A PORTRAIT OF CHINA’S ECONOMIC TRANSFORMATION: FROM MANUFACTURING-DRIVEN TO SERVICES-LED

ZHANG Bin, ZHU He, ZHANG Jiajia, and ZHONG Yi
Established on April 12th, 2008, the China Finance 40 Forum (CF40) is China’s most influential professional think tank in the field of finance and macroeconomics. Since 2015, CF40 has gradually established its “platform + research institute” think tank model. The CF40 platform serves as a foundation to support two key think tank series: the CF40 series, and the New Finance series.

Within the CF40 series, the CF40 Foundation and the CF40 Institute were established in 2016 in Qingdao, Shandong Province. CF40 also jointly launched the Silk Road Planning and Research Center with the China Development Bank, Tsinghua University, the Silk Road Fund, and the China Association for the Promotion of Development Financing. The Center’s mission is to carry out forward-looking research on important issues related to the Belt and Road Initiative.

Within the New Finance series, CF40 set up the Shanghai Finance Institute (SFI) in Shanghai in July 2011, and the Northern Finance Institute (NFI) in Tianjin in 2016. Also in 2016, the SFI founded the Shanghai Pu Shan New Finance Development Foundation (Pushan Foundation). And in October 2015, the Institute of Digital Finance (IDF) was launched at Peking University.
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Environment for China’s macroeconomic operation: Economic recovery from the COVID-19 pandemic has accelerated in developed economies, pushing up global stocks and commodity prices. In China, the monetary conditions remain stable, the broad fiscal expenditure budget has fallen sharply, while the number and scale of credit bond defaults have surged.

Characteristics of China’s macroeconomic operation: China’s economic recovery has slowed marginally, the expenditure structure has moved closer to the pre-pandemic state, and the labor market for low-income groups remains under pressure.

Outlook and risks: Consumption of services is expected to further pick up; downward pressure will prevail on investment in infrastructure and real estates; exports will remain at a relatively high level; and the aggregate demand is expected to weaken. Attention needs to be paid to the risk of a large-scale default of credit bonds and bad debt risks from small and micro enterprises as a result of the excessive downturn in broad credit, as well as the risk of an excessive downturn in real estate investment; an accelerated rebound in global inflation and contemplation among the central banks of developed countries of an early exit from the loose monetary policy may trigger financial market turmoil.

Coping strategies: Address local implicit debts with a multi-pronged approach; maintain a reasonable growth in aggregate demand and rely more on the monetary policy; maintain the flexibility of the RMB exchange rate to counter external shocks.
A Portrait of China’s Economic Transformation: From Manufacturing-driven to Services-led

The Chinese economy has fully entered a period of structural transformation from a manufacturing-driven model to a services-led one since 2012, whether in terms of nominal and real manufacturing value added (MVA) as a proportion of GDP, the share of manufacturing employment, or in terms of the share of manufacturing product consumption.

There has been no premature deindustrialization in China. Judged against high-income economies in similar stage of development, during the transformation from a manufacturing-driven to a services-led economy, the level of per capita income in China, the peak value of the share of MVA, as well as the magnitude of the decline in the share of MVA in the decade since the start of structural transformation are in line with the general experience of developed countries.

The upgrade in consumption and manufacturing, both of which are becoming more services-led rather than manufacturing-driven, is the driving force behind the economic transformation in general.

Traditional manufacturing faces greater pressure of “survival of the fittest” and is forced to transform and upgrade. The transformation and upgrading of the manufacturing industry is driven by the flourishing human capital-intensive services, which is also a premise for consumption upgrade.

The structural transformation from a manufacturing-driven to a services-led economy is a chain reaction. Consumption upgrade results in industrial upgrade, with the development of human capital-intensive service industry picking up pace. The structural transformation has also accelerated the evolution of urban morphology from urbanization to metropolitanization, pushed up consumption rates, pared down investment rates, slowed the growth in the share of the export market as well as economic growth, and leading to a macroeconomy that is “easy to cool and hard to heat”.

There remain issues that need to be reflected upon, including the real weaknesses of the Chinese economy, popular prejudices, and the 4-trillion-yuan stimulus program.
THE EXTERNAL ENVIRONMENT: ACCELERATED ECONOMIC RECOVERY AMONG DEVELOPED ECONOMIES

Developed economies have picked up pace in their recovery from the COVID-19’s blow. In 2021Q1, the global economy continued to improve in general. The J.P. Morgan Global Composite PMI and Global Manufacturing PMI Mean PMI recorded mean values of 53.4 and 54.2, respectively, up by 0.4 percentage point (pct) and 0.6 pct from their mean values in 2020Q4. With the exception of India and Brazil which posted declines, the manufacturing PMIs of major economies such as the United States, Japan, the Eurozone and Russia all rose significantly.

Figure 1: J.P. Morgan Global Manufacturing PMI
Figure 2: Manufacturing PMIs of the world’s major economies

Sources: Wind, CF40

Large-scale fiscal stimulus packages have prompted the economic recovery of developed countries. Combating the pandemic and resuscitating the economy have been the most pressing tasks for the US government since President Joe Biden took office. Following the US$1.9 trillion economic stimulus plan that the US Congress passed in early March, President Biden unveiled in late March a larger, more targeted plan of more than US$2.3 trillion on infrastructure over a period of 10 years. Driven by the large-scale economic stimulus and massive vaccine rollout in the country, the US economy has been recovering faster than other developed economies such as the EU and Japan. The accelerated recovery of the US economy has also boosted the global economy. Eurozone finance ministers said at a meeting on March
17 that their fiscal stance will remain loose given the adverse effects of the pandemic on the economy. The European Central Bank indicated that it would speed up bond purchases to prop up the economy. However, with several European countries under new coronavirus restrictions to combat new waves of infections, the economic recovery in Europe in 2021 may be weaker than expected. In Japan, the pandemic situation is relatively easing, and its domestic economy is slowly recovering. The country’s manufacturing PMI recorded a mean value of 51.3 in 2021Q1, moving above the boom-bust line of 50 for the first time since 2019.

There has been significant rebound in commodity prices. The CRB Commodity Index rose from 436 at the end of 2020Q4 to 499 at the end of 2021Q1. As of the end of 2021Q1, the spot price of Brent crude oil was US$64.0 per barrel and the futures price was US$63.5 per barrel, up 26% and 23% respectively from the end of 2020Q4. The increase in crude oil prices in 2021Q1, was mainly driven by demand recovery. Although OPEC is still seeking to support oil prices by maintaining production cuts, its tone has changed somewhat and it is proposing an orderly increase in production. In 2021Q1, the price of iron ore fluctuated widely. China’s iron ore futures settlement price rose from RMB987 per tonne at 2020Q4 to a peak of RMB1,166 per tonne in 2021Q1, a record high. With the exception of wheat, non-ferrous metals and international agricultural products posted price gains to varying degrees, with LME copper, aluminum and zinc prices rising by 14.0%, 12.9% and 2.3%, respectively, and CBOT soybean and corn prices rising by 9.6% and 16.6%, while CBOT wheat prices fell 3.5%.

Figure 3: US Treasury yields rose sharply

Figure 4: CRB commodity indices

Sources: Wind, CF40
The core CPIs of major economies remained low, while inflation forecast rebounded slightly. The US Federal Open Market Committee (FOMC) substantially ramped up its economic growth and inflation forecasts for this year at its March meeting. The Fed's forecast of the country’s GDP growth rate in 2021 has been raised from 4.2% to 6.5%, its forecast of the unemployment rate at the end of 2021 has been lowered from 5.0% to 4.5%, and its forecast of core PCE inflation at the end of 2021 has been raised from 1.8% to 2.2%

Global stock markets generally rose, the US dollar index rebounded, the yields on US long-term Treasury bonds rose significantly, and emerging market economies saw capital outflows. In anticipation of economic recovery and a loose policy environment, optimism among investors grew, and the stock markets of developed economies and some emerging markets fluctuated upwards. In 2021Q1, the stock markets of developed economies such as the US, Japan and Europe rose by 5.8%, 6.3% and 9.4%, respectively, on the basis of the figures at end of 2020Q4. Reuters data shows that since February, foreign investment in the US stock market has turned from a net outflow to a net inflow. In March, the net inflow of foreign capital in US stocks climbed to US$81.77 billion. During the same period, the emerging market asset portfolio recorded a net foreign inflow, reversing the previous net outflow. According to the Institute of International Finance (IIF), in March, emerging market countries had as much as US$4.78 billions of net cross-border capital outflow in their asset portfolios. The US dollar index and US Treasury yields rose significantly in 2021Q1, with the former rising by 3.6% from 90.0 at the end of 2020Q4 to 93.2 at the end of 2021Q1, and the yield on the benchmark 10-year Treasury note rising from 0.93 at the end of 2020Q4 to 1.74%.

