Table of Contents

J.P.Morgan

Special Report

Ten questions about China in 2020

How will the government set the growth target?

We expect the government to lower the growth target to "around 6%" in 2020, and set it at around 5.5% for the next five-year plan (2021-2025).

• Will US-China enter a trade truce after the Phase One deal?

The Phase One deal will mitigate near-term risk, but the implementation could be bumpy, and the change in the US-China relationship is unlikely to be reversed. Non-tariff actions could be the new area of conflict

• Will infrastructure investment pick up in 2020?

We expect infrastructure FAI growth to pick up to 5-6% in 2020, as fiscal easing continues and shifts from tax cuts to fiscal spending.

• Why do we expect a cyclical trough in manufacturing investment?

We expect a cyclical bottoming in manufacturing investment in 1H20 as export sector sentiment stabilizes, PPI deflation declines and returns to modest reflation, industrial profit bottoms and the industry starts to rebuild inventories.

Will China experience a credit crunch in 2020?

Not on an aggregate level. We expect stable TSF growth at around 11%, modestly higher than nominal GDP growth. Restoring the efficiency of credit allocation is a critical task going forward.

How will the CPI evolve and what are the implications for monetary policy?

We expect CPI inflation to peak in 1Q20 and stay high in 2Q, but fall quickly in 2H20 to below 2% at end-2020. We think the PBOC will hold rates unchanged in 1H and resume rate cuts in 2H20.

Will CNY depreciation continue in 2020?

CNY could be relatively stable in 2020, a by-product of the US-China Phase One deal but also with fundamental support.

• How will China's debt problem evolve?

We expect the debt-to-GDP ratio to increase modestly by about 5%-pts. The debt problem will continue to impose downward pressure on policy rates.

• Will housing activity remain resilient?

Housing activity should cool in 2H20. While nationwide policy adjustment is unlikely, city-level relaxation of housing policy is possible.

• What is the outlook for consumption?

Following a general slowing last year, consumption should stabilize in 2020 as the labor market stabilizes amid a cyclical recovery, CPI drag fades by 2H20, and auto sales bottom out.

Table of Contents
Outlook summary2
1. How will the government
set the growth target?3
2. Will US-China enter a
truce period after the
Phase-One deal?5
3. Will infrastructure
investment pick up in 2020?8
4. Why do we expect a cyclical trough in
manufacturing
investment?10
5. Will China experience
a credit crunch in 2020? 13
6. How will the CPI evolve
and what are the
implications for monetary
policy?16
7. Will CNY depreciation
continue in 2020?18
8. How will China's debt
problem evolve?20
9. Will housing activity
remain resilient?24
10. What is the outlook
for consumption?28

Haibin Zhu

(852) 2800-7039 haibin.zhu@jpmorgan.com

Grace Ng

(852) 2800-7002 grace.h.ng@jpmorgan.com

Carol Wei Liao

(852) 2800-2801 carol.w.liao@jpmorgan.com

Anita Xu

(852) 2800-2163 anita.xu@jpmorgan.com

Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com Economic Research
Ten questions about China in
2020
January 10, 2020

J.P.Morgan

Outlook summary

The slowdown in China's economic growth deepened in 2019. Our forecast of 2019 growth now stands at 6.1%, vs. 6.6% in 2018. The slowdown was driven jointly by structural and cyclical factors (Table 1). On the domestic front, a collapse in manufacturing FAI, weak policy impact on infrastructure FAI and spillover to retail sale weakness were the major drags. On the external front, escalation in the US-China trade war dragged on China's trade and business sentiment.

We expect China's 2020 growth to slow further to 5.9%.

The positive news is that the pace of slowdown should moderate, supported by a cyclical bottoming in 1H20. We expect the government to lower its growth target in 2020 to "around 6.0%," and to set the growth target in the next five year plan (2021-2025) at around 5.5% (Question 1).

Our forecast of a cyclical trough in 1H20 is based on several arguments. First, the agreement on a Phase-One deal between China and the US helps mitigate near-term trade war risk (Question 2). Second, recent policy adjustments, such as limiting the use of special local government bonds (LGB) and lowering the equity capital requirement for infrastructure projects, and the expected increase and frontloading of the 2020 quota for special LGB issuance, will likely lead to a modest pickup in infrastructure FAI growth (Question 3). Third, manufacturing investment could start to bottom, driven by the rebuilding of industrial inventories and an improved profit outlook (Question 4). Consumption could face near-term drags from a further rise in headline CPI inflation and the resulting erosion of households' purchase power, but bottoming of auto sales and stabilization of nominal GDP growth (and by extension household income growth) could provide a cushion (Question 10).

On the cautious side, the cyclical bottoming in 1H20 may not continue in 2H20, and we think structural factors will continue to drive down China's potential growth from ~6% to ~5% over the next five years. Growth momentum will likely soften in 2H20. First, the tentative truce does not mean a reversal of the drift in the US-China relationship. Implementation of the Phase One deal could be a bumpy process, the chance of a Phase Two deal is quite slim, and non-tariff measures could become a new area of bilateral confrontation. Second, after years of resilient performance, real estate investment could slow in 2H20 (Question 9).

Our forecast is based on the assumption that the policy stance will not deviate much from 2019's. The Central Economic Work Conference (CEWC) reiterated support for proactive fiscal policy and prudent monetary policy. We expect the

augmented fiscal deficit to increase by 0.5% of GDP in 2020, smaller than 0.9%pt rise in 2019. Nonetheless, the shift from tax cuts to fiscal spending will raise the fiscal multiplier (Question 3). On the monetary policy front, we expect two 50bp RRR cuts and a 10bp policy rate cut, with TSF growth relatively stable at about 11% (Question 5). We expect the recent spike in headline CPI inflation, driven by pork prices, to peak in 1Q and inflation to stay high in 2Q. While the structural CPI pick up is unlikely to change the monetary policy stance, it will affect the timing of the next rate cut (Question 6). Moreover, the CNY exchange rate likely will be relatively stable in 2020, a byproduct of the Phase One agreement (Question 7).

2020 is the final year of the three major campaigns: poverty reduction, environment protection and prevention of financial risk. Risk prevention is a key reason why this round of policy easing has been more limited compared to the past. After encouraging progress in 2017-18, some signs of financial vulnerabilities re-emerged in 2019. The debt/GDP ratio started to increase in 2019 again (by 6-7%pts), and will likely increase a further 5%pts in 2020. Local government debt (explicit or implicit) and the credit problems of small banks are imminent issues to address, and structural reform is necessary for a long-term solution (Question 8).

Figure 1: China: Contribution to headline GDP growth

%-pt contribution to headline %oya growth

Growth J.P. Morgan forecasts

Consumption

Net exports

Net exports

2011 2012 2013 2014 2015 2016 2017 2018 2019F 2020F

Source: NBS. J.P. Morgan

Table 1: China economic indicators

	Average			
	2013-17	2018f	2019f	2020f
Real GDP, % change	7.1	6.6	6.1	5.9
Consumption ¹	3.5	5.0	3.8	3.8
Investment ¹	3.5	2.1	1.4	2.2
Net trade ¹	0.0	-0.6	0.9	0.0
Consumer prices, %oya	1.9	2.1	2.9	3.7
% Dec/Dec	1.9	1.9	4.5	1.6
Government balance, % of GDP	-2.1	-2.6	-2.8	-3.0
Merchandise trade balance (US\$ bn)	460.3	380.1	457.3	423.1
Exports	2146.8	2412.4	2429.1	2514.7
Imports	1686.5	2032.3	1971.8	2091.7
Current account balance	226.2	49.1	177.7	89.0
% of GDP	2.1	0.4	1.3	0.6
International reserves, (US\$ bn)	3,433	3,072	3,102	3,082

1. Contribution to growth of GDP.

Source: National sources, J.P. Morgan

Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com Economic Research Ten questions about China in 2020 January 10, 2020 J.P.Morgan

1. How will the government set the growth target?

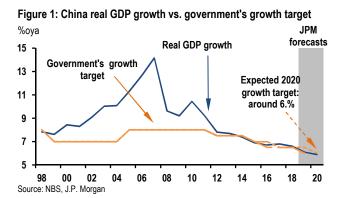
We expect that China will lower the growth target to "around 6%" this year from a 6.0%-6.5% range in 2019. In fact, this is also a consensus forecast; any other growth target setting (e.g. unchanged or a 5.5%-6.0% range) will be a surprise.

The lower growth target reflects pressure from both domestic and external fronts. Domestically, fixed investment has been weak (except for real estate investment) and the weakness also spilled over to consumption. PPI deflation resumed in 2019, dragging down industrial profits and investment incentive. On the other hand, headline CPI inflation rose quickly to 4.5% oya in December, debt started to rise again and financial vulnerabilities intensified in certain areas (e.g. local government debt and credit problems of city and rural commercial banks), jointly limiting the room for monetary easing. On the external front, the agreement on a Phase-One trade deal has mitigated near-term tariff risks, but the implementation could be a bumpy process. In addition, worries about the long-term US-China relationship and concern about global demand could still weigh down business sentiment and cross-border investment, accelerating supply chain relocation.

A lower growth target of "around 6%" is in line with the trend shift in policy and economic fundamentals. China's annual growth target used to be time-invariant (7% between 1999 and 2004 and 8% between 2005 and 2011) and perceived as a minimum target; actual growth exceeded the target by an average of 2.5%-pts in 1999-2011. Since 2011, China has steadily lowered the annual growth target. Especially after 2014, it was revised down almost every year (except in 2018), by an average of 0.25%-pt every year. The pace of downward revision in the annual growth target is in line with the downward trend in China's potential growth (link), which has fallen from around 7% in 2015 to about 6% in 2020, and is expected to trend down to about 5% in 2025.

The major debate is whether China should bolster counter-cyclical macro policy to ensure 6% growth. We do not think so, as reflected in our 5.9% forecast. First, the annual growth target is no longer a minimum target: in fact, growth has marginally undershot the growth target in 2014 (7.4% vs. 7.5%) and 2015 (6.9% vs. 7.0%). Second, the constraint from the political commitment of doubling GDP from 2010 to 2020, which had implied 6.2% average growth in 2019 and 2020, eased after the recent revision of the national accounts by the NBS. The revision raised 2018 nominal GDP by 2.1%,

which means that China can grow slightly below 6% in 2020 yet still achieve the political commitment.



