Industrial Upgrade Driven by Domestic Demand: Rationale, Pathway and Policy Coordination

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Abstract: *Domestic demand motivates businesses to develop innovative products, services and industries to pursue a high-tech, high-value, and high-quality path of development. As industrial upgrade is fueled by domestic demand, it is essential for China to expand supply-side structural reforms, establish a modern industrial system, and increase the momentum of endogenous development via dual domestic and international circulations. Industrial upgrade and domestic demand are mutually reinforcing. Consumption provides the impetus for industrial upgrade, while investment serves as the guarantee. Conversely, industrial upgrade stimulates consumption and investment. Consumption and infrastructure investment should therefore be increased in a manner that supports industrial upgrade. As it is a catalyst for industrial upgrade, the objective of policymakers should be to increase domestic demand. In addition, there should be more coordination between policy objectives and instruments and more connectivity between policymakers and implementing agencies. Sound market policies should be adopted to create a market and institutional environment that increases domestic demand, improves industrial upgrade, and spurs high-quality development.*

Keywords: *Domestic consumption, external demand, industrial upgrade, policy coordination*

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1. Introduction

In industrial upgrade to sharpen industrial competitiveness and promote sustainable development, technological, managerial, and institutional innovations inspire and support businesses to rise higher in the industrial chain through improvements in technologies, products, and services. China is currently in a crucial phase of establishing a new paradigm for high-quality development. In this stage, industrial upgrade is a strategic initiative and a key impetus for China's economic transition from rapid growth to high-quality development. From an economic standpoint, industrial upgrade is influenced by both supply- and demand-side forces. In contrast to the supply side, which provides the impetus for technological advancement, the demand side provides the pulling force. Prior to the 2008 global financial crisis, China's industrial upgrade was mainly driven by external demand. As advanced economies began

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to re-shore manufacturing in the post-crisis economic downturn, domestic consumption has replaced external demand as the main force behind China's industrial upgrade. Faced with a grave and complex international environment and the outcome of persistent impact of COVID-19 on the global economy, China's central government has established a new development paradigm in which domestic demand is the central component and domestic and international consumption reinforce one another. In the foreseeable future, China's industrial upgrade will be primarily propelled by domestic demand.

There has been extensive research on strategies aimed at increasing domestic demand and promoting industrial upgrade. First, research focused on the changing role of household consumption and external demand. Lyu (2012) held that in order to maintain economic growth, it is necessary to expand the consumer market while simultaneously increasing the manufacturing capacity, asserting that it is imperative to acknowledge the importance of domestic demand. In Jiang and Meng's view (2021), the importance of external demand has decreased in comparison to that of domestic demand due to increasing domestic household consumption and the improving consumption structure. Consequently, the role of external demand in China's industrial upgrade is expected to diminish. Jin (2021) found that a significant transformation occurs during the mature stage of a market-based economy, at which time domestic demand emerges as a crucial catalyst for market expansion. According to Ma et al. (2022), the importance of domestic demand in China's industrial upgrade has been increasing due to the worsening trade environment and rising factor costs. This trend is in contrast to the comparatively decreasing importance of wider opening up in the improvement of the country's industrial structure. Second, scholars examined how China's industrial upgrade is being propelled by consumption upgrade. Liu (2016) asserted that the shift in China's household consumption pattern from subsistence and material consumption to more personalized and diverse forms of developmental and recreational consumption necessitates the production of high-value-added goods to cater to consumer needs, thus promoting novel business models and industries. According to Feng and Zhu (2022), domestic consumption has emerged as a basis for China's economic stability amidst the challenges of declining external demand, supply shocks, and weakened expectations. This underscores the need to shore up domestic demand and facilitate industrial progress through consumption upgrade in the new phase of development. According to Yang and Chen (2018), as household incomes rise, there is a corresponding increase in the demand for products with higher income elasticity. Higher income-elasticity products account for a growing market share, bringing about an overall improvement in the industrial structure. Third, others have directed their attention towards the role of infrastructure in assessing the extent to which investment facilitates industrial upgrading. In Xu's (2021) opinion, infrastructure investment serves as a prominent form of capital that can have a substantial "multiplier effect", resulting in an increase in aggregate social demand or income that surpasses the volume of the investment. This is why governments emphasize infrastructure investment as a strategy to stimulate economic growth and job opportunities. Based on Yang's (2022) research, forthcoming industrial innovation and development will be supported by new infrastructures such as 5G, supercomputing, smart energy, and mobility. These infrastructures will facilitate the digital and green transformation of our society and economy. This study aims to explore the impact of the primary constituents of domestic demand, namely consumption, investment, and industrial correlation, on industrial upgrade. Our investigation will be based on the existing literature and guided by the underlying principles of industrial upgrade driven by domestic demand. This paper aims to provide recommendations and proposals for promoting China's high-quality economic development by leveraging domestic demand to facilitate industrial upgrade, with a focus on policy coordination.