Historically, when demand rebounds and commodity prices rise, developed countries can usually better manage inflation expectations thanks to their higher supply elasticity and monetary policy credibility, and moderate inflation expectations can have more of a positive effect on their economic recovery. However, for some emerging market countries with poor supply elasticity and monetary policy credibility, even small demand or supply shocks can cause inflation to spiral out of control, triggering capital outflows and financial market turmoil, which are not conducive to economic recovery. While developed economies such as the US are not daunted by inflation, some emerging market economies face severe challenges from uncontrolled inflation and capital outflows.
THE INTERNAL ENVIRONMENT: REDUCED FISCAL EXPENDITURE, A RELATIVELY STABLE MONETARY ENVIRONMENT, AND SURGE IN DEFAULTS IN THE CREDIT BOND MARKET

China witnessed a sharp decline in its broad fiscal expenditure. In 2021Q1, China’s public fiscal expenditure grew by 6.2% year-on-year, and government fund expenditure grew by -12.2% year-on-year. The combined growth rate of the two was 1.3% year-on-year, which was a very low level in the past five years. The Government Work Report stated that taking into account the effective control of COVID-19 at home and the gradual recovery of the domestic economy, the Chinese government would cut the ratio of its deficit to GDP to around 3.2 percent for the year of 2021. Also, no COVID-19 bonds would be issued and RMB3.65 trillion of local government special bonds would be issued. A regular mechanism of directly-channeled fiscal funds would be established and expanded to cover RMB2.8 trillion in central government funding. The country will expand effective investment this year, with a central investment budget of RMB610 billion. Although the size of the deficit is slightly higher than market expectations, the growth rate of China’s fiscal expenditure in 2021 is the lowest in three decades, at 1.8%. The sum of government fund expenditure and general fiscal expenditure as a measure of China’s broad fiscal expenditure increases by only 4.9% in 2021, a record low since the release of public data.
Slowdown in outstanding TSF growth. At the end of 2021Q1, China’s outstanding total social financing (TSF), a broad measure of credit and liquidity in the economy, rose 12.3% from a year earlier, down by 1.0 ppt from the end of 2020Q4; M1 and M2 money supply posted year-on-year (YoY) growth of 7.1% and 9.4%, respectively, down by 1.5 pcts and 0.7 ppt from the end of 2020Q4. In 2021Q1, China’s TSF increased by RMB10.0 trillion, a YoY decrease of RMB1.0 trillion. In breakdown, debt across the government and corporate sectors increased by RMB0.7 trillion and RMB6.8 trillion in the quarter, RMB0.9 trillion and RMB1.4 trillion less than a year ago, while household debt grew by RMB2.6 trillion, RMB1.4 trillion more than a year ago.

In terms of the financial market, the interest rates remain stable. In 2021Q1 the DR007, the seven-day reserve repo rate for depositary financial institutions in the interbank market, rose from an average of 1.99% in December 2020 to 2.28% in February 2021, and then fell to 2.12% in March; the R007 rose from an average of 2.34% in December 2020 to 2.62% in January 2021, and then fell to 2.20% in March. The Government Work Report stressed maintaining the continuity, consistency, and sustainability of macro policies to keep major economic indicators within an appropriate range. It stated that China will keep its prudent monetary policy flexible and targeted and at a reasonable and appropriate level, see that increases in money supply and aggregate financing are generally in step with economic growth in nominal terms, maintain a proper and adequate level of liquidity supply, and keep the macro leverage ratio generally stable.

Sources: Wind, CF40
The issuance of corporate bonds declined, while default risks were mounting up. The bond default by Yongmei Group in November 2020 dealt a huge blow to the credit bond market. The scale of corporate debt issuance and financing in the primary market declined significantly, and the proportion of companies’ prepayment of principal in net financing increased significantly, an indication of active credit reduction on the part of companies. At the same time, the default risk of credit bonds increased significantly. Both the number and scale of defaults in 2020Q4 and 2021Q1 are much higher than the historical levels of the same periods.
Two-way fluctuations of RMB exchange rate. In 2021Q1, the RMB/USD exchange rate rose from 6.54 at the end of 2020Q4 to 6.44 in early February, after which it began to slide, reaching 6.56 by the end of 2021Q1, which ended the unilateral appreciation trend that began in early June 2020 and erased the gains made during the year. The CFETS (China Foreign Exchange Trade System) RMB index rebounded from 94.8 at the end of 2020Q4 to 96.9 at the end of 2021Q1. The recent decline in the RMB exchange rate has been mainly due to changes in external factors, including the boost to US economic recovery expectations thanks to the large-scale stimulus package and the progress of the vaccination campaign in the country which have propped up the dollar index; the resumption of risk aversion in the market triggered by the third wave of COVID-19 cases in Europe; the narrowing of the China-US interest rate gap with the rising of US inflation expectations and US Treasury yields, as well as other factors such as growing expectations of an early exit from loose monetary policies and the return of capital outflows in emerging markets. The recent fluctuations in the RMB exchange rate are normal and healthy corrections, reflecting that the exchange rate has entered a new normal of two-way fluctuations, which will help alleviate the financial pressure on domestic businesses caused by continuous unilateral appreciation.

Figure 13: Onshore and offshore exchange rates
Figure 14: RMB basket exchange rate

Sources: Wind, CF40
COLUMN 1: WILL RISING COMMODITY PRICES TRIGGER ANOTHER ROUND OF INFLATION?

Since the beginning of 2021, the prices of major global commodities have risen remarkably. Compared with the beginning of the year, the Nanhua Commodity Index has risen by 7%, the prices of copper, steel rebar, iron ore, and crude oil have gone up by more than 10%, and the CRB Spot Index has risen by nearly 15%. On March 25, Premier Li Keqiang mentioned the rapid increase in commodity prices in his speech in Nanjing. In early April, the Financial Stability and Development Committee and the State Council meeting expressed concerns about the rapid rise in commodity prices. **The general concern in the market is that macroeconomic policies will be tightened ahead of schedule due to a new round of inflation triggered by rising commodity prices or policymakers’ concerns of such an occurrence.**

The overall performance of China's economy following the impact of the coronavirus pandemic is similar to that of 2009. There is a V-shaped rebound after a rapid bottoming out, and the same is true for commodity prices. However, it would be unreasonable to make a simple comparison between the current round of economic recovery and rise in commodity prices and the situation in 2009, and conclude that there would be a new wave of inflation. In 2009, driven by the significant expansion of aggregate demand, prices rose across the board, resulting in general inflationary pressure. The CPI and PPI peaked at the same time with roughly comparable gains. **Historically, the PPI and CPI mostly moved in sync in each economic cycle before 2016, and the PPI did not have a stable and obvious lead over the CPI.**

However, the CPI and PPI have diverged significantly in the current round of economic recovery, with the PPI rising rapidly, while the CPI and core CPI remain low. The GDP deflator, which comprehensively reflects price changes, has not risen significantly either. The actual inflationary pressure on the Chinese economy is not really high even after four consecutive quarters of economic recovery. Such divergence is not a new phenomenon. **The PPI and CPI have been diverging after 2016. This at least shows that there has been no effective evidence of carryover effect from the PPI to the CPI in the past five years.**

Our calculations of the rolling correlation coefficients of the CPI and PPI in different periods show a great structural change in the correlation between the PPI and CPI around 2016. Before 2016, the rolling correlation between the PPI and CPI was relatively stable, with both the
3-year and 5-year rolling correlation coefficients standing at around 0.8, except during the 2008 financial crisis. After 2016, the 3-year rolling correlation coefficient declined rapidly, followed by the 5-year rolling correlation coefficient in 2017.

**Figure 1: Continued divergence between the CPI and PPI after 2016**

**Figure 2: Significant change in the correlation between the CPI and PPI after 2016**

Sources: Wind, CF40

The price performance of different types of commodities varies greatly in the latest round of bulk commodity price increases. We observed the post-pandemic price changes of the four major commodities of ferrous metals, non-ferrous ferrous, energy & chemicals, and agricultural products with January 2, 2020 as the base date. Compared with their pre-pandemic price levels, ferrous metals saw the largest price gain (71%), followed by non-ferrous metals (27%), and agricultural products posted a relatively moderate price gain (10%), while energy and chemical prices have yet to fully return to their pre-pandemic levels (-5%).