The logic of "defending 6" is similar to the debate on "defending 7" on the currency front. Both are psychologically sensitive numerical thresholds, but economically it does not make too much difference if the threshold is crossed. Indeed, tolerance for breaching the numeric threshold will increase policy flexibility to respond to exogenous shocks. The main purpose, or the strong argument for defending the threshold is to stabilize market expectations, but it is not a "mustachieve" target for two reasons. First, the cost of defending the target could become too high especially given unexpected negative shocks, such as re-escalation of the US-China confrontation or weaker-than-expected global demand. Second, as the annual Central Economic Work Conference (CEWC) emphasized, drags on the economy have been increasing due to the interplay of structural, institutional and cyclical factors (link). In recent years, the government has downplayed the importance of economic growth and emphasized reformdriven quality growth. This is similar to the exchange rate reform in which the central bank allowed greater flexibility in response to changes in market conditions. Also, based on CNY movements, breaching the 7-threshold does not necessarily mean that USD/CNY will not drop back to below 7.

The more important issue in 2020 is how the government will set the growth target in the next five-year plan (2021-2025). China's development plan consists of targets for three time horizons: a near-term annual growth target; a super-long vision of economic and social development (two stages ending in 2035 and 2049, respectively); and in between, five-year plans to bridge between near-term and long-term objectives. 2020 is the year for the National People's Congress (NPC) to review and approve the 14th Five-Year plan for 2021-2025.

The five-year plan typically includes two types of targets: forecast-based targets (not binding) and must-achieve targets

Haibin Zhu (852) 2800-7039 haibin.zhu@jpmorgan.com Grace Ng (852) 2800-7002 grace.h.ng@jpmorgan.com Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com

(binding). In the 13th Five-year plan, binding targets were mainly related to environmental protection (e.g. land, energy consumption per GDP, air/water quality and pollution emission reduction targets), while others are non-binding such as economic growth (e.g. GDP, urbanization) and innovations (e.g. R&D, patents, internet penetration). Social welfare improvement includes both binding (e.g. education, poverty reduction, shanty town renovation) and non-binding (e.g. household disposable income growth, urban employment, pension coverage, life expectancy) numeric targets. We expect the 14th Five-year plan will follow a similar framework.

What is the proper growth target for the next five years?

Based on our analysis, China's potential growth will slow down to 5%-6% in 2021-2025 (averaging 5.5%). On the challenging side, China's working-age population will continue to decline and population ageing will intensify, dragging on the labor input contribution to growth potential; the capital stock has risen rapidly since 2008, the return on capital investment has declined, and the room for productive investment has diminished; globalization has slowed or even reversed in recent years; the US-China relationship enters a period of turmoil and "selective decoupling" most likely will continue in the coming years; on the domestic front, the debt problem and financial vulnerabilities imply that the financial sector will provide much less support for economic growth, or even become a drag. On the positive side, there is still room for China to promote sustainable growth via structural reform, including: (i) continuous urbanization; (ii) removing domestic barriers to commerce and providing a unified home market; (iii) market-oriented reform introducing the principle of competitive neutrality, e.g. allowing privately-owned enterprises to enter non-strategic sectors currently dominated by SOEs (including communication services, energy, education, and healthcare) and fostering fair competition among different types of corporate entities; (iv) manufacturing and services upgrade, i.e. shifting to the higher value-added sectors.

Overall, we think a flexible, non-binding "around 5.5%" target is a proper growth objective for 2021-2025.

A "5-6% range" may also be considered, but it is less likely in that the Five-Year plan usually implies a numeric objective for average annual growth rather than a range. Needless to say, it is also important to monitor other binding and non-binding objectives in the 14th Five-Year Plan, as they will shed light on the priority of various policy objectives, including economic growth, innovation and technology upgrading, social welfare, and environment protection. In the 13th Five Year plan, the leading theme was a new development concept which emphasized five key aspects (innovation, coordination, green development, openness, and inclusive development).

Economic Research Ten questions about China in 2020

January 10, 2020

J.P.Morgan

Table 1.1: The 13th Five Year Plan (2016-2020)

Target	2015	2020E	Current status
Economic Development			
GDP (RMB bn)	67.7	>92.7 [6.5%]	6.6% growth (3Q19)
Overall labor productivity (RMB/person)	87,000	>120,000 [>6.6%]	6.6% growth (2018)
Urbanization rate (%)	56.1%	60% [3.9%]	Up 3.5% (2018)
Service sector as % of GDP	50.50%	56% [5.5%]	Up 3.6% (3Q19)
Innovation Driven			
R&D as % of GDP	2.10%	2.5% [0.4%]	Up 0.1% (2018)
Patents per 10,000 people (units)	6.3	12 [5.7]	Up 6.2 (2Q19)
Internet penetration ratio	40%	70% [30%]	Up 21% (2Q19)
People's Livelihood and Well-being			
Average life expectancy	76.34	77.34 [1yr]	Up 0.66 year (2018)
Average growth of real disposable income per capita	-	>6.5%	6.7% growth (3Q19)
New urban jobs created (mn)	64.31	>114.31 [>50mn]	53.1mn (Nov 2019)
Average years of education of the working-age population ¹	10.23	10.8 [0.57yr]	Up 0.4 year (2018)
Reduce no. of rural residents in poverty (mn) ¹	55.75	[55.75]	Down 39.2mn (2018)
Reconstruction of urban shanty towns (mn units)¹	-	[20]	18.4mn (2018)
Resources and Environment			(
Ratio of good air quality days in cities ¹	76.7%	>80% [>3.3%]	Up 2.6% (2018)
% of water meeting/exceeding Class III level ¹	66%	>70% [>4%]	Up 5% (2018)
% of water exceeding Class V level ¹	9.7%	<5% [<4.7%]	Down 2.7% (2018)
Forest coverage ¹	21.66%	23.04% [1.38%]	Up 1.3% (2018)
Forest stock (bn cubic meters) ¹	15.1	16.5 [14%]	16% growth (2018)

Source: State Council, NBS, NDRC, J.P. Morgan

Footnote: Targets marked with 1 indicate binding targets, otherwise expected targets. [] are 2020 targeted average annual rate/accumulated growth.

the Phase One deal?

Haibin Zhu (852) 2800-7039 haibin.zhu@jpmorgan.com Grace Ng (852) 2800-7002 grace.h.ng@jpmorgan.com Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com

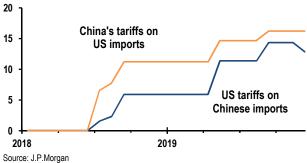
grace.h.ng@jpmorgan.com 2. Will the US and China enter a truce after

The US-China trade war was has been a key risk for the global economy, with the back-and-forth process over the past 18 months including several rounds of tariff increase and three rounds of negotiation. Overall, the US-China trade war has been escalating, with the US now imposing 14.4%pts higher tariffs on average on all imports from China and China imposing a 16.2% average retaliatory tariff on US goods (before Phase One deal takes effect, Figure 2.1).

On December 13, both sides confirmed that a Phase One agreement has been reached (link), in which the US will suspend the schedule tariff increase on December 15 (List 4.B on \$160bn imports from China) and reduce by half the September tariff increase (i.e. the 15% tariff on List 4.A will be lowered to 7.5%. In return, China will significantly increase its purchases of US products, especially US agriculture products. The agreement also includes China's commitment to improve IP protection, open its financial sector, abandon forced technology transfers, and a currency pact to avoid competitive devaluation. We expect the deal to be officially signed in early January 2020.

Figure 2.1: Tariff war between US and China

%pt, increase in average tariff rates



The Phase One deal is a positive development that significantly lowers the near-term tail risk of further escalation of the tariff war. Indeed, although the 50% reduction of the September tariff (i.e. average tariff reduction of 1.5%pts) is modest, it is the first tariff rollback since 2018. Nonetheless, escalation risk is not off the table.

First, some uncertainty on the Phase One deal remains, especially at the implementation stage. Lack of trust has been a major problem in the bilateral negotiations, which is why the US emphasizes a strict enforcement mechanism, and China is not eager to move to Phase Two negotiations. Drafting of the text itself is challenging, which led to a previous round of negotiations falling apart in early May 2019. This

Economic Research Ten questions about China in 2020 January 10, 2020

seems less of a problem at this stage, but implementation can be a bumpy process. First, the two sides have different interpretations of some key concepts, like IP protection, competitive devaluation and forced technology transfer, and it is almost impossible to rely on the agreement document to completely bridge the gap. Think about how the WTO, China and the US have completely different assessments on how China has abided by its WTO commitments. Second, at the implementation stage we think it is almost unavoidable that the US will be dis-satisfied with the pace of progress. This is not necessarily because the central government of China will not have taken serious actions, but because of resistance at a local level. Although China is a centrally controlled economy, if a policy (e.g. IP protection) hurts the interests of a specific local economy and business community, it could be bypassed or compromised at that level (so called "上有政策,下有对 策").

Second, we think the chance of reaching Phase Two or a more comprehensive agreement is slim. While President Trump said the two sides will immediately move into Phase Two negotiations, China is not keen and expects the followup negotiation to be contingent on the implementation of the Phase One deal. Clearly, the bar for Phase Two is much higher, as China will seek complete removal of existing tariffs and the US will demand action on a comprehensive list of structural issues which will shake the foundations of China's current economic system (e.g. party leadership, the role of SOEs and industrial policy). 2020 is also a presidential election year in the US, which will tend to inflame anti-China rhetoric; hence it is hard to imagine that the US will completely remove existing tariffs, a move that can easily be criticized as weakness or a surrender to China. Hence, while we expect the Phase One deal to be signed in January, we do not expect that the two sides will move on to a Phase Two deal.

Third, while the Phase One agreement should mitigate near-term tariff-war risk, non-tariff measures could become the new area of confrontation. This has already happened in the technology area: the US has created an entity list (including Huawei and hundreds of other technology companies in China) for which it has imposed strict restrictions on purchases of US components, product sales and cross-border investment in the US market for national security reasons. Such restrictions on the technology front are not addressed in the Phase One agreement and likely will intensify further in 2020. For instance, Bloomberg recently reported that the US is considering raising the threshold of US components for Huawei from 25% to 10% (the share of made-in-US components), thus significantly affecting the ability of third parties to sell products to Huawei. The financial sector is another

Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com

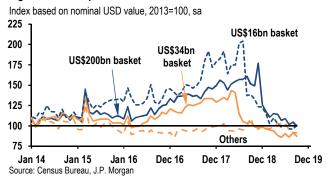
key area to watch. While the probability of a financial war is quite low (given one of the key areas of Phase One agreement is China's financial openness), financial sanctions or penalties on individuals, including individual government officials (e.g. for violations of human rights), or on individual Chinese companies or financial institutions, and more strict rules for listed Chinese companies in the US (e.g. accounting and auditing rules) could occur more frequently.