2. Industrial Upgrade Driven by Domestic Demand: Empirical Facts and Fundamental Rationale

Industrial upgrade is largely driven by domestic demand. To unleash the potentials of corporate

innovation and industrial upgrade, offer more appealing products and services, and complete industrial upgrade, it is necessary to increase consumer demand. As a populous nation, China has an enormous consumer market, and domestic demand plays a crucial role in economic expansion. This section will analyze relevant data on China's domestic and external demand and industrial upgrade, and identify the relationship between domestic/external demand and industrial upgrade, to provide empirical evidence and a theoretical framework for demand-driven industrial upgrade.

2.1 Empirical Facts of Industrial Upgrade Driven by Domestic and External Demand

2.1.1 Specification of indicators

In economic analysis, obtaining relevant data on domestic and external demand using the GDP spending approach is standard and common. The GDP spending approach consists of three components: Consumption spending, aggregate capital formation, and net export of goods and services. The final consumption rate, total capital formation, and net export ratio can be derived from the sum of each component as a percentage of the GDP to reflect the domestic and external demand share of the GDP. The domestic demand share is equal to the sum of the final consumption rate and the capital consumption rate.

Using the proportion of net exports of goods and services or the contribution rate of net exports to measure the contribution of external demand has disadvantages due to the fact that the GDP spending approach is a static accounting method that cannot reflect interactions between various components (Jiang, 2010). For example, the value of net export is zero when the total volumes of imports and exports are both 500 million yuan or when the total volumes of imports and exports are both zero, but the former indicates a higher degree of economic and trade cooperation. In addition, imports will have an effect on domestic consumption and investment. Therefore, it is inappropriate to measure external demand using net exports. That's why we use export data to determine the level of external demand. The initial step is to calculate the share of nominal external demand, or the proportion of total exports to GDP. Since there are discrepancies between total exports and the GDP statistical approach, and since total exports include the value of imported inputs that are not included in the GDP, the nominal external demand is overestimated. Referencing Jiang (2010), we subtract processing trade imports from total exports to determine the export value addition before calculating the ratio between the export value addition and the GDP as the share of real external demand. However, this approach is also flawed. Jiang (2010) notes that the transferred value of general trade includes the value of imported inputs, but due to the lack of such data, external demand is still subject to the estimation problem; however, it is closer to the share of real external demand than nominal external demand. In Table 1, we present the previously mentioned external demand indicator based on the preceding analysis. Industrial upgrade is essentially a structural change encompassing technological, product, capital, talent, and service upgrades and must be assessed by the degree of a country or region's transition towards high-end manufacturing, high-tech industries, and services. Industrial structure upgrade is measured by the ratio between the output value of the tertiary industry and the output value of the secondary industry ($Industry_1$), and the degree of industrial structural transition toward high-tech industries is measured by the high-tech operating revenues of large industrial enterprises as a share of total manufacturing business revenues ($Industry_2$).

2.1.2 Data analysis of domestic demand, external demand and industrial upgrade

As shown in Table 1, the share of China's domestic demand stayed above 90% and, despite some declines caused by the global financial crisis of 2008, remained above 95% most years, highlighting the importance of domestic demand to China's GDP. China's final domestic consumption rate remained above 50% and increased consistently after 2008, before falling during the COVID-19 pandemic. In specific years, China's capital formation rate fluctuated around 40% as a result of fiscal and monetary

policies. In response to the 2008 global financial crisis, the Chinese government introduced a 4 trillion yuan stimulus program, which increased the capital formation rate to 47.00%. In 2012, China's capital formation rate declined to somewhere between 42% and 43%. In terms of the composition of domestic demand, the ratio between the final domestic consumption rate and the rate of capital formation stood at 5:4, emphasizing the importance of consumption in domestic demand and its function as a driver of economic growth. According to industrial upgrade data, China's tertiary industry surpassed its secondary industry in terms of output value after 2012, and the share of high-tech industries increased, indicating a more complex industrial structure. Since 2012, both domestic demand and industrial upgrade have contributed consistently increasing shares.