The above-mentioned price changes can be better explained by (1) whether there are supply-side disturbances, and (2) structural differences on the demand side.

On the supply side, both ferrous and non-ferrous metals experience certain supply-side disturbances in terms of mine output, and mainly in South America. Some mineral exporting countries have been severely affected by the pandemic, resulting in a decrease in actual output of some mines. In contrast, there is no obvious supply-side disturbance for agricultural products and energy and chemical products.
On the demand side, oil prices plummeted when the demand for crude oil shrunk sharply due to the impact of the global pandemic. Although oil prices have been slowly rebounding as the global economy gradually recovers, they have only barely returned to their pre-pandemic levels. A significant improvement in crude oil demand before an official and complete removal of lockdown measures across countries will be unlikely. Crude oil is the most upstream of the energy and chemical industry, and the drop in oil prices has created a significant downside for the price of energy and chemical products.

**Compared with energy, chemical and agricultural products, ferrous and non-ferrous metals are relatively stronger on the demand side.** The characteristic of “strong investment and weak consumption” is very obvious in the latest round of economic recovery, and real estate investment has stood out the most. A similar scenario occurred in 2019 when China’s overall macro economy was weak, and most of its macroeconomic indicators were sliding. Among various types of fixed asset investment (FAI), manufacturing and infrastructure investment performed poorly, and only real estate investment thrived. In such an economic landscape, ferrous products and materials see significant gains relative to other industrial products. Exports are another major force driving the rapid recovery of the Chinese economy. They have a relatively obvious effect on the demand for major industrial products, but little effect on that for agricultural products. The differentiated performance of commodities can also partly explain why the PPI gain has not been passed to the CPI. **The relationship between the prices of agricultural products and crude oil and the CPI is more direct, while that in terms of the prices of ferrous and non-ferrous metals is farther apart.**

**The issue of upstream sectors squeezing the profits of downstream sectors warrants attention.** The PPI and CPI have continued to diverge in the past five years, and there is no historical evidence of carryover effect from the PPI to CPI. The rise in commodity prices is mainly reflected in the redistribution of profits between the upstream and downstream sectors of the industrial chain, that is, the upstream sectors are accounting for an increasing proportion of overall profits.

After 2016, the upstream sectors’ share of the profits of industrial enterprises has increased significantly, and despite the slight decline in 2019, it remains higher than the level before 2016. While the economic cycle has a certain impact on the upstream sectors’ share of profits, it is not the main reason, and an important piece of evidence is that the temporary weakening
of China’s macro-economy in 2018Q2 did not lead to a significant change in the proportion of profits earned by enterprises in upstream sectors. The proportion remained higher than the level in 2017 despite a slight decline in 2019. The upstream sectors’ share of industrial enterprise profits has been expanding at an accelerated pace since the Chinese economy began to recover from the impact of the pandemic, and it has exceeded the level at the beginning of 2019. As commodity prices remain high and generate huge profits for related sectors, the upstream sectors’ share of profits is likely to continue to increase, approaching or even exceeding the highs in 2018. Hence, in the absence of a clear expansion of end-user demand, the risk of the PPI triggering a new round of inflation is not a significant concern. Instead, attention should be paid to the profit redistribution effect brought about by the rise in the PPI.

**Figure 3: Commodity performance in 2019**

**Figure 4: Upstream sectors’ share of industrial enterprise profits**

*Sources: Wind, Hithink, CF40*

*Note: The upstream sectors include the mining, non-metallic mineral manufacturing, ferrous metals, non-ferrous metals, and coking sectors.*
CHARACTERISTICS OF ECONOMIC OPERATION: ECONOMIC RECOVERY SLOWS MARGINALLY, AND THE EMPLOYMENT MARKET FOR LOW-INCOME GROUPS HAS YET TO RECOVER

1. Economic growth slows down marginally, and the employment market for low-income groups has yet to recover

There is a marginal slowdown in China’s economic growth. China’s GDP surged by 18.3% in 2021Q1 compared to a year ago and grew by 0.6% versus 2020Q4. The 2-year average growth rate of 5.0% is significantly lower than the 6.5% YoY growth rate in 2020Q4. Among sectors, real estate and industry generally maintained the recovery trend seen in 2020Q4. The 2-year average growth rate of most sectors declined compared with 2020Q4. The biggest declines were seen in the accommodation and catering, construction, and wholesale and retail trades sectors.

![Figure 15: YoY growth rate of GDP at constant prices](image)

![Figure 16: Value added growth rate by sector](image)

Sources: Wind, Hithink, CF40

The employment market remains under pressure. After hitting a new high of 6.2% at the beginning of 2020, the surveyed unemployment rate in urban areas of China began to fall as the domestic economy recovered steadily, and by December, it returned to the level of 5.2% in the same period in 2019. It rebounded to 5.5% in the first two months of 2021 before easing to 5.3% in March 2021, up 0.1 pct from the end of 2020Q4.
The recovery of employment in the service industry has been slow. Although the employment index of the non-manufacturing PMI rebounded from 48.7% at the end of 2020Q4 to 49.7% at the end of 2021Q1, it remained below the 50% boom-bust line which separates expansion from contraction. Improvement in the operating conditions of small and micro-sized enterprises and individual industrial and commercial households has been slow. After falling to 31.9% in February 2020, the Small and Micro-sized Enterprise Operating Index slowly rebounded to 44.3% in March 2021, which remained lower than the 2018-2019 average of 46.4%. In breakdown, the recovery of the wholesale and retail industry was higher than the overall level, but was 4.0 pcts lower than the 2018-2019 average; the accommodation and catering industry suffered a serious setback, coming in at only 39.9% in March, far below the 2018-2019 average of 49.1%.

**Figure 17: The surveyed unemployment rate in urban areas of China**

**Figure 18: Small and Micro-sized Enterprise Operating Index**

Source: Wind, CF40

**Widened income gap with growth of the income of urban residents and migrant workers significantly lower than the average level of the past five years.** The per capita disposable income of urban residents increased by 12.2% YoY in 2021Q1, and the 2-year average growth rate was 6.2%, up 0.5 pct from 2020Q4, but significantly lower than the average growth rate of 8.0% in 2015-2019. The 2-year average growth rate of the median disposable income of urban residents was 5.1% in 2021Q1, which was significantly lower than the 2015-2019 average growth rate of 8.1%. The faster average growth rate of the disposable income of urban residents than the growth rate of their median income indicates that the income of high-income groups is growing faster than that of low-income groups, and the income distribution gap is widening.
The number of rural migrant workers was 174.05 million in 2021Q1, which was 2.5 million fewer than the 176.51 million in 2019Q1. The income of rural migrant workers increased by 13.9% YoY in 2021Q1, and the two-year average growth rate was 2.4%, which was significantly lower than the average growth rate of 7.4% in 2015-2019. Migrant workers are mainly employed in industries which have been lagging in their recovery, such as accommodation and catering, construction, and wholesale and retail. These industries are struggling to get back on their feet, making it difficult for the employment and income of migrant workers to return to normalcy. The significantly slower growth of the income of migrant workers than the average growth rate of the disposable income of urban residents also points to a widening income distribution gap.

**Rebound of prices.** China’s CPI rose by 0.4% YoY at the end of 2021Q1, up 0.2 pct from the end of 2020Q4 and registering positive growth for the first time in the year. Food prices went...
down 0.7% YoY, compared to a positive growth rate of 1.2% at the end of 2020; non-food prices rose by 0.7%, compared to zero growth at the end of 2020. Among non-food products, the price of industrial consumer goods rose on a YoY basis for the first time in nearly a year, mainly driven by the increase in automobile and diesel prices. The core CPI, excluding food and energy, rebounded after bottoming out. After turning negative for the first time in January 2021, it increased by 0.3% at the end of March, but far below the 1.8% growth rate recorded in the same period in 2019. Affected by factors such as rising domestic raw material prices driven by rising international commodity prices, China’s PPI rose by 4.4% YoY, up 4.8 pcts from the end of 2020Q4. The PPI for producer goods clawed back into positive territory, surging by 5.8% YoY, compared to its 0.5% decline at the end of 2020; the PPI for consumer goods recorded a 0.1% YoY increase, following a 0.4% decline at the end of 2020.

