestically, rather than transferring to other countries, due to China’s wide variability in factor costs [Xu, Hubbard, 2018, p. 94; Wang et al., 2020].

In their paper, Xu and Cao [Xu, Cao, 2019, p. 3] explain that the FG model can be seen not only through the attraction and spread of innovative technologies, knowledge and capital from developed countries to China but also from the East Coast to Central and Western regions of Mainland China. Chinese scholars have begun applying the FG model to the analysis of China’s interregional industrial relocation and upgrade [Cai Fang et al. cited in Zhang, 2014; Ji et al., 2019]. This phenomenon is called ‘industrial transfer’ (chanye zhuanyi) [Ang, 2018, p. 421]. In the article, Ang refers to the early 2000s capital movement and investment from wealthy coastal areas into poorer central and western provinces. Defining and quantifying this phenomenon is arduous, considering its complexities and uncertainty. However, there is one indicator of the scale of the industrial transfer. The term ‘domestic investment’ (shengwai zijin) is also relatively new [Ang, 2018, p. 421]. According to the official statistics, there is a steady flow of domestic and inter-provincial investment from more prosperous coastal areas to the inland regions. In the comparison of the five central provinces of China (Jiangxi, Henan, Hunan, Hubei, and Anhui), Ang [Ibid] shows how domestic investment steadily rose to enormous amounts. The comparison excluded transfers and investments to the Western provinces or coastal regions. For instance, in 2008, the total value of domestic investment in some of the central provinces of China reached

836 billion yuan (approximately 118 billion U.S. dollars). Whereas in 2015, it skyrocketed to 3,760 billion yuan (around 531 billion U.S. dollars), which was 2.5 times the amount of FDI invested in China in the same year [Ang, 2018].

China's application of the FG model differentiates from the original model. According to Ang [Ibid, p. 422], the difference is evident in three significant ways. Firstly, China exhibits 'a pattern of differentiated production and industrial transfers across sub-national regions within a nation, rather than across nations within a region' [Ibid]. It is because of its size. China is more like a continent than a country with wider subnational inequality. Secondly, there are sequentially related cross-national and sub-national transfers of industries in China. After its open-up reforms, many factories from East Asia moved to China's coastal region, which assisted rapid growth and industrialization in those areas. While coastal regions grew wealthier and more prosperous, central and western provinces lagged. Only in the 2000s did the coastal cities become investors too, moving and investing into less advanced provinces. Lastly, in addition to capital, China is now experiencing transfers of government policies and practices across regions. For instance, while the coastal local government can choose or reject low-end industries or investments, inland local governments do not have many options. They must welcome almost all investment projects [Ibid]. Such inequalities between the regions in China have raised concerns among the central Chinese government.

Indeed, according to a recent report from the Chinese Academy of Social Sciences (CASS), in the next five years, China will face an increasingly hostile world. The report recommends that the Chinese government's policy focus should be on China's vast domestic market, home-grown technological innovation, and improvement of its citizens' welfare [Tang, 2020a]. This recommendation echoes with the official "Go West" plan. According to this plan, the Western regions of China are essential destinations for the central government to meet the target of economic development and poverty eradication. The Chinese government pushes for more investment in these regions with the goal of China becoming self-reliant and self-sufficient in core and high technologies, safe food production and supply, and consumer demand [Ibid]. President Xi endorsed the idea of China being self-reliant. According to Xi's economic plan, China will focus more on satisfying the domestic market instead of relying solely on foreign markets. The report from CASS indicates that China has the potential to meet this demand. For instance, there are currently between 500 and 700 million middle-income groups in the country. This group can be a source to power Chinese economic growth for the next five years [Tang, 2020b].