Based on variations in nominal and real export dependencies, China's external demand represented a declining proportion between 2005 and 2021. The shares of nominal and real external demands both declined from 2010 to 2016. This decline halted after 2016, followed by a rebound in 2021. In general, external demand serves as an important but diminishing driver of economic growth. Judging by the correlation between external demand and industrial upgrade, the trends of external demand and industrial upgrade are inconsistent. Since external demand is subject to anomalous international volatility in various years, industrial upgrade will only occur when there is a substantial shift in external demand. China's nominal and real export dependencies were 26.43% and 20.10%, respectively, in 2009, and the industrial upgrade index dropped significantly in 2010. The implication is that although external demand is a key driver of industrial upgrade, domestic demand remains the primary incentive.

Table 1: Domestic Demand, External Demand and Industrial Upgrade (%)

Year	$Industry_1$ (Output value of the tertiary industry / output value of the secondary industry	$Industry_2$ (Operating revenue of high-tech industries / operating revenue of manufacturing industry)	Final consumption rate (final consumption spending/GDP)	Capital formation rate (total capital formation / GDP)	Share of domestic demand (final consumption rate + capital formation rate)	Nominal export dependency (total export volume)	Real export dependency (total exports - processing trade imports) / GDP
2005	87.87	15.90	54.30	40.30	94.60	36.98	25.01
2006	87.82	15.40	52.50	39.90	92.40	38.90	27.24
2007	91.47	14.30	50.90	40.40	91.30	38.07	27.70
2008	91.28	12.90	50.00	42.40	92.40	34.83	26.56
2009	96.52	12.60	50.20	45.50	95.70	26.43	20.10
2010	95.05	12.30	49.30	47.00	96.30	29.10	22.18
2011	95.27	12.00	50.60	47.00	97.60	28.02	21.75
2012	100.22	12.70	51.10	46.20	97.30	26.34	20.71
2013	106.11	12.80	51.40	46.10	97.50	24.92	19.79
2014	112.06	13.00	52.30	45.60	97.90	24.40	19.41
2015	124.51	14.10	53.70	43.00	96.70	22.61	18.56
2016	132.32	14.70	55.10	42.70	97.80	20.57	17.03
2017	132.08	15.60	55.10	43.20	98.30	20.32	16.80
2018	134.26	16.90	55.30	44.00	99.30	19.94	16.53
2019	140.67	16.80	55.80	43.10	98.90	19.41	16.50
2020	144.18	18.20	54.70	42.90	97.60	19.31	16.59
2021	135.28	18.10	54.50	43.00	97.50	21.32	18.77

Source: *China Statistical Yearbook* (2022) and *Statistical Yearbook of China's High-Tech Industries*, 2006-2022.

2.2 Intrinsic Rationale for Domestic and External Demand to Drive Up Industrial Upgrade

Export, one of the three drivers of economic development, is crucial to a nation's economic growth. In the initial phase of economic development, domestic demand is insufficient and economic growth lacks endogenous driving forces due to modest household income, a low national savings rate,

and limited investment resources. In this situation, the only way for a nation to stimulate economic growth is to rely on the external market, attract foreign capital and businesses, stimulate the growth of domestic investment and the expansion of manufacturing, and compensate for the lack of demand. China has integrated into labor-intensive and low-value links of global value chains (GVCs) since the implementation of reform and opening up, leveraging its strengths of low-cost labor and a complete industrial system. Economic openness has unleashed vast domestic market and innovation potentials, transforming the nation into the world's factory. China has transitioned from a low-income to a middle-income country as a result of massive job creation and rising household incomes. Due to the expansion of China's domestic market and consumer demand, the interaction between external demand and domestic demand has been conducive to economic growth. China is increasingly subject to "vertical exploitation" and "low-end lock-up" from developed nations under the GVC division of labor and trade systems, preventing it from rising to the high-value links of the GVCs. Along with the disparate resource endowments and development trajectories of different regions and sectors, income disparities between regions and sectors have been widened by external demand. The implication is that when economic development reaches a certain stage, external demand plays a diminishing role in bolstering economic growth, threatening its sustainability.

In recent years, China's international environment and competitive strengths have undergone dramatic transformations. Unilateralism and protectionism in the developed world have hindered economic globalization and impacted China's external demand. China's labor cost advantage has diminished with social and economic development and rising levels of education, and some labor-intensive industries have relocated to other developing nations. The forces propelling external demand have lost momentum. On the other hand, China's rapid social and economic development has contributed to the continuous expansion of its domestic market and an upgrade in its consumption structure. Despite the expanding share and importance of the domestic market, China's limitations of high-end manufacturing and homegrown innovations on the supply side make it hard to meet rising consumer demand for high-value goods and services, resulting in a supply-demand mismatch. If China is to sustain its economic growth, break free from the "low-end lock-up" effect, and avoid the "middle-income trap" (Zhang and Jin, 2020), it must transition from an external demand-driven development model to one driven by domestic demand. China is expected to expand domestic demand as an endogenous driver of economic growth and usher in a new paradigm where domestic demand drives industrial upgrade, which in turn stimulates external demand, developing a unified domestic market, encouraging indigenous corporate innovation, and promoting industrial upgrade.