**Figure 23: Monthly CPI and PPI**

**Figure 24: Core CPI rebounded after bottoming out**

*Source: Wind, CF40*

**COLUMN 2: HOW SHOULD CHINA'S PMI REBOUND IN MARCH BE PERCEIVED?**

Before March 2021, both the CFLP and Caixin PMIs had been moving in tandem since recovery began after the easing of the domestic pandemic situation, that is, they rose rapidly before peaking and falling back in November 2020. A significant divergence occurred in March 2021, with the CFLP PMI staging a strong rebound of 51.9%, up 1.3 pcts from the previous month and close to its peak in November 2020, while the Caixin PMI continued to slide, coming in at 50.6%. The divergence may be partly attributed to sampling difference, and the difference in the seasonal adjustment methods adopted is also one of the influencing factors.
Most of the seasonal adjustment programs adopted by the Bureau of Statistics are X12/X13, which is more effective in foreign applications, but not ideal in the elimination of the effect of Chinese lunar festivals. The Spring Festival fell in the month of February in the years 2016, 2018, and 2019, and the PMI in March of these three years was 1.2, 1.2, and 1.3 pcts higher than that in February, respectively, displaying clear seasonal characteristics. However, the same characteristics were not obvious in the Caixin PMI. In other words, the seasonal effect is likely to be the key explanation of the sharp increase in the CFLP PMI.

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Sources: Wind, CF40

We are more interested in which PMI more accurately reflects the real economic situation at the time. In terms of indicator composition, the PMI is more focused on reflecting information on the production side. With reference to the approach of the Bureau of Statistics, we calculated the average growth rate of value-added industrial output for two consecutive years since 2017. This approach essentially enables the smoothing of original data, and its advantage is that while it does not filter out sudden major impacts, it can largely eliminate the base effect in the later
stage. In March 2021, the two-year average growth rate of value-added industrial output was 6.2%, which was significantly lower than the monthly YoY growth rates since November 2020. This further proves that the marginal improvement on the production side has basically ended.

2. Aggregate demand: Moving closer to the pre-pandemic demand structure

In terms of aggregate demand, judging from the marginal change in 2021Q1 relative to 2020Q4, the contribution of consumption to economic growth is increasing, while the contribution of exports and investment to economic growth is slowing in varying degrees, with the contribution of capital formation to economic growth slowing substantially in particular. The marginal change indicate that the economy is moving closer to the pre-pandemic expenditure structure.

Significant room remains for consumption recovery. In 2021Q1, China's total retail sales of social consumer goods grew 33.9% YoY and was 1.9% higher compared to 2020Q4. The 2-year average growth was 4.2%. By consumption type, in 2021Q1, the retail sales of goods posted 2-year average growth of 5.3% YoY, which was flat compared to 2020Q4 and lower than the 9.1% in the same period of 2018-2019; catering revenue posted 2-year average growth of -0.5% YoY, down 0.7 pct from 2020Q4 and far lower than the 10.0% in the same period of 2018-2019. The recovery of consumption expenditure on services was slow. In 2021Q1, consumption expenditure on health care and medical services grew 18.6% YoY, that on education, culture
and recreation grew 49.9% YoY, and that on miscellaneous goods and services grew 23.8%, with the 2-year average growth rates coming in at 2.7%, 0.0%, and -3.3%, respectively, which were 11.1 pcts, 6.2 pcts, and 9.9 pcts lower than the average growth rate over the same period in 2018-2019.

The contribution of investment to economic growth slowed down, while real estate investment remained resilient. China’s fixed-asset investment grew 25.6% YoY in 2021Q1, with a 2-year average growth rate of 2.9%. In breakdown, investment in the manufacturing industry increased by 29.8%, and the 2-year average growth rate dropped by 2.0 pcts. In the tertiary industry, infrastructure investment increased by 29.7%, and the 2-year average growth rate rose by 2.1 pcts. In 2021Q1, the national real estate development investment increased by 25.6% YoY, with a 2-year average growth rate of 7.6%. Sales of commercial buildings remained stable, while growth of newly started housing area slowed down somewhat. In 2021Q1, the sales area of commercial buildings grew 63.8% YoY, recording a 2-year average growth rate of 9.9%. With the continuous tightening of property market control policies by local governments such as those of Guangzhou, Shenzhen, Shanghai, and Hangzhou, coupled with the impact of strict investigations by local authorities to prevent the illegal flow of business loans into the property market and the “three red lines” policy for the real estate sector which puts limits on borrowing, newly started housing area grew 28.2% YoY in 2021Q1, recording a 2-year average decline of 3.4%.

Figure 27: Total retail sales of social consumer goods
Figure 28: Fixed asset investment growth rate

Source: Wind, CF40
Export growth remained high and continued to serve as a key driver of economic recovery. In March 2021, China’s exports maintained a high growth, rising 30.6% YoY, which was a significant drop from the cumulative YoY growth rate of 60.6% in the first two months of the year, and this was mainly due to the significant weakening of the low base effect in March. From April 2020 to January 2021, China’s exports grew by an average of 10.2% YoY, far higher than the global average (-4.5%) and the growth rate of other emerging economies (-16.0%) in the same period. The proportion of China’s exports in global trade soared, averaging at 17.3%, an increase of 3.2 pcts from the 2017-2019 average. In terms of product categories, exports of mechanical and electrical products accounted for 60.3% of the country’s total export value in 2021Q1, an increase of 43% YoY; high-tech products were the main driver of export growth, with exports of such products increasing by 38.9% YoY. In terms of export destinations, China’s exports to the US, Japan, South Korea, the UK, EU, and ASEAN grew 53.3%, 7.6%, 20.9%, 73.2%, 45.9%, and 14.4%, respectively, in March 2021.

China’s strong exports were underpinned by supply gaps outside the country. The YoY growth rates of industrial production and retail sales in Europe and the US have fallen sharply since the pandemic situation turned severe in April 2020, and demand recovery outpaced production recovery after bailout packages were launched in these countries and regions to provide financial support to households and businesses. The gap between YoY production growth and YoY retail sales growth in Europe and the US in the first two months of 2021 remained greater than normal levels. Going forward, the sustainability of China’s export growth will hinge
on the relative pace of recovery of overseas supply and demand. Loose monetary and fiscal policies can boost aggregate demand, while herd immunity through inoculation can rapidly eliminate the inhibitory effect of earlier lockdowns on production. As of April 21, 2021, 40.1%, 18.5%, 49.5%, and 24.1% of the population in the US, EU, UK, and Canada, respectively, have received at least one COVID-19 shot, according to Bloomberg, whereas China is clearly lagging behind developed economies in its vaccination progress, with the country having vaccines enough for only 7.0% of its population. Based on the current vaccination rate in the US, it will take three months to achieve vaccination of 75% of the country’s population, whereupon economic activities can return to normal.

Figure 31: Production-demand gap outside China

Figure 32: Production-demand gap in China

Figure 33: China’s export growth far outpaces the world’s export growth

Figure 34: Proportion of China’s exports in global trade
OUTLOOK AND POLICIES: REBOUND IN CONSUMPTION AND SLOWDOWN OF INVESTMENT; A SUPPORTIVE POLICY ENVIRONMENT STILL NEEDS TO BE MAINTAINED

1. Rebound in consumption and slowdown of investment

Household consumption remains significantly lower than the pre-epidemic level, with great potential for recovery. As the impact of the pandemic lingers, service consumption growth in China remains significantly lower than its pre-pandemic levels. Household savings maintain steady growth, with newly-added household deposits coming in at RMB6.68 trillion in 2021Q1. Going forward, as the temperature rises and the pandemic is further contained, service consumption is expected to recover further and drive a rebound in general consumption.

Infrastructure investment and real estate investment are under downward pressure. The significant deceleration of public budget expenditures and government fund expenditures, coupled with the increasing difficulty of debt financing through LGFVs, has put pressure on infrastructure investment. Real estate investment is also facing downward adjustment pressures in an environment where general credit growth has slowed down, and control policies on credit related to banks and real estate companies have been gradually strengthened. In terms of manufacturing, the manufacturing industry continues to enjoy strong cash flow, and exports are
expected to remain relatively high in the near future, which are set to support manufacturing investment.

2. Focus on credit bond market risks, and address the issue of hidden debts of local governments with a multi-pronged approach

The scale of the hidden debt of local governments is significant, and the quality of the underlying assets is cause for concern. We estimate that there are more than 300 LGFVs with an interest coverage ratio of less than 1, involving various forms of loans totaling RMB7.4 trillion. The recent spate of defaults in the credit bond market and the sharp rise in the amount of default are issues that are bound to happen and need to be addressed. Resolving the issue of the hidden debts of local governments will take time. Clear rules and the guiding of expectations will be necessary, and various methods such as bankruptcy and debt restructuring, adjustment of debt maturity structure, and debt/equity swap will need to be employed flexibly. Care will need to be taken to prevent the emergence of new distortions in the process, and a relatively stable macroeconomic environment is also required as a safeguard.