What does it mean? On the positive side, tariff war risk is mitigated in the near term, and bilateral trade activity could stabilize or increase (especially China's imports from the US). In 2018-19 bilateral trade declined sharply as a result of escalation in US-China tariff war (Figures 2.2 and 2.3). China's exports to the US fell by 12.8% in the first eleven months of 2019, and its share of US imports fell from 21.6% in 2017 to 18.2% in 2019. Similarly, US exports to China fell by 23.3% in the first eleven months of 2019, and its share in Chinese imports fell from 8.4% in 2017 to 5.9% in 2019 (Figure 2.4).

Figure 2.2: Bilateral trade with the US



Figure 2.3: US imports from China in nominal terms



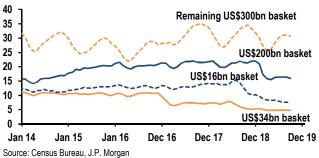
Nonetheless, the uncertainty in new US-China relationship will continue to stay and may intensify in non-tariff areas. This means the positive impact on business sentiment and investment incentive might be limited.

Economic Research Ten questions about China in 2020

January 10, 2020

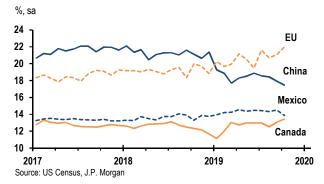






Our baseline scenario assumes a selective decoupling between China and the US in the coming years, which will significantly affect the global supply chain. This decoupling already is evident in the decline in China's share in US imports and the increase in the shares of alternative suppliers, e.g. the euro area, Mexico and ASEAN economies (Figures 2.5 and 2.6). Part of the market share shift could be a nearterm response of re-exporting and re-labelling. But, in the medium term trade, we think policy uncertainty will drive further supply chain relocation outside China, and encourage China to be more self-sufficient in technology innovation and to upgrade its manufacturing. For instance, the Chinese government has announced an ambitious 5G plan which mainly is supported by domestic technology.

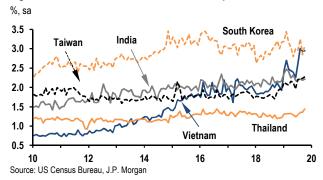
Figure 2.5: Share of US imports, top four suppliers



The implementation of the Phase One deal will also affect China's import structure. As the second-largest economy and second-largest importer in the world, China's commitment to increasing its imports from the US will either further shrink in China's trade surplus, or lead a shift in imports from other countries to the US. The bilateral trade agreement between the world's two largest economies could put further pressure on the existing multi-lateral trade system, which has been weakened by the rise of populism and trade protectionism in recent years.

Haibin Zhu (852) 2800-7039 haibin.zhu@jpmorgan.com Grace Ng (852) 2800-7002 grace.h.ng@jpmorgan.com Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com Economic Research Ten questions about China in 2020 January 10, 2020 J.P.Morgan

Figure 2.6: EM Asia economies share of US imports



Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com Economic Research Ten questions about China in 2020

January 10, 2020

J.P.Morgan

3. Will infrastructure investment pick up in 2020?

Infrastructure investment was disappointingly soft in 2019.

As in previous policy easing episodes, infrastructure was a key area of policy support starting from 3Q18. Large special local government bond issuance in 3Q18 reversed the fiscal tightening in 1H18 and led to a rebound of infrastructure FAI growth from a 2.6%oya decline in 3Q18 to 5.0% growth in 4Q18 (Figures 3.1 and 3.2). Entering 2019, the government increased the issuance quota for special local government bonds to 2.15 trillion yuan from 1.35 trillion yuan in 2018, and allowed 60% of the quota to be front-loaded from January rather than waiting until after the March NPC meeting as usual. Nonetheless, throughout 2019 infrastructure FAI growth has been soft in a 3-4% range, weaker than policymakers' expectations.

Figure 3.1: Infrastructure FAI

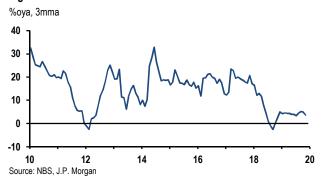
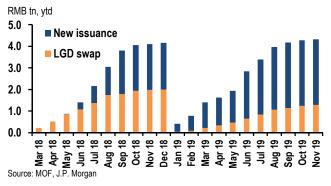


Figure 3.2: Local government bond issuance

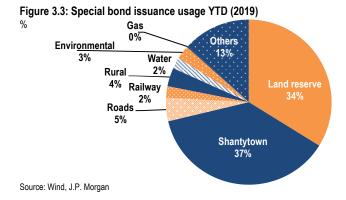


There are two reasons why infrastructure activity was weaker than expected. First, after a decade of high investment in infrastructure, the average rate of return has been declining and it has become more difficult to find profitable infrastructure projects, even taking into account the positive externalities on local economic development. In recent years, fiscal reform has emphasized the profit of infrastructure projects. Furthermore, in 2017 a new accountability system was introduced that required local government officials to take

lifelong responsibility for bad debt, adding penalty constraints on local governments' investment decisions and limiting the choice for potential infrastructure projects.

Second, and more important, is the fiscal constraint faced by local governments. Infrastructure projects typically are endorsed by local governments, and the funding typically includes an equity capital contribution from local governments and debt financing from various sources (e.g. special local government bonds, bank loans and local government financial vehicle (LGFV) debt). The major constraint in 2019 was a shortage of equity capital from local governments. The two major sources of such capital, local government fiscal revenue and land sales, both collapsed in 2019. Fiscal revenue growth fell from 6.2% in 2018 to 3.8% in the first 11 months of 2019 as a result of a large-scale tax cut, and land sale revenue growth collapsed from 39% in 2017 and 25% in 2018 to 8% in the first 11 months of 2019.

Policy has been adjusted to address the equity capital shortage problem and thus should lead to a modest pickup in infrastructure FAI growth to 5-6% in 2020. In late May 2019, the Ministry of Finance announced that some proceeds (about 20%) from special local government bond issuance can be used as equity capital for qualified infrastructure projects. This policy led to a modest pick-up in infrastructure investment growth to 6.7% oya in August and 6.3% oya in September. In September, the State Council announced that the proceeds from special local government bonda cannot be used for land reserves and shanty town renovation (Figure 3.3). In November, the State Council lowered the equity capital requirement for certain infrastructure projects by 5%-pts (previously 25-30%). Going into 2020, we expect the quota for special local government bond issuance will increase further to 2.65 trillion yuan, of which a significant part (confirmed to be 1 trillion yuan) can be used from January 1. There is market speculation that the quota could be even higher at or above 3 trillion yuan; if true, this would pose some upside risk to our forecasts.



Haibin Zhu (852) 2800-7039 haibin.zhu@jpmorgan.com Grace Ng (852) 2800-7002 grace.h.ng@jpmorgan.com Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com

Our forecast for an infrastructure FAI pickup is in line with ongoing fiscal easing. The CEWC reiterated the adoption of proactive (expansionary) fiscal policy in 2020. We expect this will be reflected in a higher fiscal deficit target at 3.0% of GDP up from 2.8% in 2019, and a large quota for special local government bond issuance at 2.5% of GDP, up from 2.2% in 2019. The augmented fiscal deficit, including budgetary and off-budgetary fiscal items, should increase to 11.2% of GDP in 2020 from 10.7% in 2019. This means fiscal policy remains expansionary, but the increase in the augmented deficit will drop to 0.5% of GDP from 0.9% 2019.

Table 3.1: China's General Government fiscal account (consolidated) % of GDP

70 0. 02.		2017	2018	2019f	2020f
(1) Revenue	(1a)+(1b)	22.3	22.0	21.4	21.1
1a. Headline revenue	, , , , ,	21.0	20.4	19.8	19.5
Tax revenue		17.6	17.4	16.2	16.3
Non-tax revenue		3.4	3.0	3.6	3.2
1b. Withdrawal from	gov't funds	1.2	1.6	1.6	1.6
(2)Augmented expendit	ure (3)+(4)	33.8	31.8	32.1	32.3
(3)General gov't (2	a)+(2b)	25.2	24.7	24.2	24.1
3a. Headline expendi	ture	24.7	24.5	24.2	24.1
3b. To budget stabiliz	ation funds	0.4	0.1	0.0	0.0
JPM Adjustment					
(4)Additional expenditure					
(4a)+(4b)+	(4c)+(4d)	8.7	7.1	7.9	8.2
4a. Financed by LGB		1.0	1.5	2.2	2.5
4b. Financed by land	sale	2.7	3.0	2.7	2.5
4c. Financed by LGF	V debt	4.3	2.1	2.9	3.1
4d.Policy banks and	others*	0.7	0.5	0.1	0.1
(5)Official balance	(1)-(3)	-2.9	-2.6	-2.8	-3.0
(6)General gov't net borro	` ' ' '	-4.1	-4.3	-4.4	-4.6
(7)Augmented net borro		-11.6	-9.8	-10.7	-11.2
Memo item: GDP	, . ,	82075	91928	100202	101003

^{*} others include sales of government assets, saving from mobilizing idle fiscal resources and interest payment saving from LGD swap program

Source: MOF; CEIC; J.P. Morgan estimate

We also expect a shift in fiscal easing from tax cuts to fiscal spending, hence the fiscal multiplier should be

higher. The 2019 fiscal easing mainly involved large-scale tax cuts accompanied by support for infrastructure activity. While fiscal easing has helped to cushion economic weakness due to escalation of the trade war, higher business uncertainty and weaker profits and corporate capex, the fiscal multiplier was small compared to previous fiscal easing episodes. There are two main reasons for the low multiplier. First, the tax cuts were smaller at about 1.2 trillion yuan, based on our calculation, than the above-2 trillion official estimate. We estimate that actual tax cuts for corporations and households were smaller than expected, in part due to more strict tax collection and in part to a weaker tax base

Economic Research
Ten questions about China in 2020

January 10, 2020

during the economic slowdown. In addition, fee collection increased by 25.4% ytd in November, implying that the reduction in aggregate taxes and fees was only 0.6% of GDP (link). Second, the fiscal multiplier is smaller for tax cuts than for fiscal spending. Especially in an economic downturn, firms and households are more likely to save the tax saving than use it for new investment and consumption.