As demonstrated by the preceding discussion, in the context of economic growth and industrial transition, industrial upgrade is propelled by domestic and external demand. While external demand is an important driver of economic growth and wealth accumulation during the startup phase, domestic demand provides a robust guarantee of sustained economic growth (Chen, 2017). We must maximize domestic and international resources and markets, coordinate domestic and external demand drivers, which are subject to the feedback effects of industrial upgrade, and promote consumption and investment in support. In return, domestic and external demands are subject to the feedback effects of industrial upgrade. For instance, improvement in the industrial structure can correct distortions in factor allocation. By increasing product value-added, it is possible to meet the diverse demands of consumers and to make the supply-demand equation more flexible and adaptable. Lack of progress in industrial upgrade will reduce consumer surplus and lead to an excessive reliance on foreign supplies to satisfy domestic demand, which is detrimental to the supply and demand dual circulations. In the new normal of profound changes in domestic and international environments, China must increase domestic demand to cope with the international market crunch and tap into the potentials of its domestic market, as well as continuously upgrade its industrial structure and pursue high-quality development.

3. Pathways for Domestic Demand to Drive Industrial Upgrade

Increasing demand for goods and services from domestic consumers, enterprises, and government investments will speed up the development and upgrade of related industrial sectors. Domestic demand-driven industrial upgrade should give full play to consumption and investment in infrastructure, and stimulate the upgrade of related industries.

3.1 Industrial Upgrade Driven by Consumption Upgrade

Consumption upgrade will encourage businesses to provide more technology-intensive and higher value-added products and services, enhancing industrial competitiveness and profitability. Consumption upgrade is at the heart of consumption-driven industrial upgrade. As a primary driver of economic expansion, the growth and structural improvement of consumption provide direction for the supply side and induce industrial transition and upgrade. First, growth in consumption signifies an increase in market demand and the diversification and individualization of consumer goods, which prompts businesses to invest more capital to expand manufacturing, upgrade equipment, and adopt the latest technology to increase efficiency and supply more goods and services. Second, improvement in the consumption structure entails a transition from subsistence consumption to personal development and recreation consumption as household incomes rise. According to the marginal consumption theory, a rise in income will increase the consumption of non-essential, high-value goods and services with a higher income elasticity of demand. When the consumption structure is upgraded, traditional and low-end industries will encounter increased market competition, while high-end and emerging industries will encounter more market opportunities and increased growth space. This will prompt businesses to adjust production to meet market demand, reallocate production factors, and improve product and service quality by investing more in research and development, innovation, and business management. In this way, the industrial structure as a whole will improve. Third, new-generation information technologies such as the internet and big data have facilitated information communication between the production and consumption sides, making it easier for producers to identify changes in market demand and quickly adjust. In this way, internet technologies and platform businesses have transformed the traditional business model by putting producers in direct contact with consumers at lower costs.

With the most comprehensive industrial system and the largest domestic market in the world, China has enormous potentials for consumption-driven industrial upgrade. However, China's domestic consumer market is unbalanced and insufficient, and needs policy guidance. Since 2010, China's domestic consumption has vigorously pulled economic growth, but accounts for a smaller portion of the GDP. China's final consumption as a percentage of the GDP reached 54.5% in 2021, which is 3.6 percentage points below the 2003 apex of 58.1%.[1] Second, China's flawed system of income distribution has resulted in significant household income disparities, with the size of the population in the middle- and low-income brackets remaining big. According to the principle of marginal diminishing consumption, increasing the income of middle- and low-income groups is crucial for the expansion of the domestic consumer market. During the 14th Five-Year Plan period (2021-2025), we should strive to expand the middle-income group to supercharge the development of the consumer market and realize economic growth potentials. Third, China's unequal regional economic development has resulted in heterogeneous regional consumption-driven industrial upgrade. In the central and western regions, effects of consumption on industrial upgrade are more obvious than in the eastern region. The reason for this is that the influence of consumption on industrial upgrade diminishes with increasing economic development. As a result, we should implement a regional development strategy as an industrial upgrade catalyst to narrow regional gaps and give play to consumption upgrade's promotion effect on industrial

[1] Source: National Bureau of Statistics.

upgrade in the central and western regions. Fourth, China's urban-rural divide has led to disparate effects of consumption on industrial upgrade. Currently, urban consumption upgrade has a greater impact on industrial upgrade than does rural consumption upgrade. Internet-based commercial distribution also contributes substantially to industrial upgrade. Urbanization facilitates industrial transition and upgrade in neighboring regions.