The Chinese leaders learnt a lesson during the 2008 GFC. The sudden drop in manufacturing orders from the United States and other developed economies hit hard Chinese low-end export manufacturers in the coastal regions of China [Ang, 2018, p. 430; Tongxin et al., 2011, p. 1462]. Approximately 67,000 factories shut down, which left millions of workers without jobs. The crisis threatened not only to push the economy into recession but also to trigger political unrest. The Chinese leadership had to pump the economy with a fiscal stimulus package totaling four trillion yuan (approximately over 500 billion U.S. dollars) [Ibid]. This package played an essential role in increasing employment and stimulating economic growth. Similarly, post-COVID-19, China's central government has allocated

over 400 billion U.S. dollars to local governments to support jobs and help private companies [ABC News, 2020]. Past and current experiences have prompted Chinese leaders to find additional and diverse sources for China's future economic growth and self-sustainability and focus more on the domestic economy.

With the FG model-type industry upgrade, and while relocating industries to central and western regions, China's eastern region does not have clear directions for industry upgrades of its own. The FG model-type domestic industrial relocation has helped China avoid the impacts of the GFC. However, today, whether this model can help China overcome the middle-income trap (MIT) and whether the developed regions are able to conduct industrial relocation to less developed areas continuously remain unclear [Zhang, 2014, p. 85]. According to the World Bank, middle-income economies continue to slip into MIT as they are trapped between low-wage manufacturers and innovators with high wages. Their wage levels are too high to compete with low-wage exporters, and the level of their technical capacity to compete with developed countries is too low [Lee, 2019, p. 4–5].

The transition from mid- to high-income status is possible but rarely accomplished. Like many developing countries in the process of catching up, China copied some practices, policies, and institutions of advanced countries to grow its economy [Lee, 2019]. In his book, Lee explains the catch-up paradox, where a country cannot catch up with advanced countries by simply following the path of the lead countries. Instead, the catch-up and overtaking require pursuing a totally different path. Lee [Ibid, p. 9] defines catch-up as 'reducing the gap between the forerunner and latecomer economies.' He also illustrates this catch-up paradox as "to be similar, you've got to be different", which means that while catch-up means trying to be similar, long-term success requires taking a path that differs from that taken by advanced countries' [Ibid].

Lee [Lee, 2019, p.10] argues that latecomers do not just follow the course of technological progress of the developed countries; they sometimes skip some stages or even establish their own course that varies from that followed by the forerunners. One of the reasons why Korean consumer electronics, led by Samsung, was able to take over the Japanese incumbent Sony was that the former leapfrogged ahead of the latter into emerging digital technologies, which used to be the pioneer in the manufacturing of analogue products [Lee, 2019].

China's vast market size played a critical bargaining power for the Chinese government to attract foreign MNCs for technology transfer and Joint Venture (JV) negotiations, using a strategy of 'trading the (domestic) market for (foreign) technology' [Lee, 2019, p 62]. The telecommunications equipment industry is a good example of this strategy. In the mid-1990s, indigenous manufacturers emerged and competed directly with JVs in rural and urban markets, successfully transforming diffusion into the promotion of indigenous companies in China [Ibid].

According to Miao et al. [Miao et al, 2018, p. 640–641], overtime some Asian companies in South Korea (for instance, Samsung, LG, Hyundai-Kia Motors), Taiwan (MediaTek and AUO), and China (Huawei) have shown that technical laggards can overcome disadvantages under certain conditions and use latecomer-specific advantages to catch-up with dominant, first-mover firms in advanced countries. In the case of China's Huawei, it has

emerged as a leader in the telecommunications equipment industry and 5G, surpassing Ericsson and Cisco systems in sales [Ibid].

However, China still relies on foreign technologies and expertise. The current focus and concern of the Chinese government are to continue developing its domestic market, indigenous and independent innovation, and become technologically self-sufficient [Saxenian, 2006].

Conclusion

No single country or economy possesses the entirety of the world's knowledge and technology. Instead, countries learn from and collaborate with other nations, adapting the learnings to their needs to set and achieve ambitious goals. Often, this is through complex affairs and sometimes through win-win situations and even emulation of other's development and progress. Japan and China are no exception. This paper explored the Flying Geese model using China and Japan as case studies, highlighting their rapid ascent and strategic development via unique pathways and the model's relevance in explaining the transformative nature of industrialization and economic growth in East Asia. While the original FG model was developed to describe the economic development patterns of Japan and other East Asian states, China has exhibited similar patterns that are aligned with the model. For instance, China began its economic development with a focus on labor-intensive industries and gradually moved to technology-driven sectors.