We expect fiscal easing will shift back to fiscal spending on public investment (mainly infrastructure) and consumption (to support poverty reduction and urbanization) in 2020. The shift in policy direction is due to the conflict between near-term economic drags and the smaller fiscal multiplier of tax cuts, also due to the deterioration in the fiscal condition of local governments. We expect no major further tax cuts in 2020, though the effect of tax cuts will linger into this year, as the VAT cut and reduction in social security contributions only took effect in 2Q 2019. Infrastructure will be a key beneficiary of fiscal easing in 2020, and contributes to the 1H20 cyclical bottoming in our baseline forecast.

Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com Economic Research Ten questions about China in 2020 January 10, 2020 J.P.Morgan

4. Why do we expect a cyclical trough in manufacturing investment?

Cyclical factors have played an important role in China's **slowdown in 2019**, in addition to the structural slowing in the economy's potential growth, the turnaround of the financial cycle since 2017 amid tightening financial regulation, and escalation in US-China trade conflict since 2018. Cyclical drags have been notable in private sector demand (despite tax cuts for the corporate and household sectors), especially in the form of weak private investment (private sector FAI growth moderated to 4.5% oya in the first eleven months of 2019 from 8.7% in 2018) and manufacturing capex (manufacturing FAI growth slowed to 2.5%oya in Jan-Nov). Overall, manufacturing FAI, which accounts for about one-third of total fixed investment in China, has been the soft spot of the economy in recent quarters amid US-China trade frictions, on-going supply chain relocation, slowing industrial sales revenue and profit growth amid PPI deflation, and deteriorating confidence in the manufacturing sector (Figure 4.1 and Table 4.1).

Figure 4.1: FAI growth by industry



Table 4.1: Nominal fixed asset investment (Yearly)

	%share	2018	2019F	2020F	
	(2017)	%oya	%oya	%oya	
Total	100.0	5.9	5.2	5.6	
Primary Industry	3.3	12.9	1.0	12.0	
Manufacturing	32.3	9.5	2.5	4.5	
- Textile and related industry	2.4	2.5	-2.0	1.5	
- Metal and commodities	8.9	11.9	10.0	7.0	
- Machinery & electronic equipment	9.0	13.2	-6.5	5.0	
- Transportation equipment	2.7	2.1	0.0	3.0	
Electricity, gas, and water production	5.0	-6.7	-1.0	4.0	
Real estate	23.3	9.5	10.2	7.0	
Infrastructure	23.3	3.8	4.5	5.2	
- Transport infrastructure & construction	10.8	2.9	4.3	5.0	
- Water conservation, environment mgmt.	13.7	3.3	2.8	3.5	
Healthcare, social security, education, etc	4.1	9.1	10.0	10.0	

Source: NBS, J.P. Morgan estimates

Going into 2020, we expect the industrial and manufacturing sectors to show signs of a cyclical trough and a moderate recovery. In particular, we expect manufacturing

FAI growth to tick up to 4.5%yoy this year (Figure 4.1, Table 4.1), as a number of drags seen last year likely will reverse.

First, on the external front, in our baseline scenario the US-China Phase One deal suggests stabilization and a pickup in export activity in the coming months. Indeed, given the progress in US-China trade talks, export sector sentiment appears to have stabilized recently, with the export order component of the NBS PMI in December returning to the highest level since the outbreak of the tariff war. In addition, a moderate firming of global demand conditions in 2020, as indicated by our global growth outlook, should provide further support for China's export sector this year (Figure 4.2).

Figure 4.2: Global manufacturing PMI and China exports

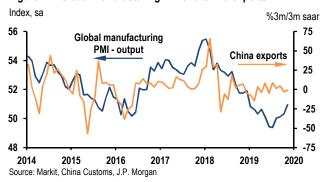


Figure 4.3: Exports and FAI in electrical machinery and equipment



Looking back, the escalation of US-China tariff war dragged down capex in some export-related manufacturing sectors. Notably, in addition to lower valued-added sectors such as textiles where investment growth has declined steadily in recent years, investment in electrical machinery and equipment has slowed notably since the outbreak of the US-China tariff war, falling 6.8%oya in Jan-Nov, compared to solid double-digit annual growth in recent years (Figure 4.3). This is perhaps not surprising, as mechanical and electrical products account for almost 60% of China's total exports. Looking ahead, considering near term stabilization in

Haibin Zhu (852) 2800-7039 haibin.zhu@jpmorgan.com Grace Ng (852) 2800-7002 grace.h.ng@jpmorgan.com Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com

export sector sentiment with the US-China Phase One deal expected to be signed in the coming weeks, export-sector related manufacturing capex will likely stabilize and accelerate modestly in 2020, though the structural supply-chain relocation trend is unlikely to reverse meaningfully.

Regarding corporate sector fundamentals, in addition to the cyclical slowing in industrial activity, the return of PPI deflation dragged on industrial sales revenue and profits in 2019, which in turn restrained manufacturing FAI (Figure 4.4). In this regard, we believe PPI deflation likely had hit the cyclical low in October, and should turn to inflation this year. Indeed, compared to the last round of sustained PPI deflation during 2012-16, when producer prices were suppressed by excess capacity in upstream industrial sectors and significant global commodity price declines, this time around the problem of domestic excess capacity has eased notably given the government's supply-side reform efforts since 2016, and the latest bout of PPI deflation largely reflects 2019 declines in global commodity prices.

Figure 4.4: Manufacturing FAI and industrial enterprise profits

%oya, ytd, both scales

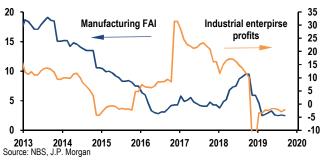
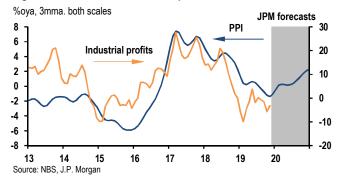


Figure 4.5: China PPI and industrial profits



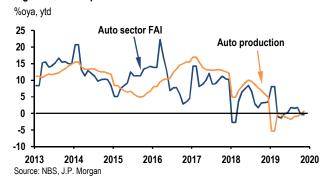
Looking forward, we expect global commodity prices to stabilize in 2020, signaling the end of PPI deflation and a moderate recovery of industrial profits in China (Figure 4.5). We note that latest data already show signs of a trough and a moderate recovery in industrial profits: industrial profits rose 5.4%oya in November after a 9.9% fall in October,

Economic Research Ten questions about China in 2020 January 10, 2020

marking the first annual growth in six months. As we expect industrial profits to extend the recent trend pick-up as the cyclical sector of the economy bottoms and as PPI inflation resumes, this, in turn, should support a moderate recovery in manufacturing FAI growth.

From a sectoral perspective, China's auto industry has slowed notably in the past two years, reflecting a combination of factors, including the expiration of tax incentives, a new industrial policy regarding China VI standard emission rules, and the slowing in the monetization policy of shanty town redevelopment (the beneficiary households used the monetary subsidy for consumption including auto purchase). As a result, the auto sector has been a notable drag on industrial production and manufacturing FAI in recent quarters. Auto production growth slumped to 4.9% oya in 2018 and 0.7% oya in Jan-Nov 2019 from 12% average annual growth during 2013-17. Similarly, auto sector FAI growth slowed notably to 3.5% oya in 2018 and contracted 0.4% in Jan-Nov 2019 (Figure 4.6). Looking ahead, auto demand is expected to bottom early in 2020 after falling around 10% in 2019, which should lead to stabilization and moderate recovery in production and investment in the sector.

Figure 4.6: Auto production and investment



In addition, from a cyclical perspective, historical experience suggests the industrial inventory cycle is a useful indicator for tracking the peaks and troughs of the business cycle and manufacturing capex. Looking back, during the last manufacturing downturn, the industrial inventory cycle bottomed in late 2015/early 2016, followed by a solid recovery in the economy in 2H16 and 2017. This time round, along with the slowing in the economy, the industrial inventory cycle similarly turned down notably since late 2018 (Figure 4.7). In this regard, it is encouraging to note that latest industrial data suggest tentative signs of bottoming in the inventory cycle. On a similarly constructive note, the new orders to inventory ratio in the NBS manufacturing PMI has recovered markedly in recent months, rising to 1.12 in December, the highest reading since July 2018 (Figure 4.8),

Haibin Zhu (852) 2800-7039 haibin.zhu@jpmorgan.com Grace Ng (852) 2800-7002 grace.h.ng@jpmorgan.com Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com Economic Research Ten questions about China in 2020 January 10, 2020 J.P.Morgan

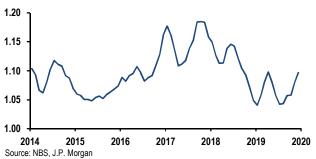
highlighting improving near term demand relative to inventory conditions. Looking ahead, with near term stabilization in business sentiment as hinted at by the steady improvement in the manufacturing PMI readings and an expected moderate recovery in manufacturing activity, we believe an inventory rebuild is likely in the next 1-2 quarters.

Figure 4.7: Industrial inventory



Figure 4.8: manufacturing PMI new orders to inventory ratio

Ratio, sa, 3mma



Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com Economic Research Ten questions about China in 2020 January 10, 2020 J.P.Morgan

5. Will China experience a credit crunch in 2020?

The annual Central Economic Work Conference (CEWC) held in Beijing in December laid out key tasks and economic policies for 2020, reiterating a prudent but flexible monetary policy. It noted that the central bank will maintain reasonably adequate liquidity and that M2/TSF growth should be consistent with economic development. In addition, lowering financing costs, improving monetary policy transmission, and alleviating financing difficulties for private enterprises and SMEs remain priorities.

Our interpretation is that M2 growth will be in line with nominal GDP growth. As TSF growth is usually 2.5%pt higher than M2 growth, it should stay around 11% in 2020, similar to 2019. That means TSF growth will remain only modestly higher than its historical low. Will it lead to a credit crunch in 2020?

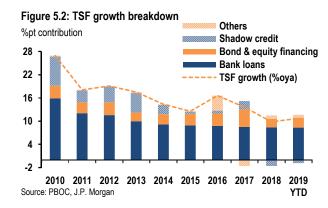
We do not think so. On an aggregate level, 11% TSF growth should not be interpreted as credit tightening. Our forecast of nominal GDP growth in 2020 is slightly above 8%, and thus 11% TSF growth should not lead to a credit crunch. Indeed, the debt-to-GDP ratio rises about 5%-pts in our baseline scenario.