3.2 Industrial Upgrade Driven by Infrastructure Investment

Infrastructure investment is conducive to economic growth and industrial upgrade. Infrastructure investment promotes industrial upgrade in three ways: First, by increasing consumer demand. As the main capital in social and economic operations, infrastructure investment has a significant multiplier effect and generates social demand that is multiplied by the volume of the investment. As a key component of aggregate social demand, infrastructure investment injects a substantial amount of capital into the national economy, providing businesses with the means to produce more goods and services to satisfy consumer demand. In addition, infrastructure development enhances transportation, communication, and public services, reduces costs, and facilitates industrial transition. Second, investment in infrastructure optimizes the allocation of resources. Infrastructure development - particularly in the areas of transportation, energy, and communications - may improve a region's business climate and attract more companies and capital. Reasonable cross-regional movement of production factors improves the allocation of capital, talent, and technology and promotes intra-regional industrial restructuring. Investment in infrastructure has the potential to encourage regional industrial upgrade and restructuring due to its positive externalities. Third, investment in infrastructure facilitates innovation by stimulating companies to spend more on R&D and innovation to increase industrial productivity and technological prowess, while simultaneously reducing production costs. With the effects of scale and network, investment in infrastructure will steer industrial agglomeration and technological diffusion across regions, resulting in technology spillovers that liberate corporate vitality for innovation. Progress in technology and innovation will promote intra-industry labor division and structural improvement, advancing industrial value addition.

Infrastructure consists of both traditional and new-type infrastructure. Transportation, energy, water resources, postal service, warehouses, and other infrastructures that provide public services for production sectors and people's livelihoods are included in traditional infrastructure. 5G base stations, extra-high voltage (EHV) transmission, high-speed railway, new energy vehicle charging facilities, big data centers, artificial intelligence (AI), and industrial internet are examples of new-type infrastructure. Both kinds of infrastructure reduce the cost of doing business. Companies have greater access to information thanks to traditional infrastructure, enabling them to search for information and communicate at lower costs. Access to the internet facilitates the rapid transfer of technology and other production factors. In contrast to traditional infrastructure, which increases total factor productivity (TFP) via the formation of public capital, the new type of infrastructure is distinguished by an increase in capital-extensive technologies. On the basis of the new generation of information technologies, the new type of infrastructure has shown the trends of digitalization, intelligence, and network-based development. In comparison, investment in traditional infrastructure focuses primarily on the production of steel, cement, mechanical equipment, and other industrial products. Investment in the new type of infrastructure comprises a large proportion of the service sector, with a focus on ICT upgrades, 5G communications, big data, and AI, as well as the closely related financial and commercial services. Investment in the new type of infrastructure potentially induces industrial upgrade from both the supply and demand sides, by increasing the substitution rates of capital, labor and goods and services on the supply side and by increasing the demand for services on the demand side.

As China's economy transitions from rapid growth to high-quality development, it faces complex and volatile international situations as well as technology sanctions imposed by some Western nations.

In this context, we must exploit the strategic opportunity presented by a new round of technological and industrial revolutions, develop 5G, AI, big data, and other information technologies of the next generation, and utilize the whole-nation system to acquire critical technologies and reduce foreign dependence. To achieve this, we must invest more in new infrastructure, accelerate the transition of manufacturing from labor-intensive to technology-intensive, develop a modern industrial system, and cultivate a new dynamic for high-quality development. Considering our reliance on foreign suppliers of essential technologies, we should maintain a moderately advanced industrial layout, avoid hasty transitions, strive to improve the investment structure to steer industrial structure adjustment, and stabilize economic growth while enhancing the economic structure. Uneven regional social and economic development results in disparate effects of infrastructure investment on industrial upgrade. The prosperous eastern region of China functions as the country's industrial powerhouse, attracting more industrial activity and talent than the central and western regions. Therefore, infrastructure investment in the eastern region is more conducive to industrial upgrade than infrastructure investment in the central and western regions. In terms of investment allocation, the government should place a greater emphasis on regional resource advantages and regional development coordination.