3. Maintain a reasonable growth in aggregate demand and rely more on interest rate policies

The policy on the management of aggregate demand should adhere to the principle of "China-based" and "no sharp turns". In terms of fiscal policy in a broad sense, it is necessary to maintain policy support for small and micro-sized enterprises and low-income groups. While controlling the expansion of hidden debts, the country also needs to focus on the efficient use of special bonds and the stabilization of infrastructure investment growth. At the stage of a sharp slowdown in broad fiscal expenditure and debt transformation of LGFVs, monetary policy will need to be used to actively fill the gap in aggregate demand, and interest rate policy tools will need to be fully employed to reduce debt costs and improve asset valuations, thereby supporting aggregate demand and maintaining a reasonable level of liquidity.

4. Give full play to the flexibility of the RMB exchange rate to ensure that it serves as a buffer for macroeconomic stability

Whether it is to cope with the difference in relative demand changes at home and abroad, or to
cope with the impact of international capital flows, maintaining a flexible RMB exchange rate would be the primary response measure. Under a flexible exchange rate system, the RMB will depreciate to a certain extent if the US economy stages a strong recovery, while the recovery of the Chinese economy experiences marginal weakening, and this will have a positive effect on increasing aggregate demand and preventing deflation. The US dollar has often appreciated in periods of strong economic recovery in the US, thanks to the return of funds to the country. Under such a circumstance, an exodus of funds from China by foreign investors who have made profits in the country will likely cause turbulences in the domestic capital market and lead to a fall in asset prices. Ensuring that the RMB exchange rate has sufficient flexibility to fully reflect the changes in the value of the US dollar in a short period of time will make the continued transfer of funds out of China unprofitable for foreign investors. Maintaining sufficient exchange rate flexibility is the first line of defense against foreign capital outflows.

**A PORTRAIT OF CHINA’S ECONOMIC TRANSFORMATION: FROM MANUFACTURING-DRIVEN TO SERVICES-LED**

The period from 2010 to 2012 marked a turning point in the trajectory of China’s economic operation, with many key macroeconomic indicators running counter to earlier trends, and a phenomenon that stood out was the reversal of economic growth, shifting from growth that had been picking up speed since entering the 21st century to a continuous decline after 2011. In terms of industrial structure, excluding the price impact, growth of the real value-added of the industrial sector outpaced that of the real value-added of the services sector for most of the time before 2012. Since 2012, growth of the real value-added of the services sector has been outpacing and maintaining a large gap with that of the real value-added of the industrial sector. In terms of expenditure structure, the consumption rate declined and the investment rate increased for a decade before 2011. After 2011, the trends reversed. In terms of external position, the ratio of current account balance to GDP was on an uptrend before turning downward after 2009. In terms of economic cyclical fluctuations, the GDP deflator, which is a measure of overall price level, fluctuated upward in the first decade of the 21st century before shifting to a trend of downward fluctuations. 2011 was also a pivotal year for China’s PMI, with the index which reflects the state of economic climate shifting from recording strong readings more often than not to recording mostly middling readings. Shifts have also been observed.
in many aspects such as regional and urban development, fiscal and tax revenue, credit, and corporate profits between the first and second decades of the 21st century.

These shifts in key macroeconomic indicators do not exist in isolation. There are intricate and close links between economic phenomena, and such links share common treads. A reversal of key macroeconomic indicators implies changes in these threads, and seeking out major new threads is vital to the study of the Chinese economy. It can help us have a more comprehensive grasp of the overall context of economic phenomena, and understand the connections between complex economic phenomena from a clearer perspective. It can also help us make predictions about the future to better serve the formulation of economic policies.
A continuous increase in consumer income will bring about two major changes in the structure of consumer spending. The first is that food consumption expenditure as a proportion of income will decrease when income reaches a certain level and the consumption of food becomes gradually saturated, as indicated by the Engel’s law. The second is that consumption expenditure on manufacturing goods as a proportion of income will decrease when consumption of such products becomes gradually saturated, and this can be deemed as the Engel’s law in the broad sense. Both the Engel’s law and the Engel’s law in the broad sense have been empirically verified by all high-income countries at similar stages of development.
The development history of high-income countries shows that the growth of household consumption expenditure on manufacturing goods would begin to lag behind the growth of household consumption expenditure on services when per capita GDP reaches 8,000-9,000 international dollars (in 1990 constant prices). The main reason is that consumers' consumption of manufacturing goods will gradually become saturated after their income reaches a certain level, and their consumption of services will exceed that of manufacturing goods to further improve their quality of life. This trend of change will continue to strengthen with the increase in per capita income.

The trajectory of China's consumption expenditure structure is highly consistent with the experience of high-income countries. China’s per capita GDP based on purchasing power parity (PPP) exceeded 8,000 international dollars in 2010 (in 1990 constant prices), and exceeded 9,000 international dollars in 2012. China's household consumption expenditure structure saw a turning point in 2012 when the country’s per capita GDP exceeded 9,000 international dollars. Between 2005 and 2012, the categories of household consumption expenditure with the fastest growth were household goods and services, transportation and communication, other goods and services, and clothing. The growth rate of food expenditure was close to the average growth rate of all categories of consumption expenditure, while the growth rates of expenditure on education, culture and recreation, housing and healthcare and medical services lagged behind the average growth rate of all categories of consumption expenditure. Between 2013 and 2019, expenditure on healthcare and medical services and expenditure on education, culture and recreation which had been the laggards became the two fastest growing categories, and they were followed by expenditure on transportation and communication and expenditure on housing. The categories with the slowest expenditure growth were household goods and services, food, and clothing.

Consumption upgrade has brought about the transformation of consumption expenditure from expenditure that is driven by manufacturing goods to services-led expenditure. This became the underlying force driving economic growth after China's per capita GDP exceeded 9,000 international dollars, and it was also the source of subsequent turning points of many economic indicators. This force has brought about changes in industrial structure, population flow and urban morphology, investment structure and investment rate, economic growth rate, and economic cycle, among others.
CHAIN REACTION: INDUSTRIAL STRUCTURE AND INDUSTRIAL FORM

With the consumption upgrade from manufacturing goods to services, relative price changes are adjusted accordingly. We use CPI/PPI to reflect changes in the price of services relative to that of manufacturing goods. The CPI includes lifestyle-related manufacturing goods and services, while the PPI includes lifestyle- and production-related manufacturing goods. The ratio of the two can roughly reflect the relative price changes of services relative to manufacturing goods, and it is a common approach in related literature. Between 2001 and 2011, China's CPI/PPI relative price was generally stable in the 90-100 range, and there was no obvious unidirectional trend of change. Between 2012 and 2011, the CPI/PPI relative price rose sharply, increasing from less than 100 to nearly 120, pointing to a sharp fall in the prices of manufacturing goods relative to the prices of services.

In the general macroeconomic model, the rise of the CPI/PPI relative price over an extended period of time is attributable to two exogenous drivers. One is faster productivity growth of the manufacturing sector relative to the services sector, and the other is the change in demand preference from manufacturing goods to services. Where the rise of the CPI/PPI relative price over an extended period of time is driven by a relative productivity growth of the manufacturing sector, it should be accompanied by an increase in manufacturing investment rate and an increase in the growth rate of the supply of manufacturing goods, and what we see is not the case. The rise of the CPI/PPI relative price after 2011 is likely to be mostly due to a change of
demand preference from manufacturing goods to services. While economic cycles, cyclical overcapacity or changes in the external environment can also exert a significant effect on changes in the CPI/PPI relative price in the short term, such changes are more a cyclical mid-to-short-term phenomenon rather than a long-term trend.

Figure 11: CPI and PPI

Figure 12: CPI/PPI

Sources: Wind, CF40

THE MANUFACTURING INDUSTRY

Manufacturing goods as a whole are facing the challenge of a decline in demand growth and the relative price of products. The growth rate of manufacturing sales revenue has dropped significantly after 2012, and so has the MVA growth rate. The overall environment facing the manufacturing industry is in sharp contrast with the previous period of robust growth. This has compelled the adoption of a series of adjustments within the manufacturing industry, and the main points of which are: (1) Low-efficiency enterprises and a large number of small and micro-sized enterprises have exited from the manufacturing industry, and the market share of a small number of high-efficiency enterprises has increased significantly; (2) Enterprises have increased their R&D investment, quality level and new product categories to survive in a more competitive environment; (3) To survive in a more competitive environment, manufacturing enterprises are engaging in more specialized division of labor, separating from the manufacturing industry R&D, sales, business services and other professional services
that originally fell under the manufacturing industry to form separate enterprises that provide more specialized services; (4) From the perspectives of R&D investment, number of patents produced, production process, and complexity of export products, the transformation and upgrading of the manufacturing industry is progressing well.