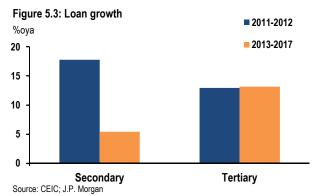
A striking feature of the latest round of policy easing since 2H18 is that monetary easing, especially credit policy, has remained rather restrained, compared to China's previous easing episodes (link). TSF growth hit bottom in at 9.9%y/y 2018 due to financial deleveraging, and only picked up modestly to 10.7%oya ytd in November 2019. The rebound in TSF growth is much weaker than the easing episodes in 2015-15 and 2012-13, not to mention the 4-trillion stimulus episode in 2008-09. Nevertheless, as nominal GDP growth has decelerated over the past two years, aggregate credit availability has improved (Figure 5.1).



We have also pointed out in earlier studies that credit support for the real economy not only depends on TSF growth, but more importantly depends on the efficiency of credit allocation ("Why China can grow with less credit," 2018). The current level of TSF growth will not generate a credit crunch if the efficiency of credit allocation can be improved; by contrast, if credit efficiency deteriorates even higher TSF growth will be insufficient.

From the credit supply perspective, TSF mainly consists of bank loans, shadow credit and capital market financing. Since the financial deleveraging in 2017, shadow credit components have contracted steadily. In other words, TSF growth in the past few years has been mainly in the form of stable loan growth and solid bond financing (benefiting from the low financial market interest rates (Figure 5.2). We have documented in the past that shadow credit has a smaller impact on activity than bank loans ("Why China can grow with less credit," 2018), and thus we believe that the weak shadow credits has no critical impact on productive sectors.





From the credit demand perspective, it is critical that credit flows into the more productive sectors. By industry, loan growth in secondary industries has declined notably in recent years (Figure 5.3), but remained steady in tertiary sectors, which have outperformed other sectors by a great mar-

number of industrial sectors.

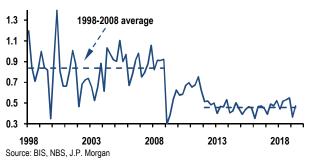
Haibin Zhu (852) 2800-7039 haibin.zhu@jpmorgan.com Grace Ng (852) 2800-7002 grace.h.ng@jpmorgan.com Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com

grace.h.ng@jpmorgan.com
gin. Note that the service sector is less credit intensive, and
service sector growth has outpaced manufacturing sectors in
recent years amid the transformation of China's growth model. Reduced credit support for the manufacturing sector has
helped the government efforts to address overcapacity in a

Going forward, there is still room to improve credit efficiency. Credit efficiency stabilized in recent years, but on average at a much lower level than in to pre-GFC years (Figure 5.4). On the micro level, structural problems remain, especially in credit distribution between different sectors. For instance, private firms are in general more efficient than SOEs, but SOEs tend to receive easier and cheaper loans due to government's implicit guarantee (see "China's debt: Which way to go", Nov 2019), as default rates among SOEs are far lower than for private firms despite their poor financial performance (Figure 5.5).

Figure 5.4: Credit efficiency

Ratio, %-pt change in GDP for 1%-pt change in credit



The policies encouraging financing of private sector and small and micro enterprises (SMEs) could help correct structural distortions in the allocation of credit and thus enhance credit efficiency. Loans to SMEs have been supported by policy makers and outpaced loans to their larger peers, expanding by more than 20% oya in 3Q19 (Figure 5.6). Nevertheless, SME loans only accounted for 7.5% of total loans at the end of October. The government will continue to encourage credit support for SMEs and private companies. In practice, the challenge is to balance risk pricing for SME loans and the policy objective to lower the funding cost. The current practice of using administrative guidance could generate new market distortions. Several issues are important here. First, the payment cycle of accounts receivables has been lengthening in recent years, which increase the credit demand of SMEs and private companies. Measures should be taken to fix this problem. Second, increasing credit support to SMEs and private companies should be based on market discipline with proper risk pricing. This requires financial sector innovations, especially with the support of latest technology

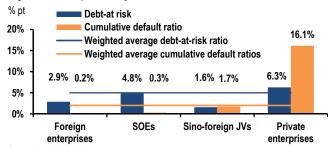
Economic Research Ten questions about China in 2020

January 10, 2020

J.P.Morgan

(e.g. big data, AI and fintech) to address difficulties in risk assessment of SMEs. Third, it is important to remove the implicit guarantee for SOEs, accelerate bad loan disposal and free up credit for more productive sectors.

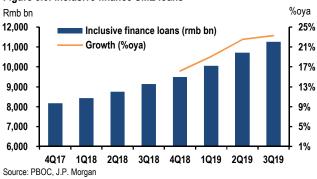
Figure 5.5: Comparison by bond issuers



Source: WIND, J.P. Morgan

Footnote: Debt-at-risk is calculated based on the financial data of each bond issuer, including interest coverage ratio and cash/short-term debt ratio

Figure 5.6: Inclusive finance SME loans



Now let us think differently. Most investors take for granted that the Chinese government has the policy option to deliver another round of credit stimulus like in 2012-13 or 2015-16, if it is willing to do so. We disagree with this assessment. The room for additional credit easing has become more limited, and one should think about the other questions "How to get 11% TSF growth in 2020," and "how to ensure reasonable credit expansion going forward."

In 2020, it is not an easy task for the PBOC to maintain stable TSF growth, especially incorporating other policy objectives. The challenge to maintain stable TSF growth in 2020 comes from the following aspects:

(1) Large banks have been maintaining about 10% loan growth, but they are facing capital-raising pressure. In particular, the big-4 Chinese banks, all categorized as global systemically important banks (G-SIFIs), started to face TLAC requirement from 2019. The potential shortfall in TLAC capital for the big-4 banks could be as high as 4.4 trillion yuan by 2023 (link);

Haibin Zhu (852) 2800-7039 haibin.zhu@jpmorgan.com Grace Ng (852) 2800-7002 grace.h.ng@jpmorgan.com Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com

(2) The credit risk problem for city and rural commercial banks will force small banks to slow down (or even reduce) their balance sheet expansion, weighing on bank loan growth. There are 134 city commercial banks and more than 1,300 rural commercial banks in China, together they contributed 25% of the stock of bank loans and 38% of new bank loans in 2018 (link). As the biggest contributor to bank loan growth, the balance sheet adjustment for small banks imply that loan growth likely will fall below the steady range (12-14%) in 2020;

(3) 2020 is the last year of transition for the implementation of new AMP and WMP rules, by which non-standard credit assets should move from off balance sheet to on balance sheet. If the deadline is strictly enforced, it will likely lead to another year of shadow credit contraction. Recently, there has been speculation that the 2020 deadline may be further extended to mitigate the drag on TSF growth. Even if it happens, shadow credit will continue to be a constraint on TSF growth in 2020 (but a smaller drag compared to 2019).

To summarize, to achieve stable TSF growth in 2020 is not an easy task. We expect to see a large amount of capital raising (via perpetual bonds) by big banks, some lenient treatment in shadow credit regulation, and growth in capital market financing (including bond and equity financing). The long-awaited new Securities Law, which will take effect on March 1, will set the legal basis for expanding registration-based IPO reform across the whole capital market. We expect that IPO procedures will be simplified and equity issuance will increase significantly in 2020 (link).

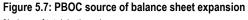
In the longer term, a critical issue for the PBOC to address is how to continue growing its balance sheet to support its credit policy. The PBOC has been using different approaches at different stages: central bank re-lending prior to 1993; FX reserve accumulation between 1994 and 2014; RRR cuts and PBOC lending facilities after 2014 (Figure 5.7).

The regime shift in 2014 is important. In the two decades before 2014, persistent current account and financial account surpluses (twin surpluses) led to increases in China's FX reserves, the most important channel for the PBOC to create base money and maintain money/credit growth. During the years when FX reserves increased too rapidly, the PBOC had to hike the RRR as a sterilization measure. After 2014, China's current account surplus fell sharply and the financial account moved into deficit, FX reserves fell from the peak near US\$4 trillion by nearly \$1 trillion. It is unlikely that FX reserve accumulation would drive PBOC balance sheet expansion in the foreseeable future.

Economic Research Ten questions about China in 2020

January 10, 2020

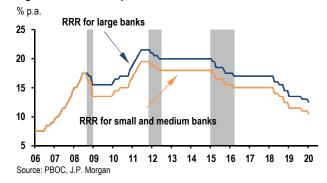






The current approach of using RRR cuts and central bank lending facilities likely will come to an end in the next several years. The RRR has fallen to 12.5% for large banks (from the 21.5% peak in 2011), 10.5% for small and medium-sized banks and 6% for rural cooperatives (Figure 5.8). The excess reserve ratio came down from 2.4% at the end of 2016 to 0.6% in November 2019. While there is still room for further RRR cuts, it is no longer a sustainable solution for PBOC balance sheet expansion. Similarly, PBOC lending facilities, after years of steady expansion, could face a shortage of qualified collateral.

Figure 5.8: Reserve requirement ratios for financial institutions



The current approach could be sustained in the coming years, but what would happen if the current approach to PBOC balance sheet expansion hits a bottleneck? One possible direction is to find an alternative way to support PBOC balance sheet expansion, for instance, the issuance of PSL or special financial bonds of policy banks (as in 2015), or even the issuance of government bonds purchased by the central bank. Alternatively, the PBOC could de-emphasize its quantitative operations and focus on establishing an interest rate-based monetary policy transmission mechanism. This would involve expanding capital market financing, improving market based interest rate formation and stronger interest rate transmission in the financial sector.

Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com

Economic Research Ten questions about China in 2020

January 10, 2020

J.P.Morgan

6. How will CPI evolve and what are the implications for monetary policy?

Headline CPI inflation moved up from 1.7% ova at the beginning of 2019 to 4.5% in November (Figure 6.1). The spike in headline CPI inflation largely was driven by food inflation, which reached 19.1% oya in November. The dominant driver was surging pork prices, which spiked 110.2%oya in November, contributing 2.64%-pts to headline CPI inflation. Prices of other meat products have also risen due to substitution effects (Figure 6.2). In contrast, both non-food and core CPI inflation rates have remained rather soft, reflecting the general lack of pricing power outside of food amid slowing economic growth.