3.3 Industrial Upgrade Driven by Industrial Correlation

Rather than being independent from one another, industrial sectors are interdependent. Their synergy facilitates the development of related industries, the creation of industrial chains and clusters, the forging of stronger business connections, and the boosting of industrial competitiveness and value addition. Agriculture, for instance, provides essential materials for the manufacturing and service sectors, whereas the manufacturing sector enables agricultural modernization by providing advanced technology, machinery, and equipment. As an essential industry, manufacturing is the foundation for the growth of the service sector. As their business volume increases, manufacturers outsource R&D, design, marketing, transportation, and other services in a cost-effective manner to third parties. As a result, the service sector has flourished with a broader business scope and a higher level of specialization. In addition, the service sector contributes to the development of manufacturing. At a certain level of social and economic development, professional services such as research and development, design, logistics, and finance become crucial in order for manufacturing businesses to pursue differentiated development and raise value addition. By optimizing manufacturing processes and increasing the efficiency of supply chain integration and value addition, modern services contribute to a company's competitiveness and manufacturing transition and upgrade. Rapid cash, material, and data flows strengthen connections and synergy between the manufacturing and service sectors.

New-generation information technologies, with their high permeability and enabling effects, have deepened the link between production and services, blurring the industrial boundaries and integrating industrial development. The *Implementation Program for Expanding Domestic Demand during the 14th Five-Year Plan Period* called for the development of service-based manufacturing and manufacturing-oriented IT services, as well as the design, development, and integration of information application systems in key sectors. Now that it has entered the middle and late phases of industrialization, if it is to achieve high-quality economic development, China must promote integrated manufacturing and service development and increase manufacturing value addition by developing knowledge-intensive services. The benefits of upgrading manufacturing are twofold: First, it may improve the quality of the manufacturing supply and help China's manufacturing industry to overcome the "low-end lock-up effect". For decades, China's manufacturing industry has remained at the middle and bottom rungs of the value chain. In the new industrial revolution centered on smart manufacturing, China's manufacturing industry faces the dual challenges of developed countries reshoring advanced manufacturing and other developing countries competing for mid- and low-end industries. Integrating manufacturing with modern services and fostering differentiated competitive strengths is one way to improve the quality of the

manufacturing supply and value addition. The second advantage consists of overcoming Baumol's cost disease and enhancing economic performance. Baumol's cost disease is caused by the "self-circulation" of services, which inhibits the growth of productivity in the service industry. Without the support of the real economy, service sector productivity may not increase. This issue can be resolved by coordinating the development of manufacturing and the service sector in order to boost service sector productivity and avoid the "middle-income trap".

The integration of manufacturing and services in China faces many obstacles. First, despite its heft, China's manufacturing industry lacks the competitiveness and strength necessary to rise in the value chain. Despite being the largest manufacturing nation in the world, China lags far behind developed nations in terms of overall manufacturing prowess. Manufacturing transition is hindered by modest added value, profitability, and knowledge-based assets. Second, inadequate manufacturing-service integration has meant modest support for upgrading manufacturing in the service sector and a disconnect of the financial sector from the real economy. Third, China has yet to derive more tangible benefits from manufacturing-service integration and make strides in critical technologies to catch up with advanced nations, transform profit modes, and achieve leapfrog development.

4. Policy Approach for Industrial Upgrade Driven by Domestic Demand

China is still confronted with a contradiction between consumption upgrade, investment growth, and effective supply. The reaching of a dynamic equilibrium between demand and supply has been hampered by supply-demand mismatch, obstacles to economic circulation, and a lack of coordination between growth in domestic demand and industrial upgrade policy. The only way to eliminate barriers to supply-demand circulation and achieve high-quality economic development is to integrate expanding domestic demand with implementing supply-side structural reforms, placing domestic demand at the service of industrial upgrade.

4.1 Policy of Expanding Domestic Demand

China is undergoing rapid industrialization, urbanization, informationalization, and agricultural modernization, and domestic demand has the potential to turbocharge economic development. Despite the fundamental role of consumption and the growing importance of investment in industrial upgrade, there are still obstacles that need to be overcome. In the household sector, individualized household consumer demand has not yet been completely satisfied. Some households have spent the majority of their savings on housing investments, leaving them short of funds for personal development. Deficiencies in public welfare spending have hurt mass consumption potentials. Some industrial sectors have yet to designate an upgrade path based on their comparative advantages. Companies lack incentives to innovate and break new ground. Some industries are faced with technological industrial upgrade bottlenecks. Consumption-investment synergy is hampered by domestic market circulation barriers, unjust competition, and distortions in factor allocation.