Figure 13: Change in the growth rate of the main business income of industrial enterprises

Figure 14: Changes in the growth rate of the total profit of industrial enterprises

Source: Wind, CF40

The premature de-industrialization of Latin American countries has led to the stagnation of their economic development. Some scholars are worried that China will follow their footsteps. China not only mirrors the similar development stage of high-income economies in terms of income level and peak in manufacturing share corresponding to the structural transition from a manufacturing-driven economy to a services-led economy, but is also mirroring their change in manufacturing share after the peak period. In the decade after their industrialization peaks, Japan, South Korea, Taiwan, the US, West Germany, and France recorded average MVA as a proportion of GDP of 30.3%, 30.5%, 34.8%, 25.3%, 33.7%, and 25.6%, respectively. China’s average MVA as a proportion of GDP in the 2012-2019 period was 30.0%, indicating that the country did not withdraw from manufacturing to a significantly greater extent than other high-income economies at similar development stages, and the trajectory of the change in China’s manufacturing share has been standard. The core rationale for the transition from manufacturing to services is that the transition only begins when per capita income at PPP reaches a certain level, the manufacturing sector has undergone full development, and the consumption of manufacturing good is gradually saturated. This is basically the case in China. It first became
a global manufacturing country and only began to make the transition when its manufacturing goods became fully competitive in the international market. The same did not happen for Latin American countries.

![Figure 15: International comparison of MVA as a proportion of GDP in the decade after the peak of industrialization](chart)

Sources: Maddison, National Bureau of Statistics, CF40

### THE SERVICE INDUSTRY

Not all service industries have seen faster growth after the peak of industrialization. Only service industries that use more knowledge and professional skills will grow faster. They require more highly educated labor input. The literature often refers to such industries as technology-intensive service industries or human capital-intensive service industries. Buera and Kaboski (2012b) observed that the value added share of the service industry in the US economy has risen from 60% in the 1950s to 80% today, an increase of 20 pcts, with that of technology-intensive services increasing by 25 pcts, while that of low-tech services declined. Their definition of technology-intensive services is based on the average education level of the

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labors employed, and these services can also be called human capital-intensive services. Other high-income countries also had similar experiences. After their industrialization peaks, 13 economies, namely Japan, South Korea, Taiwan, the US, the UK, Germany, France, Belgium, Italy, Spain, Finland, Sweden, and the Netherlands, saw a continued increase in the value-added and employment share of industries that use more human capital, such as finance, insurance, real estate, commerce, and government services, while the value-added share of industries that use less human capital, such as trade, catering, hotel, transportation, storage, traffic, and information, remained flat or declined.

*Figure 16: The more human capital-intensive industries achieve faster growth*

![Diagram showing the growth rate of value added by industry](image)

*Sources: National Bureau of Statistics, Wind, CF40*

The same is true in China which saw a more prominent increase in the value added of human capital-intensive services after 2012. There was a very significant positive correlation between the growth rate of services value added (SVA) and the human capital intensity of the industry.
between 2012 and 2020. The top-ranking sectors in terms of value added growth were those with high human capital intensity, including information transfer, computer services and software, leasing and commercial services, real estate, finance, health, social security and social welfare, scientific research, technical services and geological prospecting, public management and social organization, culture, sports and entertainment, education, water conservancy, environment, and public facilities management, while the laggards were sectors that are less human capital intensive, such as mining, manufacturing, agriculture, forestry, animal husbandry and fishery, accommodation and catering, transportation, storage and post, resident services and miscellaneous services.

Figure 17: Employment growth rate of some human capital-intensive service sectors in the decade after the industrialization peak

Sources: Maddsion, National Bureau of Statistics, CF40
Note: The human capital-intensive service sectors here include water conservation, environment and public facilities; education; health, social security and social welfare; public administration and social organization; culture, sports and entertainment, corresponding to public utilities, government services and community, social and personal service industries under the United Nations employment classification standards, respectively.

There are two driving forces behind the faster growth of the human capital-intensive service sectors relative to other sectors. One is the increase in consumers’ demand for human capital-intensive services, typically in the form of financial services, real estate, sports, entertainment, and education. The other is the increase in demand for specialized services derived from the transformation and upgrading of the manufacturing industry, typically in the form of
CHAIN REACTION: FROM URBANIZATION TO METROPOLITANIZATION

Cities grow rapidly in the process of industrialization. After entering the age of industrialization, most farmers would leave their land and head for factories and service industries in urban areas. The concentration of population in cities is crucial to the process of industrialization. It brings a new urban lifestyle and a larger consumer market for industrial products than the rural lifestyle. The increasing urbanization rate and the growth and upgrading of industrial product consumption provide a steady stream of demand for industrial products. Cities bring about the expansion of market scale, generating space for further labor differentiation and specialization. At a higher level of specialization, the production efficiency of each worker for industrial products is greatly enhanced. Judging from the experience of other high-income countries, during the peak period of industrialization before the economic transformation from manufacturing to services, the urbanization rate generally exceeded 70%.

The urban morphology of high-income countries continued to change after the shift of the engines of production and consumption to human capital-intensive industries. While there was further agglomeration of population, the manner of such agglomeration was no longer the same. Globally, when the percent of population in cities of more than 2,000 inhabitants per square kilometer (urbanization rate) neared or reached its peak, any further increase would be small. However, population migration would continue to take place, and more and more people would flock to metropolitan areas with higher population density, that is, the suburbs rather than the central areas of metropolises. Many metropolitan areas, such as Tokyo, New York, London, and Paris, continued to expand after entering the transition period of economic structure from manufacturing to services. There were also many cities that began to decline, especially small and medium-sized cities and those that rely excessively on resources or the production of industrial products.

2 Internationally, the urbanization rate is a concept of density, and an area with a population of more than 2,000 per square kilometer is defined as a city. In China, the urbanization rate comes from the concept of administrative regions.
Human capital-intensive industries have become the key to determining the destiny of urban development. Despite the existence of the Internet and other new technologies that allow the provision of many services across regions, overcoming physical distance has remained elusive for most human capital-intensive services. This makes cities that have advantages in both the production and consumption of human capital-based services even more competitive, and such cities are often metropolises.

The main differences between large cities and small and medium-sized cities are scale, density, and heterogeneity. Combined, these characteristics make large cities more conducive to the dissemination, accumulation and consumption of knowledge, compared with small and medium-sized cities. With human capital-intensive industries becoming the center of development, metropolises are more likely to win in the competition between cities.

Metropolises offer more knowledge that can be acquired. For entrepreneurs, they can see the latest consumer trends in the bustling business districts of metropolises, as well as traditions in the back streets and alleys, all of which may help them launch their business. For artists, not only do metropolises offer more museums, art exhibitions and performances, but they have countless billboards that may serve as an inspiration. Most of this knowledge is free, and in many cases, one just has to open one’s eyes or ears to take it in.

Metropolises not only offer more knowledge, but also motivates learning. Life in metropolises is busy and fast-paced. The inhabitants are exposed to a myriad of differences and possibilities. Witnessing polarities in terms of wealth, poverty and all other aspects, they always have a goal in their line of sight for their endeavors. Diversity will lead to increased competition. Whether it is out of the yearning for a better life, or out of envy and jealousy, they have to get up early every morning and strive to achieve new goals.

Metropolises reduce unit learning costs. They often host performances or speeches that have a large audience, and while the performers or speakers command high fees, the cost per audience member is small. In the financial districts of New York, London, Hong Kong, and Tokyo, one can be at the venues of several large international financial institutions in one morning – something that is unimaginable elsewhere.

More importantly, metropolises have found a market for human capital and created a new way
of life. College towns also teach and spread knowledge, but they cannot replace the role of metropolises. While creating and disseminating knowledge, metropolises are also consuming a large amount of knowledge and consuming a variety of human capital-intensive products and services. A kaiseki chef will find it difficult to be suitably employed in a small city but will be able to find a high-paying job in a big city. The first choice for employment among graduates of prestigious universities is often metropolises. With their large scale and high density, metropolises create services and human capital demand that is impossible to duplicate in small cities. Metropolises also never cease to create new lifestyles, which not only makes life richer and more colorful, but also constantly creates new demand for human capital.