Figure 6.1: Headline CPI, food and non-food CPI

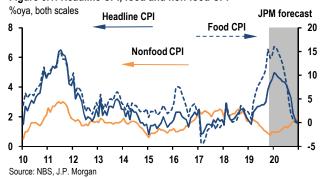
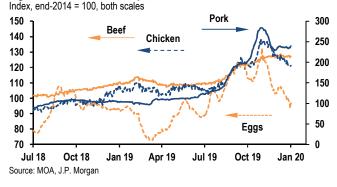


Figure 6.2: Wholesale meat price index



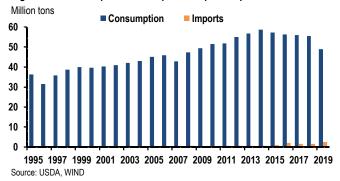
The spike in pork prices was due mainly to a large drop in pork supply, because of both the spread of African swine fever and the closure of pig farms in many provinces in recent years as part of environmental protection campaigns (environmental protection, poverty reduction, and prevention of financial risks are three key tasks to be completed by 2020). Due to this dual hit, sow supply and pork supply fell about 40% from the normal level (Figure 6.3). The effect of various measures the government adopted this year, such as using pork reserves and increasing imports, has been very limited given that China accounts for about 49% of global

pork consumption and imports account for less than 3% of China's consumption (Figure 6.4).

Figure 6.3: Decline in pig stocks %oya 10



Figure 6.4: China's pork consumption vs. pork imports



Headline CPI inflation will most likely continue to move up in the coming quarters. Recovery of the hog supply will take a long time, given that sow stock is very low and hog supply will increase only after the sow stock starts to recover. As recently as September 2019, the sow stock growth fell 38.9% oya but the pace of decline slowed in October. Meanwhile, African swine fever imposes significant business risks for the pig industry and there is little incentive for pig farming. Based on our estimates, the hog supply will only recover in early 2021. Hence, pork prices will continue to move up and push up the prices of other meat products.

We expect headline CPI to peak at around 5% in 1Q20 and stay high at 4%-5% in 2Q20. Pork prices should start to decline in late 2020. Meanwhile, core inflation likely will remain soft as economic growth moderates. While we expect PPI inflation to return, it should stay mild and spillover to the CPI could be limited. These, together with the falling pork prices, will drive headline CPI inflation back down to 2% toward end-2020.

CPI dynamics play an important role in our 2020 growth **projection and policy outlook**. On the real side, we think

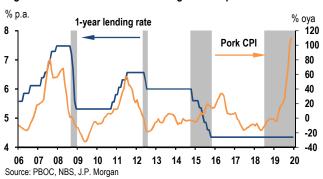
Haibin Zhu (852) 2800-7039 haibin.zhu@jpmorgan.com Grace Ng (852) 2800-7002 grace.h.ng@jpmorgan.com Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com

the persistent rise in headline CPI in the coming quarters will erode the purchasing power of households, a key reason for our concern about softer consumption in 1H20.

On the policy side, in response to a shortage of hog supply, the Chinese government likely will increase fiscal support for the pig industry and the consumption of low- and medium-income households. It is also likely to be more willing to increase purchase of US agricultural products in bilateral trade negotiations.

Regarding monetary policy, the spike in headline CPI inflation in the near term constrains room for further rate cuts. While the PBOC's 3Q19 monetary policy report highlighted the latest CPI spike's limited impact on medium-to-long-term inflation expectations, as it largely has been driven by a short-term surge in pork prices, it also noted that monetary policy should be fine-tuned in response to economic growth and price changes going forward. This reinforces our view that monetary policy will remain restrained and that the policy rate likely will stay on hold in the near term, especially as the Phase One trade agreement (expected in January) trims downside risk to the 1H20 growth outlook, while CPI inflation has surged higher than market expectations lately.

Figure 6.5: China's benchmark lending rate and pork inflation



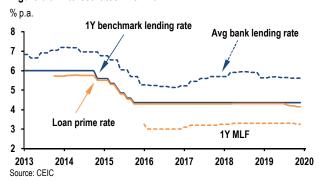
Another reason why we believe rate cuts will be on hold in the near term is the need to improve the interest rate transmission mechanism. While financial stability concerns warrant a restrained pace of credit growth, it becomes important to reduce the interest burden of borrowers (especially corporates) amid an economic slowdown. Loan prime rate (LPR) reform was introduced in August last year to address the issue of interest rate segmentation, to lower financing costs for the real economy, and improve monetary transmission. In November, the PBOC cut its policy rate (5bp each for the 1-year MLF and the 7-day reverse repo), the first time since 2016. However, lending rates came off only to a limited extent (Figure 6.6). Indeed, since the reform, the LPR has

Economic Research Ten questions about China in 2020

January 10, 2020

been reduced by 16bps, and average lending rates only came down by 4bps, consistent with our predictions in an earlier research note ("China: How much lower can interest rates go?" September 2019). That is to say, there is still much room to enhance interest rate transmission, before the central bank rushes to the next interest rate cut amid high inflation.

Figure 6.6: Interest rates in China



Limited transmission of LPR rate cuts to the average lending rate is due to the fact that only some bank loans (90% of new loans) use the LPR as the benchmark rate at this moment. On December 28, the PBOC announced that all new floating rate loans should no longer use benchmark lending rate as benchmark (use LPR instead) from January 1, 2020, and all existing floating-rate loan contracts should be reset using LPR as the new benchmark between March 1 and August 31 in 2020. This means LPR cuts after September 1, 2020 will have a larger impact on the average bank lending rate.

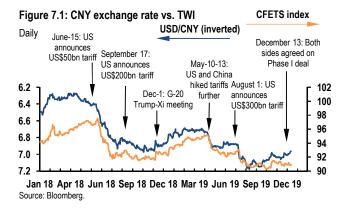
We expect MLF, reverse repo and LPR rates to stay unchanged in the foreseeable future, and that the next rate cut will be postponed to 2H20 when headline CPI inflation falls back to below 3% (see below for further discussion on monetary policy). We expect a 10bp MLF/LPR rate cut in 2020, and that rate cuts will continue to be asymmetric with no change in the benchmark deposit rate. The main uncertainty is when headline CPI inflation will start to come off, which largely depends on when pork supply will recover to normal levels (consensus expects headline CPI inflation to peak in 1Q20).

Meanwhile, the overall monetary policy stance will remain carefully calibrated. We look for TSF growth at around 11% (similar to the pace in 2019). This implies the debt/GDP ratio will rise modestly in 2020, by about 5%-pts. We see the PBOC delivering two 50bp RRR cuts in 2020, one announced on January 1 to manage the liquidity demand around the lunar new year (LNY, see link), and one in 2H when we expect growth momentum to slow again.

Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com Economic Research Ten questions about China in 2020 January 10, 2020 J.P.Morgan

7. Will CNY depreciation continue in 2020?

From January 1, 2019 till December 31, 2019, CNY depreciated only 1.5% against the USD, and the CFETS TWI weakened 2% from 92.7 to 90.8. CNY movements closely fit the US-China trade talk dynamics (Figure 7.1), breaking the psychologically sensitive 7-threshold when the tariff war escalated in August and falling below 7 in November with signs of positive trade talk developments. With the signing of the Phase One US-China trade agreement in sight CNY ended 2019 at 6.96, and we expect it to remain largely stable in the near term.



However, the bar for the next phase of negotiation is much higher and uncertainty remains elevated, as the US Presidential election draws closer and the political atmosphere is more challenging for further compromise in bilateral negotiations. CNY adjustment is an important part of the policy reaction if the trade war further escalates. The development of trade talks and US-China tensions will still be the main driver of CNY dynamics in 2020.

In our baseline scenario, we expect no further progress in trade talks, and forecast the USD/CNY to stay just below 7.00 in 1Q and hold around that level in 2Q. The currency clause in Phase 1 agreement would reinforce a firmer/stable CNY backdrop, as Chinese authorities would have a strong incentive to maintain a stable currency to ensure a path remains open for further negotiations. However, organic depreciation pressures likely will take the pair back to 7.10 by end-2020 as we expect domestic growth to moderate in 2H, given the need for structural reforms and deleveraging.

A bullish CNY scenario is one in which the US and China make further progress in trade talks and more tariffs are rolled back as a result. USD/CNY would comfortably fall below 7.00 in this scenario as the market is likely to speculate that further tariff cuts would be forthcoming. Capital outflow pressures are still firm, in our view, which should

ultimately put a floor on how far the USD/CNY can drop below 7.00.

Conversely, if the trade tensions escalate again, the market will quickly price in higher tariff rates, likely pushing USD/CNY beyond 7 and even higher. For policymakers, CNY likely will be the first line of defense, given the increasingly limited room for domestic macro policies as monetary easing is constrained by high leverage and fiscal stimulus faces weakening multipliers. The only hurdle for policymakers to tolerate CNY depreciation is capital outflow pressures, which could be reignited if CNY depreciates sharply. However, given the experience of the past two years, we believe capital outflows would pick up in this case, but remain manageable.

Since 2018, each round of CNY depreciation has led to an increase in capital outflow pressure, although outflows remained contained. Capital outflows largely depend on currency expectations (see "China: Controlling CNY expectations via the CNH market", 2018). The spread between the offshore and onshore spot rates, or the forward premium could signal CNY depreciation expectations. Despite the multiple rounds of CNY depreciation in the past two years, CNY expectations seem to have been well-anchored (Figure 7.2). This reflects changes in the PBOC's currency management. Since 2018, the PBOC has been more permissive in allowing market pressures to be reflected in changes in the spot rate than before. When intervention was needed, the PBOC has focused explicitly on managing forward rates and anchoring expectations, introducing new tools such as the issuance of PBOC bills in Hong Kong SAR to control CNH.

Figure 7.2: USDCNY and 1-year USDCNH rates



In addition, the authorities have tightened capital outflow controls since 2016. The measures have been effective. Outward FDI has reversed course and declined since mid-2016, despite the policy push for the ambitious Belt & Road Initiative. Growth in tourism outflows has normalized, with the services deficit stabilizing below 2% of GDP in recent

Haibin Zhu (852) 2800-7039 haibin.zhu@jpmorgan.com Grace Ng (852) 2800-7002 grace.h.ng@jpmorgan.com Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com

quarters. Outward portfolio investment has been limited by the daily quota on Stock Connect, and Southbound Bond Connect is yet to launch. The share of short-term debt in total external debt fell to 59% at the end of 3Q19 from 69.4% in 1Q15 (Figure 7.3).



Furthermore, China's domestic financial markets have been opened further to global institutional investment.

Recent developments include enhancing the QFII (and RQFII) scheme by eliminating the lock-up period, removing the quota, and streamlining the administrative process. Various connect programs, as well as the inclusion of local stocks and bonds in major global indices, have attracted fund inflows. All these have helped mitigate outflow pressure amid CNY depreciation and slowing growth.