Furthermore, by adopting an export-led strategy, China became the largest exporter of manufactured goods in the world. Through FDIs, the Chinese economy acquired the necessary knowledge and technologies, further helping with its catch-up strategy. Projections to achieve the goal of becoming a technologically advanced country include China modernizing central and western provinces, spending more on R&D, promoting national innovation capabilities, and reducing the reliance on foreign technologies. For instance, by developing and generating indigenous innovation, China has been aiming to catch up with more developed countries, technologically leapfrog, and become a lead dragon and not a follower not only in East Asia but globally. Ezra Vogel [cited in Cummings, 1984, p. 39] mentioned that in the late 20th century, Americans had not yet begun to think about the implications of living in a world where Japan was the most powerful industrial power. Perhaps in the 21st century China is the new global powerhouse.

References

- Abramovitz, M. (1986). Catching up, forging ahead, and falling behind. *The Journal of Economic History*. Vol. 46(2). Pp. 385–406. DOI: 10.1017/s0022050700046209
- Akamatsu, K. (1962). A historical pattern of economic growth in developing countries. *Journal of Developing Economies*. 1(s1). Pp. 3–25. DOI: 10.1111/j.1746-1049.1962.tb01020.x
- Ang, Y.Y. (2018). Domestic flying geese: Industrial transfer and delayed policy diffusion in China. *The China Quarterly*. Vol. 234. Pp. 420–443. DOI:10.1017/s0305741018000516.
- Arrighi, G. (2007). *Adam Smith in Beijing: Lineages of the Twenty-First Century*. New York, Verso Books. 418 p.

Bernard, M., Ravenhill, J. (1995). Beyond product cycles and flying geese: Regionalization, hierarchy, and the industrialization of East Asia. *World Politics*. Vol. 47(2). Pp. 171–209. URL: DOI: 10.1017/s0043887100016075.

Black, L. (2017). Japan's Aspirations for Regional Leadership – Is the Goose Finally Cooked? *Japanese Studies*. Vol. 37(2). Pp. 151–170.

Brautigam, D., Xiaoyang, T., Xia, Y. (2018). What kinds of Chinese 'geese' are flying to Africa? Evidence from Chinese manufacturing firms. *Journal of African Economics*. 27(s1). Pp. i29–i51. DOI: 10.1093/jae/ejy013.

Breslin, S. (2015). China's Global Power. *China as a Global Power in Assessing China's Power*. New York, Palgrave Macmillan US. Pp. 231–250.

China doesn't set GDP target, promises more than \$400b to prop up coronavirus-hit economy. ABC News, 22.05.2020. URL: <https://www.abc.net.au/news/2020-05-22/china-promises-funds-to-boost-economy-hit-by-coronavirus/12276772>

Chiu, C.-Y., Lin, C.-C., Yang, C.-H. (2019). Technological catching-up between two ASEAN members and China: A metafrontier approach. *China Economic Review*. Vol. 54. Pp. 12–25. DOI: 10.1016/j.chieco.2018.09.012.

Crawford, R. J. (1998). Reinterpreting the Japanese economic miracle. *Harvard Business Review*. January–February. URL: <https://hbr.org/1998/01/reinterpreting-the-japanese-economic-miracle>

Cui, Z. (2012). Making sense of the Chinese 'socialist market economy': A note. *Modern China*. Vol. 38(6). Pp. 665–676. DOI:10.1177/0097700412459700.

Cumings, B. (1984). The origins and development of the Northeast Asian political economy: industrial sectors, product cycles, and political consequences. *International Organization*. Vol. 38(1). Pp. 1–40. DOI: 10.1017/s0020818300004264.