At the same time as the rise of metropolises, many small and medium-sized cities and cities that rely excessively on the production or trade of industrial products would face development bottlenecks. Some cities would succeed in their transformation, while others would face industrial decline and population outflow, such as the famous "Rust Belt" region in the US. The production and consumption of industrial products can be separated in the sense of distance. Cities with advantages in the production of mineral energy or manufacturing goods can maintain strong vitality and even become “star cities” in spite of their small local markets when they generate profits by selling their industrial products to markets outside their regions and boost their income level. However, with the transformation of the economy from manufacturing to services, the focus of production and consumption would shift to human capital-intensive service industries, and the profit margins for the production and trade of industrial products would narrow significantly. Cities that rely excessively on the production or trade of industrial products would then face transformational challenges. Some cities have been successful in their transformation, and they include New York, Tokyo, and Hong Kong, all of which first came to the fore thanks to manufacturing and international trade, and have today transformed into international metropolises based on the service industry and the gathering of talents.

China's urban morphology has also undergone significant changes since the country began its transition from a manufacturing-heavy economic model to a services-led one. There continues to be further agglomeration of population, and the urbanization rate is further increasing. According to official statistics, China's urbanization rate (calculated in terms of administrative regions) rose from 51.8% in 2012 to 59.1% in 2018. Some unit population densities calculated based on big data point to an even higher urbanization rate in China. There has also been a significant change in the direction of population agglomeration. The appeal of small and
medium-sized cities has diminished, and large cities are attracting more people. We observe two important characteristics of the evolution of China’s urban morphology through a sample of 215 major cities in the country: (1) Cities with net population outflows outnumber those with net population inflows. The two accounted for 55% and 45%, respectively, of the total number of cities between 2007 and 2012. The proportion of cities with net population inflows fell to 36.8% between 2012 and 2018, while that of cities with net population outflows rose to 63.2%. (2) The bigger the city, the greater its appeal, and the megacities are the most appealing. Between 2012 and 2017, the growth rate of the permanent population of cities with a population of 1 to 5 million and the growth rate of the permanent population of the provinces where these cities are located were comparable, that is, 0.62% and 0.63%, respectively. This indicates that these cities no longer have much advantage in attracting population inflow. In comparison, the growth rate of the permanent population of cities with a population of 5 to 10 million (0.79%) was significantly higher than the growth rate of the permanent population of the provinces where these cities are located (0.62%), and the growth rate of the permanent population of cities with a population of more than 10 million (1.21%) far surpassed the growth rate of the permanent population of the provinces where these cities are located (0.63%).

Source: Wind, CF40
CHAIN REACTION: INVESTMENT STRUCTURE AND INVESTMENT RATE

Significant changes in consumer spending, industrial structure and urban morphology require investment to be adjusted accordingly. Both private investment and government-led investment underwent significant changes in investment growth rate and areas of investment in 2012.

China's FAI growth rate dropped sharply after 2012, slipping to an average annual growth rate of 7.6% in 2013-2017, compared to 19.2% in 2003-2012. By sector, the sharp decline in growth rate was mainly attributable to the industrial sector, whose average annual FAI growth rate plunged from 25.4% in 2003-2012 to 5.1% in 2013-2017, compared to the service sector whose average annual FAI growth rate fell from 21.3% to 9.1%. Among the various service sub-sectors, the relatively human capital-intensive sub-sectors of education, information transfer, software and information technology services saw their FAI growth rate increase in the latter period, while the decline in the FAI growth rate of resident services, repairs and other services, accommodation and catering, and wholesale and retail, which are mainly labor-intensive sub-sectors, became more prominent. The financial sector also saw a prominent decline in FAI growth rate in the latter period but the small scale of FAI involved meant that the impact of the decline on overall services FAI was limited.

There were several reasons for the sharp decline in FAI. One of which was the significant slowdown in GDP growth in the latter period, which meant that the slowdown in revenue growth among sectors exerted varying degrees of negative impact on the FAI growth of various industries. The second reason was that for the industrial sector and the mining industry, the downward trend in the growth of demand for manufacturing end products triggered a decline in the expected profitability of the overall industrial sector and mining products, including raw materials and intermediate products, and this further led to the decline in FAI. The third reason was that for the service industry, similar to the saturation in demand for general manufacturing goods, there was also a certain degree of saturation in the demand for labor-intensive services, as represented by resident services, repairs and other services, accommodation and catering, and wholesale and retail. These sectors lagged behind other service sectors in value added growth, and their FAI growth was sluggish.
Figure 20: FAI growth rate comparison

Figure 21: Services FAI growth rate (2013-2017)

Source: Wind, CF40

Figure 22: Infrastructure investment growth rate comparison

Figure 23: Breakdown of infrastructure investment

Source: Wind, CF40

Government-led infrastructure investment also decline after 2012. The decline in infrastructure investment growth was much smaller than that in overall FAI growth, with the average annual growth rate of infrastructure investment sliding from 18.9% in 2003-2012 to 13.1% in 2013-17. Within infrastructure investment, investment in the production and supply of electricity, heat, natural gas and water posted the most noticeable slowdown in growth. Such investment as a percentage of all infrastructure investment slipped by more than 10 pcts. Investment in transportation, storage and post as a percentage of all infrastructure investment fell by 5-6 pcts.
In comparison, investment in the management of water conservation, environment and public facilities maintained relatively rapid growth, accounting for close to 50% of all infrastructure investment, up from 20-30% previously. Judging from the slowdown in infrastructure investment and the adjustment of the areas of investment, the slowdown was more prominent in the growth of infrastructure investment that served the expansion of the industrial sector, whereas investment that served urban expansion and the improvement of the urban public service environment maintained a relatively high growth rate. This is consistent with the changes discussed earlier in the industrial structure transformation from manufacturing to services and the transformation of urban morphology.

**CHAIN REACTION: ECONOMIC GROWTH**

The main concern here is whether the process of structural transformation from manufacturing to services will affect economic growth. Historically, middle-income countries undergoing industrialization would experience faster economic growth than high-income countries dominated by service industries (Lucas, 1988). Among 11 sample economies, the growth rate of the UK economy in the decade after transformation was higher than that in the decade before transformation, and France, Taiwan and Canada did not record any significant change in average economic growth rate between both periods, while the remaining seven economies, namely Japan, Germany, Australia, Spain, Italy, South Korea, and Hong Kong, saw a significant decline in their average economic growth rate in the post-transformation decade. These phenomena show that the economic growth rate of most countries during their industrialization period is higher than their growth rate as they enter the service-oriented economic model.

It is challenging to understand the relationship between structural transformation and economic growth in terms of mechanism. The early single-sector neoclassical growth model could not accommodate structural changes, and did not pay attention to the impact of economic structural changes on economic growth. The belief was that structural changes were merely an insignificant by-product of the process of economic growth. However, early research by Rostow et al. (Rostow, 1959; Kuznets, 1973; Chenery and Syrquin, 1975; Baumol and Blackman, 1991) emphasized that changes in economic structure led to changes in economic growth. A more

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3 The US is excluded as it embarked on economic transformation in 1950, and the decade before that included World War II.
The rigorous discussion of the relationship between structural transformation and economic growth is the integration of technological progress differences in the agricultural, industrial, and service sectors within the framework of the neoclassical growth model, or the introduction of changes in consumer preferences with income growth, so as to deduce the changes that these factors bring to structural transformation and economic growth through the use of models. Changes in economic growth are not caused by structural transformation. They come from factors that lead to structural transformation (differences in technological progress and changes in preferences in different sectors).

**Figure 24: Difference in economic growth rate between the decade before and the decade after economic transformation**

Source: Middson (2010), CF40

The discussion of the relationship between transformation from a manufacturing-heavy economic model to a services-led one and economic growth can be carried out from the three perspectives of productivity, labor input and capital accumulation. Numerous studies have found that there are significant differences in the productivity of agriculture, industry, and service industries, whether within or between countries. Some scholars (Duarte and Restuccia, 2010) have found that the productivity gap in agriculture and service industries between poor and rich countries is greater than the productivity gap in manufacturing. The process of the transfer of a country’s economic resources from agriculture to manufacturing is a process in which economic resources are transferred from low-productivity sectors to high-productivity sectors, which
will lead to an increase in aggregate productivity, and it is a catch-up process; the process of transferring economic resources from manufacturing to service industries is a process in which economic resources are transferred from relatively high-productivity sectors to low-productivity sectors, which will lead to a decline in aggregate productivity, and it is a process of slowing, stagnant or even declining economic growth. Some scholars (Bah and Brada, 2009) have also found that countries that adopt a planned economy model overemphasize the agriculture and industrial sectors, and underestimate service sectors. Today, the share of employment in the service sectors in former planned economy countries in the EU is still far lower than that of other EU countries. They also found that the total factor productivity of the service industry in these countries is much lower than that of the manufacturing industry. Therefore, the structural transformation from manufacturing to services will lead to a significant decline in the growth rate of per capita GDP.