China should emphasize a combination of the following policy initiatives: First, a proactive fiscal policy and prudent monetary policy must be adopted to stimulate domestic demand. Through a combination of tax cuts and fee reduction policies, market entities should be incentivized to consume and invest. Financial institutions should be instructed to provide more assistance to the real economy and to stabilize market expectations. Market order should be restored to prevent behaviors that hurt consumer interests, enhance the consumption environment, and stimulate consumption potentials. The second topic is employment policy. In order for consumers to have disposable income, they must have decent jobs. The unemployment rate in China has spiked since COVID-19, and tech firms are laying off employees. To secure employment and re-employment for various groups, we recommend that the government streamline procedures, reduce the job market's threshold, support flexible employment

via various channels, and assist the poor in getting hired. Pension and education concerns should be alleviated through the implementation of multi-tiered pension insurance systems, provincial pooling of pension and medical insurance funds, and reforms to equalize access to education. Third, policies to enhance the business climate. Priority should be given to encouraging investment in infrastructure and financing, encouraging market-based factor allocation, and establishing a unified national market to level the playing field, as well as adopting policies to protect property rights and enforce the social credibility system for a high-quality market environment conducive to domestic demand. Fourth, other domestic demand strategies. For example, domestic demand potentials can be unlocked by accelerating the development of China's less developed central, western, and northwestern regions and ethnic minority regions. Regional and urban-rural income disparities should be reduced through better regional development and demographic urbanization.

4.2 Industrial Upgrade Policies

China has enormous potentials for industrial upgrade, as indicated by the rising level of agricultural modernization, manufacturing remaining at the mid- and low-end links of global value chains, and its share of the service sector that is smaller than the average level of nations in comparable development stages. Under the new round of industrial and technological revolutions, market entities and governments at all levels must closely observe the new trends of industrial upgrade and harness new factors of production and technology to accelerate the process of industrial upgrade. Digitalization and environmental sustainability are now the primary focuses of industrial upgrade in the digital economy. The inability of businesses to innovate and derive technological progress from scientific research (Zhou and Lyu, 2012) has exposed supply chains to the risk of external disruptions. Overcapacity coexists with insufficient factor input, and resource allocation distortions have impeded industrial upgrade. The deviation of local industrial development from resource endowment advantages has led to homogeneous industrial development. Diverse policy instruments should be used to formulate and implement industrial upgrade policies for various industries.

Based on the industrial classification of new structural economics (Wang, 2021), we should concentrate on the three categories of industrial upgrade policies listed below: First, government-led, market-participatory industrial upgrade policymaking. Any disruption to the supply of choke-point technologies will jeopardize the entire supply chain for strategic industries that are crucial to the national economy and defense. The government should devote more funds to fundamental research and stimulate the commercialization of R&D discoveries as the foundation for industrial upgrade in advanced manufacturing sectors such as semiconductors, aviation, aerospace, biomedicine, and cutting-edge equipment. In certain industries, market forces can be utilized to advance research on essential technologies. Second, market- and government-driven industrial upgrade policies for lagging, transitioning, and technology-changing industrial sectors. The government must assist industries that lag far behind global frontier technologies in establishing R&D institutions and acquiring frontier technologies and knowledge to make up for their deficiencies. For transition industries, it is recommended to not only upgrade traditional industries that have lost comparative advantages, but to also eliminate backward capacities through market mechanisms and relocate them to low-tier domestic regions or BRI countries. For industries transitioning to new technologies such as new energy vehicles, mobile payments, and big data, market mechanisms will attract the concentration of superior factors. The brief R&D cycle and high concentrations of talent, technology, and capital will attract market-based competition, facilitating industrial upgrade. Third, market incubation policies to enhance the business climate and encourage fair competition. Fair competition is essential for regulating corporate behaviors (Jin, 2022). It is recommended to lower market and institutional transaction costs and increase factor allocation efficiency by enhancing the quality of industrial development and streamlining institutional procedures in order to nurture internationally competitive market entities (Liu and Liu, 2023).

4.3 Policies to Coordinate Domestic Demand Growth and Industrial Upgrade

4.3.1 Industrial upgrade driven by policies to increase domestic demand

Domestic demand policies provide diverse pathways to industrial upgrade and guide policymaking while unlocking consumption and investment potentials. First, policies should be implemented to increase consumer demand as a driver of industrial upgrade. In the past, policy initiatives such as tax preferences and subsidies were effective for industries such as home appliances, charging stations for new energy vehicles, artificial intelligence, and new energy batteries. The government may look to past practices when developing new programs to raise consumers' purchasing power and spending so as to generate demand. Local governments should be encouraged to enact pro-consumption policies and develop a variety of consumer use cases that serve to promote the consumption of high-quality products and services and induce industrial innovations. Second, the government should implement policies to increase domestic demand by promoting consumption upgrade, with a particular emphasis on digital consumption. Priority should be given to the promotion of green food, green clothing, and green transportation, as well as the encouragement of businesses to implement advanced green and low-carbon technologies and promote green supply chains. In addition, digital consumption should provide greater support for industrial digitalization, cultivate digital consumption brands with international influence, and stimulate the upgrade of digital industrial chains with high-quality digital consumption demand. Third, the proactive expansion of effective investment should be pursued to encourage industrial integration and upgrade traditional industries. The government should encourage a reasonable investment ratio between traditional and new types of infrastructure and develop a platform for industrial digitalization and upgrade. On the basis of the development of traditional infrastructure, efforts must be made to strengthen the role of new infrastructure led by "big data", artificial intelligence, cloud computing, and the internet of things (IoT) in transforming traditional industries. Use of the data factor should be made more efficient in regulating industrial production and business operations. Digital technologies should be harnessed to reduce the cost of integration between manufacturing and producer services and to facilitate the upgrade of related industries.