Dezan Shira & Associates (n.d). An introduction to doing Business in China 2023. *Asiabriefing.com*. URL: <https://www.asiabriefing.com/store/book/introduction-doing-business-china-2023.html?autodownload>

Halper, S. (2012). *Beijing consensus, the: Legitimizing authoritarianism in our time*. Basic Books. New York, Basic Books.

Hamada, K., Okada, Y. (2009). Monetary and international factors behind Japan's lost decade. *Journal of the Japanese and International Economies*. No. 23. Pp. 200–219.

Heng, S.-H. (2010). The 2008 financial crisis and the flying geese model. *East Asia (Piscataway, N.J.)*. Vol. 27(4). Pp. 381–394. DOI:10.1007/s12140-010-9128-6.

Immigration. *Review of Global Politics*, 7.

INSEAD (2011). *The Global Innovation Index 2011: Accelerating Growth and Development*. WIPO. URL: <https://www.wipo.int/publications/en/details.jsp?id=274&plang=EN>

Ishikawa, J. (2015). Japan made misguided policy responses after Plaza Accord: Former finance official. *Nikkei Asia*, 18.09.2015. URL: <https://asia.nikkei.com/Economy/Japan-made-misguided-policy-responses-after-Plaza-Accord-Former-finance-official>

Ji, Yujun 纪玉俊, Feng, Kuo 冯阔, Sun, Biao 孙彪 (2019). Da guo xiao ying xia zhong guo de yan zhen mo shi chan ye sheng ji yin jiu – yi ge ji yu zhi zao ye de li lun fen xi kuang jia 大国效应下中国的雁阵模式产业升级研究 — 一个基于制造业的理论分析框架 [Research on the "Flying Geese" model of the industrial upgrading in China under great nation effect: A theoretical framework based on manufactural industry]. *Chongqing daxue xuebao 重庆大学学报(社会科学版)[Journal of Chongqing University Social Edition]*. Vol. 25(1). Pp. 1–16. DOI: 10.11835/j.issn.1008-5831.2019.01.001

Kojima, K. (2000). The 'flying geese' model of Asian economic development: origin, theoretical extensions, and regional policy implications. *Journal of Asian Economics*. Vol. 11(4). Pp. 375–401. DOI:10.1016/s1049-0078(00)00067-1

Lee, K. (2019). *The art of economic catch-up: Barriers, detours and leapfrogging in innovation systems*. Cambridge (England), Cambridge University Press. 279 p. DOI: 10.1017/9781108588232

Li, H.-Y. (2006). *Mao and the economic stalinization of China, 1948–1953*. Rowman & Littlefield. Lanham, MD. 256 p.