Nevertheless, the BOP is not watertight. Hot money outflows were high in 2Q19 (Figure 7.4), but seem to have moderated in 3Q19. The errors and omissions component of the BOP persistently has remained larger than before 2015, pointing to hot money outflows instead of statistical errors (Figure 25). It remained at US\$40-50bn per quarter or about US\$200bn per year. External USD debt, which is sensitive to currency interest rate adjustments, reached about US\$1.12 trillion in 3Q19, 61% higher than in 1Q15. Domestic growth likely will continue to moderate in the medium term, either because of further escalation of the US-China conflicts on trade or on other areas of disagreement, or because of the government gives priority to structural reforms and deleveraging. As a result, domestic capital outflow pressure likely will remain firm, especially going into 2H20, although we believe that acute capital flight as in 2015-16 will not be recur, given the PBOC's enhanced currency management, controls on outflows, and efforts made to attract foreign inflows.

Economic Research Ten questions about China in 2020

January 10, 2020





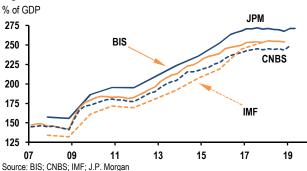
Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com Economic Research
Ten questions about China in
2020
January 10, 2020

J.P.Morgan

8. How will China's debt problem evolve?

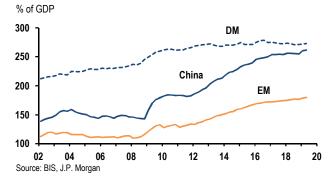
China's debt started to rise again in 2019, after rapid increases between 2007 and 2016 when the debt/GDP ratio rose from 157% to 268% and stabilization in 2017-18. Based on our calculation, China's debt/GDP ratio will increase by 6-7%-pts in 2019 (Figure 8.1).

Figure 8.1: China's nonfinancial sector debt



China's nonfinancial sector debt is not among the highest in the world, actually it is lower than in many advanced economies (e.g. the US, UK, euro area and Japan). Nonetheless, the rapid increase in China's debt is unprecedented and a typical leading indicator of future financial distress. China's debt burden stands among the highest in EM economies (Figure 8.2), suggesting the debt increase has exceeded the development stage of the real economy. In addition, China's interest rates are much higher than in high-debt advanced economies, raising long-standing concerns about the sustainability the debt.

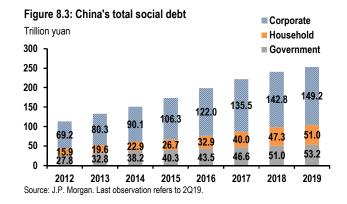
Figure 8.2: Total credit to nonfinancial sector



China's debt largely has been concentrated in the corporate sector. Corporate debt reached 150 trillion yuan (or 160% of GDP) in 2019, with state-owned enterprises (including local government-related entities) accounting for 60%-70% of the total (Figure 8.3). This is due in part to Chinaspecific institutional factors: limited equity-financing capaci-

ty of SOEs and hence heavy reliance on debt financing (and SOEs have favorable financial access compared to private owned enterprises (POE)); and widespread use of local government-related entities. The line between local government debt and SOE corporate debt is somewhat vague here, and the market generally believes there is some form of implicit government guarantee for the debt of SOEs and local government-related entities.

Since 2017, household debt has become the biggest contributor to China's debt growth, steadily outpacing other components ("The resurgence of China's debt," August 9, 2019). Low household indebtedness (18.1% of GDP in 2007) limited the impact of household borrowing in earlier years, but as households levered up it has become increasing relevant. Household debt contributed 5.6%-pts of the 15.6%-pts of GDP debt increase in 2016 and 4.2%-pts in 2017. Even with stricter rules on consumer finance and a crackdown on P2P lending and cash loans since late 2017, households still added roughly 1%-pt of GDP per quarter to China's debt. We estimate that China's household debt will exceed 60% of GDP in next few years.



The funding sources of debt have changed in recent years, especially since the financial deleveraging in 2017. China's debt is financed mainly via three sources: bank loans, shadow credit and bond financing (including government bonds and corporate bonds). Bank loans have been the dominant and most stable source of debt funding. Since 2013, loan growth has been stable within the range of 12-14% per year, and bank loans persistently accounted for roughly 60% of total debt outstanding (Figures 8.4). By contrast, shadow credit has been volatile. Shadow credit grew strongly in earlier years but contracted notably after 2017 amid financial deleveraging (Figure 8.5). The share of shadow credit in total debt outstanding declined from a 19.1% peak in 2014 to the current 13.7%, replaced by bond financing, the share of which rose from 17.7% to 24.4%. Expansion of corporate and local government bond issuance, as well as the large-scale local

Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com Economic Research Ten questions about China in 2020 January 10, 2020 J.P.Morgan

government debt swap program since 2015, have been the main contributors to strong bond financing activity.

Figure 8.4: Funding sources of China's debt

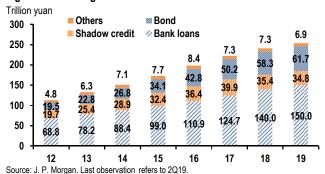
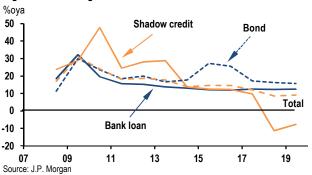


Figure 8.5: Funding sources of China's debt



We expect China's debt to continue to rise modestly in the coming years and stabilize below 300% of GDP by 2025 ("China's debt: Which way to go," November 5). In the Central Economic Work Conference, the government emphasized maintain stable macro leverage stable in 2020 (link), a less hawkish posture than the deleveraging campaign in 2017-18. The CEWC reiterated that M2 and TSF growth should continue to be in line with economic development. In the current situation, M2 growth is roughly in line with nominal GDP growth, and TSF growth about 2.5%-pts higher than M2 growth. Assuming this continues, the debt/GDP ratio will increase by approximately 5%-pts per year.

The modest increase in debt in coming years is part of our baseline outlook on China's debt (Figure 8.6). We expect the government to be restrained in its policy stimulus, focusing on structural reform and rebalancing (gradual but no reversal in direction) and tolerant of a gradual slowdown in GDP growth. As a result, growth is expected to moderate from about 6% to 5% between 2020 and 2025 (Figure 8.7). Efficiency should start to edge up after about five years, as the impact of reforms kicks in. We do not expect a sudden crisis like the Asian Financial Crisis in China in the foreseea-

ble future, as China's debt is mainly domestic and capital flows are not fully liberalized, which is critical to avoid a typical EM crisis in which a foreign debt crisis, currency depreciation, and capital flights, as well as a domestic financial crisis and asset price collapse, tend to reinforce one another. However, if the reform agenda were abandoned, and policy stimulus continues to rely on excessive credit growth and investment, economic efficiency would deteriorate further. In the bear case scenario, GDP growth could move higher than in our baseline in the near term, but it would slow more sharply approaching 2025. In addition, the debt-to-GDP ratio would surge to an unsustainable level that would threaten financial stability.

Figure 8.6: China debt/GDP ratio

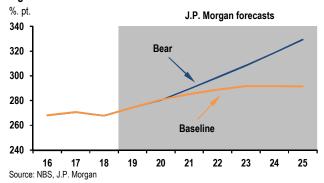
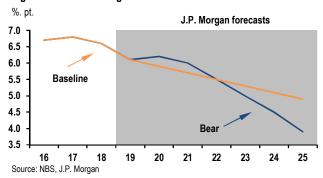


Figure 8.7: China GDP growth



China's debt problem will also affect its monetary policy in the medium and long term. In a recent published article, PBOC Governor Yi said that China will not adopt a competitive zero interest rate or quantitative easing policy, despite the very accommodative monetary policies in most advanced economies since the 2008 Global Financial Crisis. He emphasized that the PBOC will continue its prudent monetary policy and that the monetary policy stance will be dependent on the output gap and inflation gap. The statements suggest that China's monetary policy is domestically focused and does not respond to other major central banks. Nonetheless, we believe China's interest rate will continue to move lower

evolve?" November 1).

Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com

Grace Ng (852) 2800-7002 grace.h.ng@jpmorgan.com

in the coming years for purely domestic considerations, and that the debt problem will significantly affect the PBOC's monetary policy operations ("China's debt: How will it

First, China's potential growth will slow from above 6% currently to 4% by 2030 ("Through the looking glass: China in 2030", February 4). The structural downward trend is jointly determined by various challenges faced by the Chinese economy: the rise of trade protectionism and the slow-down (or reversal) in globalization; demographic change, including the decline in the working-age population and population aging; smaller room for capital investment; redefinition of the US-China relationship; and the pressure to address financial vulnerabilities. With the slowing trend, there will be persistent pressure to use accommodative fiscal and monetary policies to boost to economic activity.

Second, inflation pressure is low. Although headline CPI inflation hit 4.5% in November, the highest since 2012, it was mainly driven by spike in pork prices whereas core inflation was a tame 1.4%. Meanwhile PPI deflation resumed in 2019. The low-inflation environment will strengthen the view that China's growth is below its potential and that a negative output gap justifies lower interest rates.

Third, since the financial regulatory reform in 2017, the PBOC has both price stability and financial stability mandates. Although the macro-prudential operations of the PBOC do not directly use monetary policy instruments, the interaction between the two mandates implies that financial stability considerations will impose constraints on monetary policy operations. In particular, the debt problem and the task of managing financial risk imply that the PBOC will most likely adopt a policy combination of low interest rates and prudent credit policy in the coming years.

Low interest rates is a result of the gradual reform approach favored by the Chinese authorities. Market-oriented structural reform is key to a resolution of the debt problem, including reforms of SOEs and local government related entities as well as market-oriented bankruptcy schemes for SOEs and financial institutions. In practice, structural reform is easier to suggest than to deliver. Gradual reform likely will continue, but may be insufficient to resolve the debt problem. The debt resolution will likely be a long process, and a low interest rate environment allows the authorities a longer period to the address the problem.

One reason why investors are more concerned about China's debt problem, even though China's debt is still lower than that of high-debt advanced economies, is that China's interest

Economic Research Ten questions about China in 2020

January 10, 2020

J.P.Morgan

rate is much higher. China is the only high-debt major economy (debt/GDP ratio exceeding 250%) that has not adopted a zero interest rate policy. At the current debt and interest rate, the annual interest payment on existing debt equals about 15% of GDP, or about 70% of TSF flow (Figure 8.8). A 100bp change in average lending rate will change the annual interest burden by 2.7%-pts of GDP (Figure 8.9). This partly explains why the authorities have given priority to reducing the average lending rate to the corporate sector, not only to support the private sector but also to manage debt concerns.