4.3.2 Stimulating the growth of domestic demand with industrial upgrade policies

Industrial upgrade policies help improve resource allocation, resolve supply-demand contradictions, and increase supply capacity so as to satisfy premium consumer demand and expand demand. First, industrial upgrade policies should be implemented to optimize resource allocation and the consumption structure, as well as to improve the quality and efficiency of product supply. In addition to increasing environmental regulation for energy-consuming and polluting industries, the government should eliminate outmoded capacities and step up policy support for emerging industries to attract business investment, improve the industrial structure, and optimize the consumption structure. Second, policies should be implemented to steer industrial upgrade and broaden the categories and distribution methods of consumer products with the aim of uncovering additional consumption potentials. To promote digital, network-based, and intelligent operations, China has adopted a set of "Digital China" policies. For instance, the *Plan for New-Generation Artificial Intelligence (AI) Development* and the *Plan for Big Data Industry Development in the 14th Five-Year Plan Period* offer generic technical support for the digital empowerment of traditional industries. Priority should be given to developing the smart home market based on the industrial internet, AI, and virtual reality (VR), developing smart cities with the support of the internet of things (IoT), cloud computing, and big data, achieving effective interconnection between education, healthcare, mobility, and city management, and expanding the consumption boundary and enhancing the quality and convenience of the supply of consumer goods and services. Third, industrial upgrade policies should be implemented to promote emerging industries and industrial integration, as well as the synergy between industrial sectors, increase investment, and optimize the investment

structure. Indigenous innovation should play a greater part in supporting industry upgrade and integration, and proactive incentives should be implemented to encourage innovation and compensate for emerging industries' technology deficits. Also, it is crucial to develop modern services and enhance the quality and efficiency of public services. Emerging industries and modern services with high potentials and favorable market expectations should be nurtured to attract capital, talent, and data, increase investment, and improve the industrial structure.

4.3.3 Policy coordination for domestic demand growth and industrial upgrade

Policy coordination may foster synergy and contribute to domestic demand growth and industrial upgrade. First, domestic demand policies should be coordinated with industry upgrade policies. Policymakers should consider the interplay between consumption, investment, and industrial upgrade to avoid resource allocation distortions caused by policy overlaps and policy resource waste. This requires the removal of institutional obstacles. Second, domestic demand and industrial upgrade policies should be coordinated more closely. Domestic demand policies are developed in collaboration with a wide range of government agencies, including the Ministry of Finance, the People's Bank of China (PBoC), the Ministry of Commerce (MOFCOM), the Ministry of Human Resources and Social Security, the Ministry of Industry and Information Technology (MIIT), and the National Development and Reform Commission (NDRC). The MIIT, the NDRC, and the Ministry of Finance also enact and implement industrial upgrade policies. Given the overlap in policymaking authorities, in order to improve policy coordination and precision, it is essential to increase policymaking coordination and information exchange between relevant departments. Finally, proactive efforts should be made to reform the system of income distribution and enhance market cultivation policies so as to increase household consumption and facilitate industrial upgrade. The government should support the dynamism of market entities and establish a market environment that is conducive to consumption and industrial upgrade. One strategy to boost household consumption is to maintain a reasonable income distribution ratio among various factors such as labor, capital, knowledge, technology, and data. Second, fiscal and monetary policies should be implemented to increase consumer and corporate purchasing power by increasing public investment and social security spending. Tax rates and fees should be decreased to encourage businesses to invest more in R&D and upgrade. Third, there should be steady progress in creating modern market and distribution systems. With the goal of optimizing the allocation of production factors and increasing market efficiency, policies should be implemented to develop efficient and interconnected modern logistics, enhance fundamental market systems, and foster fair competition. Fourth, reforms to the consumption, investment, and financing systems should be carried out to remove institutional barriers that inhibit consumption and investment.

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