- Lin, J.Y. (2011). *Demystifying the Chinese economy*. Cambridge University Press. Cambridge, England. 311 p.
- Ma, Y., Trautwein, H. (2013). *Thoughts on economic development in China*. Routledge, London. 352 p. DOI:10.4324/9780203066645
- Maurer, M.R. (2017). Supply chain trade and technological transfer in the ASEAN + 3 region. *China Economic Review*. No. 46. Pp. 277–289. DOI:10.1016/j.chieco.2017.02.001
- McClain, J.L. (2002). *Japan: a Modern History*. W.W. Norton & Company.
- Ozawa, T. (1980). Government control over technology acquisition and firms' entry into new sectors: the experience of Japan's synthetic-fibre industry. *Cambridge Journal of Economics*. No. 4. Pp.133–146.
- Ozawa, T. (2018). eMNCs (and aMNCs) on the "Schumpeterian development ladder": toward a new paradigm of interactive growth between the emerging and the advanced worlds. *Transnational Corporations Review*. Vol. 10 (4). Pp. 299–317.
- Park, PH. (2009). The Collapse of the Flying Geese Development Model: Advent of New Order in East Asia and a Foreign Policy Alternative for the Republic of Korea. *The Review of Korean Studies*. Vol. 12(4). Pp. 155–180.
- Saxenian, A. (2006). *The new Argonauts: regional advantage in a global economy*. London (England), Harvard University Press. 424 p.
- Smil, V. (2020). *Growth: From microorganisms to megacities*. London (England), MIT Press. 661 p.
- Smil, V. (2003). *China's past, China's future: Energy, food, environment*. Taylor & Francis Group. 256 p.
- States Administration of Foreign Exchange (2023). *SAFE Releases Data on China's Foreign Exchange Reserves at the End of September 2023*. Chinese government. URL: <https://www.safe.gov.cn/en/2023/1007/2139.html>
- Tang, F. (2020a) *China's five-year plan to focus on independence as US decoupling threat grows*. *South China Morning Post*. URL: <https://www.scmp.com/economy/china-economy/article/3085683/coronavirus-china-five-year-plan-focus-independence-us>
- Tang, F. (2020b). *Coronavirus, US-China decoupling prompt Beijing to unveil new western development plan*. *South China Morning Post*. URL: <https://www.scmp.com/economy/china-economy/article/3084915/coronavirus-us-china-decoupling-prompt-beijing-unveil-new>
- The Japan Times (2006). *China seeks to learn from mistakes of 1985 Plaza Accord*. URL: <https://www.japantimes.co.jp/news/2006/09/09/business/china-seeks-to-learn-from-mistakes-of-1985-plaza-accord/>
- The World Bank (1993). *The East Asian miracle: economic growth and public policy*. World Bank policy research reports. New York, Oxford University Press, Inc. 389 p.
- Tongxin, A., Yuejin, F., Huan, Z. (2011). An analysis of the model of china's industrial restructuring and upgrading-borrowing ideas from the experience of Japan. *Energy Procedia*. No. 5. Pp. 1461–1466. DOI: 10.1016/j.egypro.2011.03.250
- Tsai, H-J. (2004). *The Analysis of Regional Political Economy on Taiwanese*. 359 p.
- Wang, F., Xia, J., Xu, J. (2019). To upgrade or to relocate? Explaining heterogeneous responses of Chinese light manufacturing firms to rising labor costs. *China Economic Review*, August. Vol. 60. URL: <https://doi.org/10.1016/j.chieco.2019.101333>.
- Widodo, T. (2008). Dynamic changes in comparative advantage: Japan "flying geese" model and its implications for China. *Journal of Chinese Economic and Foreign Trade Studies*. Vol. 1(3). Pp. 200–213. DOI:10.1108/17544400810912365.
- World Intellectual Property Organization (WIPO) (2022a). *Global Innovation Index 2022: What is the future of innovation drive growth?* WIPO. DOI 10.34667/tind.46596. URL: https://www.wipo.int/global_innovation_index/en/2022/
- World Intellectual Property Organization (WIPO) (2022b). *World Intellectual Property Indicators 2022*. WIPO. URL: <https://www.wipo.int/publications/en/details.jsp?id=4632>
- Xinhua (2023). *China witnesses increasing academic influence with over 5,000 sci-tech journals*. The State Council of the People's Republic of China. URL: https://english.www.gov.cn/news/202307/07/content_WS64a8041ec6d0868f4e8dd961.html

Xu, J., Cao, Y. (2019). Innovation, the flying geese model, IPR protection, and sustainable economic development in China. *Sustainability*. Vol. 11(20). Pp. 1–28. DOI: 10.3390/su11205707

Xu, J., Hubbard, P. (2018). A flying goose chase: China's overseas direct investment in manufacturing (2011–2013). *China Economic Journal*. Vol. 11(2). Pp. 91–107. DOI: 10.1080/17538963.2018.1449445.

Zhang, Q. (2014). The Flying Geese Paradigm: Industrial Upgrade Strategy and Balanced Regional Development. *China Economist*. Vol. 9(5). Pp. 66–87.

Zhou, H. 周华蓉 Liu, Y. 刘友金 He, S. 贺胜兵 (2022). “Xin yan hang mo shi” li lun yu “yi dai yi lu” chan ye fa zhan” “新雁行模式”理论与“一带一路”产业发展 [The “New Flying-Geese Pattern” and Industrial Development in the “Belt and Road” Area] *财经研究* [Journal of Finance and Economics]. Vol. 48(8). Pp. 78–93.

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