Changes in aggregate productivity caused by such transformation may also lead to changes in the savings rate and capital accumulation. Echevarria (1997) incorporated the differences in technological progress and preference changes in different sectors into the neoclassical growth model. Through numerical simulation, he observed not only structural transformation and aggregate productivity changes, but also an increase in savings rate growth (agriculture to industrial) followed by a decline (industrial to services). While Echevarria’s numerical simulation conclusions are consistent with empirical facts, they do not offer further explanation for the changes in savings rate. One possible explanation mechanism is that the decline in aggregate productivity brought about by economic transformation will lead to a decline in the marginal return of capital and reduce the motivation for saving and investment.

The structural transformation perspective also provides a useful angle for understanding labor input. In a country with an underdeveloped service market, increases in demand for services cannot be fully satisfied through marketization, and workers may choose to substitute home work time for outside work time, and labor input that does not include family labor will therefore decrease. Rogerson (2008) found that the proportion of employment in the service industry in Europe has been consistently lower than that in the US, and the reason is that the European service industry is underdeveloped. A large number of service jobs cannot be satisfied by the market but can only be substituted by family labor.

In general, differences in technological progress and non-homogeneous consumer preferences impact economic growth in the following ways: (1) The aggregate productivity effect, that is, the
share of the service sector with lower productivity expands, driven by the dual forces of rising demand and relative price, while the share of the industrial sector with higher productivity shrinks, resulting in a decline in aggregate productivity growth. (2) Capital accumulation, that is, the transfer of resources between sectors affects the marginal rate of return on capital, which in turn affects capital accumulation; (3) Working time, that is, the transfer of labor between sectors and the difference in average working time between sectors lead to changes in the total working time.

China’s economic growth rate has declined significantly in the past few years, and there is no study to accurately calculate the extent to which the decline is attributed to the structural transformation of the Chinese economy. In terms of sectors, the continuous decline in GDP growth since 2012 is mainly due to the slowdown in the industrial sector. Between 2012 and 2019, China's GDP growth rate declined significantly in six years, namely 2012, 2014, 2015, 2016, 2018, and 2019. The slowdown in the growth of the value added of the industrial sector accounted for 61% and 49% of the decline in GDP growth in 2012 and 2019, respectively, while the decline in GDP growth in the remaining years can be fully attributed to the slowdown in the growth of the value added of the industrial sector. In terms of capital investment, the GDP growth rate between 2012 and 2019 mainly came from the slowdown in capital formation growth. There was a significant decline in the contribution from capital formation to GDP growth under the expenditure approach. By sector, the slowdown in capital formation growth mainly came from the industrial sector. The above evidence shows that the slowdown in China’s economic growth since 2012 is mainly due to the slowdown in investment and output expansion in the industrial sector, which is obviously closely related to the country’s structural transformation from a manufacturing-heavy economic model to a services-led one.
CHAIN REACTION: CREDIT AND THE ECONOMIC CYCLE

After entering the period of transformation from a manufacturing-heavy economic model to a services-led one, the cyclical characteristics of China's economic alternating between “cold” and “hot” changed significantly. While the alternation continued, the duration of “hot” periods became shorter while that of “cold” period became longer. With the potential economic growth rate undergoing significant changes, economic growth rate cannot be used directly to judge whether the economy was “cold” or “hot”. Inflation would be the better gauge in this case. Continuously greater demand than supply would bring about overheating of the economy, and rising inflation would follow. During the peak of China's industrialization process from 2002 to 2012, short supply was a dominant phenomenon, and the GDP reduction factor, which fully reflects the price level of goods and services, averaged at 4.6%, indicating overheating of the overall macro economy. Between 2013 and 2019, oversupply was a dominant phenomenon. Despite the various stimulus policies rolled out by the government, such as expenditure expansions, tax cuts, and subsidies, the GDP reduction factor was 2.0%. During this period, there were 54 consecutive months of negative PPI growth, and in terms of the characteristic of the macroeconomic cycle, the economy was easier to cool but harder to heat.

This and the low prices seen during the period were the direct result of insufficient purchasing power. Insufficient purchasing power under the modern credit currency system is closely related to credit growth. A slowdown in credit growth will bring about a slowdown in the growth of the purchasing power of the society as a whole. The geometric mean of social financing growth fell from 18% in 2003-2012 to 13% in 2013-2020, which was the direct reason for the decline in demand growth in the latter period. Behind this direct reason was the deeper reason of changes in the industrial structure and credit growth.

The slowdown in credit growth in China after the country entered the period of transformation...
mainly came from the corporate sector, especially the industrial sector. Industrial sector loans as a percentage of total loans began to slide after 2012, falling from 27.8% in the year to 17% by 2018, while manufacturing sector loans as a percentage of total loans slid from 18-19% to 10.8% by 2018. Manufacturing loans, infrastructure loans, service industry loans and personal loans, which accounted for the highest proportions of all loans, posted geometric mean annual growth rates of 3%, 9.3%, 13.3%, and 17%, respectively, in 2012-2018.

The slowdown in corporate sector loan growth was closely related to the transformation of the economic structure. Before 2012, China was experiencing a rise of industrialization, and capital-intensive industries represented by steel, chemicals, energy, machinery and equipment were growing rapidly. So were investment and exports, and spontaneous market demand for credit was strong. After 2012, capital-intensive industrial enterprises entered the mature period of operation, and the demand for credit shrank sharply. The decline in spontaneous market demand for credit also stemmed from policy distortions that restricted the development of emerging industries (restrictions on market access and the flow of factors, price controls, etc.). Human capital-intensive industries have greater development potential. However, their credit demand is lower than that of capital-intensive industrial sectors in the earlier period, and it is also difficult to fully unleash their development potential.

Credit demand is not the only issue. It is more difficult to supply credit to human capital-intensive industries. There are some obvious differences between traditional capital-intensive
manufacturing and human capital-intensive industries. In traditional capital-intensive manufacturing: (1) There are a large number of tangible assets such as plant and equipment that are easy to value; (2) There is generally a time lag from production to consumption, and such a time lag also leads to orders, warehousing, letters of credit and other documents; (3) Product standardization is high. With the availability of successful templates for learning, copy production can be easily carried out, and global market-orientation means a low probability of failure. In the case of human capital-intensive industries: (2) A large amount of human capital investment that is difficult to value is required, and there are fewer tangible assets; (2) Production and consumption occur at the same time. There is no time lag, and orders, warehousing, and letters of credit are rarely used; (3) The degree of standardization is low. With the lack of success templates for learning, copy production is difficult, and such industries are mainly limited to the local markets and face a high probability of failure. These differences mean that capital-intensive industries inherently possess an extensive collateral and credit history, and banks are also relatively more inclined to provide credit to companies in these industries. In contrast, human capital-intensive industries lack collateral at least at the initial stage and face higher risks, making it difficult for banks to provide credit to enterprises in these industries, especially start-ups.

Growth in household credit and credit related to government-led infrastructure investment has to some extent compensated for the decline in corporate credit growth, but this is far from sufficient to maintain a reasonable level of credit growth in the whole society, and is not enough to maintain a sufficient level of aggregate demand. The macroeconomic management authorities can use the issuance of government debt or the lowering of interest rates to drive the broad credit of the whole society and maintain aggregate demand at a sufficient level. However, in doing so, they will encounter the trilemma of ensuring growth (employment), stabilizing housing prices and preventing systemic financial risks. They can only focus on two of these policy objectives and not all three.

The first option is to focus on the objectives of ensuring growth (employment) and stabilizing housing prices, and the corresponding means to achieve these objectives would be to increase broad credit and aggregate demand through the expansion of LGFV debt, and not lower interest rates to stimulate housing prices. The corresponding price would be a rise in systemic financial risks arising from the steep increase in implicit government debt. The second option is to focus on the objectives of ensuring growth (employment) and preventing systemic
financial risks, and the corresponding means to achieve these objectives would be to increase aggregate demand through the lowering of interest rates, and not increase implicit government debt. The corresponding price would be rising housing prices. The third option is to focus on the objectives of stabilizing housing prices and preventing systemic financial risks, and the corresponding means to achieve these objectives would be to not lower interest rates nor expand government debt. The corresponding price would be an economic downturn and rising unemployment arising from insufficient demand. The macroeconomic management authorities have attempted all the above three options. With concerns about debt risks and housing prices, government-led credit expansion is also restricted, and insufficient demand has become a long-standing problem since China entered the period of economic transformation.