Figure 8.8: Sensitivity of interest repayment burden to average lending rate

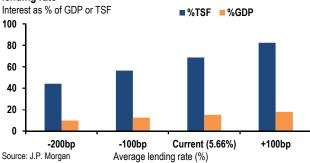
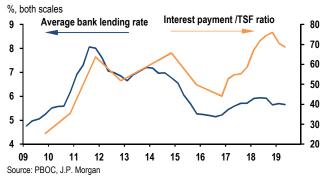


Figure 8.9: Interest payment burden of China's debt

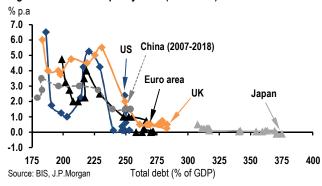


Our forecast of lower interest rates in China should not be surprising. High debt is now a global phenomenon. In the past decade, two trends have been observed in most high-debt advanced economies (including the US, UK, euro area and Japan), and the two trends likely will come to the fore in China over the next decade.

First, the policy rate likely will continue to move lower, eventually approaching the zero interest rate bound (Figure 8.10). It is not by coincidence that zero interest rate policy, or even negative interest rates, has appeared only in advanced economies with high debt. A lower policy rate will reduce the risk-free rate in the financial market.

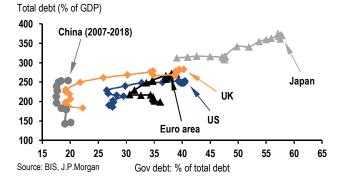
Haibin Zhu (852) 2800-7039 haibin.zhu@jpmorgan.com Grace Ng (852) 2800-7002 grace.h.ng@jpmorgan.com Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com Economic Research Ten questions about China in 2020 January 10, 2020

Figure 8.10: Debt and policy rates (2000-2018)



The second trend is a transformation of non-government debt (corporate and household debt) into government debt. In the US, euro area, UK and Japan, the share of government debt in total non-financial debt has continued to trend up since the high-debt era began (Figure 8.11). Such a debt transformation will reduce the risk premium on debt outstanding. In China, the share of government debt (as % of total debt) has been quite stable at slightly below 20%, but very likely will follow the pattern of other advanced economies in the next decade.

Figure 8.11: Government debt and total debt (2000-2018)



Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com Economic Research Ten questions about China in 2020 January 10, 2020 J.P.Morgan

9. Will housing activity remain resilient?

The resilience of housing activity has been one of the bright spots in the economic slowdown since 2018. Despite the authorities' persistent policy tightening, real estate investment growth has held up at around 10% in 2018 and 2019, up from 7.0% in 2017. In the first 11 months of 2019, real estate investment expanded 10.2%oya ytd, significantly outperforming manufacturing (2.5%) and infrastructure investment (4.0%).

On the policy front, a notable feature of this round of counter-cyclical policy adjustment is that housing policy was not eased. In 2008 and 2015, relaxation of housing policy (down-payment requirement, transaction tax, mortgage rate and removal of home purchase restrictions) resulting in a rebound in housing market activity was an important part of policy easing (<u>link</u>). This time, property market tightening measures remain in place, and investors have been concerned about further property tightening. The Central Economic Work Conference in December re-emphasized that "housing is for living and not for speculation," and city-level housing policy adjustment and long-term management mechanisms will be adopted to stabilize land prices, housing prices and expectations. The policy choice (no change in nationwide housing policy) reflects the political commitment to promote steady and healthy housing market development. Policymakers' are concerned that an over-heating housing market will crowd out investment in other real sectors.

The resilience of the housing market has been an important cushion against the domestic and external weakness faced by the Chinese economy. In 2019, although aggregate real estate investment growth was similar to the previous year, construction activity rebounded notably from a 2.3% decline in 2018 to a 10.9% expansion in the first 10 months. New home area under construction rose 10.1% oya in the first 11 months of 2019, higher than the 6.3% gain in 2018.

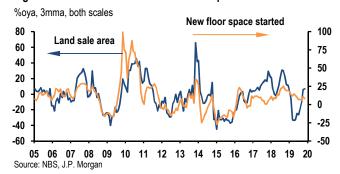
Figure 9.1: Real estate investment breakdown



The key question is, will housing activity remain resilient in 2020? Our forecasts assume a modest slowdown in real estate investment to 7% in 2020, with resilient performance in 1H20 but softening 2H20.

From a cyclical perspective, housing activity will likely cool off in 2020. Reliable leading indicators of real estate investment include land sales and new home starts in the previous 2-3 years. For instance, land sales (in area) rose 15.8% in 2017 and 14.2% in 2018, and new home starts (in floor space) rose 7% in 2017 and 17.2% in 2018, contributing to solid real estate investment growth in 2018 and 2019. Nonetheless, these leading indicators have fallen rapidly since the beginning of 2019: land sales (in area) dropped 14.2% oya in the first 11 months of 2019, and new home starts (in floor space) decelerated to 8.6% oya ytd by November, both signaling a softening in housing activity in the next 1-2 years (Figure 9.2).

Figure 9.2: China land sales and new floor space started



In addition, the scale of shanty town re-construction, a key component in public housing, has also been reduced significantly in recent years. Since 2008, the scale of shanty town renovation exceeded 45 million units. Shanty town reconstruction peaked in 2015-2017 (with a three-year renovation target of 18 million units, and exceeding 6 million units each year), but the target was revised down to 15 million units for 2018-2020. Taking into account the 2018 data (6.26 million unit), the scale of shanty town renovation will drop to below 4.5 million unit per year in 2019 and 2020 (Figure 9.3). In September 2019, the State Council issued a note forbidding proceeds from special local government bonds to be used in land reserves and shanty town renovation. While the objective of this new policy is to support infrastructure projects, it will impose a fiscal constraint on the ability of local government to continue large-scale public housing construction (in 1H19, about 70% of special local government bond issuance was used for land reserves and shanty town renovation). Hence, both public housing and private housing (or so-

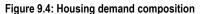
Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com Economic Research Ten questions about China in 2020 January 10, 2020 J.P.Morgan

called commodity housing) activity likely will cool off in the next two years.

Figure 9.3: Shanty town renovation



From a structural perspective, China's housing demand may have passed its peak. Since the housing reform in 1998, China's housing market has experienced two decades of rapid development. According to the Survey and Research Center for China Household Finance, China's home ownership rate was 85.0% in 2017 (80.8% in urban areas and 93.6% in rural areas), among the highest in the world. The NBS reports that average living space per person reached 39 square meters for urban residents (vs. 6.7 sqm in 1978) and 47.3 sqm for rural residents (vs. 8.1 sqm in 1978).

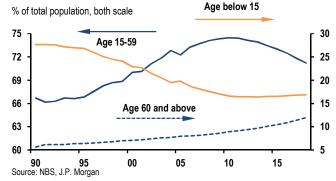




The demand for housing mainly comes from the following sources: (i) new marriages; (ii) urbanization; (iii) public housing, including shanty-town renovation; (iv) quality improvement; and (v) purchases for investment (Figure 9.4). Based on the estimates of JPMorgan Equity Research, China's housing demand peaked in 2017 (around 20 million units per year) and will moderate gradually to 16.7 million units in 2020. This downshift is attributable to several reasons. First, demographic change (population ageing and decline in birth rate) and shifts in family structure imply that the number of marriages will gradually come off from high levels (Figure 9.5). Second, the scale of shanty town renova-

tion is expected to be reduced going forward. Third, the change in policy stance ("housing is for living not for speculation") and expectations for weaker house price inflation reduce the investment demand. In recent years, new home sales reached close to 1.5 billion sqm (1.45bn in 2017, 1.48bn in 2018 and estimated at 1.5bn in 2019). The high level of home sales should start to moderate in the coming years.

Figure 9.5: China's demographic structure



The major imbalance in the housing market has shifted from an aggregate imbalance between demand and supply in earlier years to structural imbalances. The structural imbalance is mainly reflected in three aspects.

First is a location mismatch. While urbanization continues in China, population flows vary across regions and cities, which affects housing demand across regions. The traditional approach of dividing between tier-1, tier-2, tier-3 and tier-4 cities, mainly based on administrative priority/ranking, is becoming less relevant. JPMorgan's equity research team defines seven city cluster areas where housing demand will be concentrated: Beijing-Tianjin-Hebei (the so-called Jing-Jin-Ji area); the Shanghai delta area (including Jiangsu and Zhejiang); the Greater Bay area; Shandong province; Fujian province; Central China core cities (Wuhan, Changsha, Zhengzhou); Western China core cities (Chongqing and Chengdu). They represent two different types of urbanization that coexist in China. One is a metropolitan or city cluster model that reflects the spillover from a central city to nearby cities, most notably the Greater Bay area and Shanghai delta area. The other is a large city model, most notably in central and western China, in which core cities attract all resources (capital, finance, labor, education, etc.) at the cost of surrounding smaller cities. The population inflow, especially the inflow of young talent, will determine the prospects of local economic development including the local housing market outlook, hence local policies to attract young talent have been

Haibin Zhu (852) 2800-7039 haibin.zhu@jpmorgan.com Grace Ng (852) 2800-7002 grace.h.ng@jpmorgan.com Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com Economic Research
Ten questions about China in
2020
January 10, 2020

J.P.Morgan

used by a number of cities as an alternative way to relax local housing policies.

Second is a quality mismatch. Behind the large volume of existing housing, the market is highly diversified. It includes commodity housing (market-oriented), public housing (including shanty-town re-development), collectively owned housing (heavily subsidized by government employers and hence facing restrictions on ownership and transferability), housing converted from welfare housing, housing without residential usage permits (e.g. converting from industrial land or rural land, homes built by rural residents located in the city) (Figure 9.6). The quality of different types of housing also varies a lot. Even for commodity housing, those built one or two decades ago can hardly meet current demand.

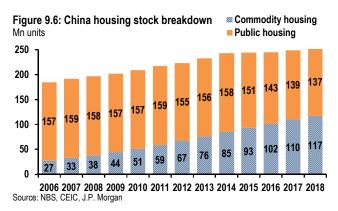


Figure 9.7: Distribution of house price-to-income ratios Number of cities (total 95) **2016** 30 2017 25 **2018** 20 15 10 (10,12] (12,20] [3,5](5,6](6,7](7,8](8,10] 20 Sources: Soufun; NBS: J.P. Morgan

The third aspect is income mismatch, or inequality in the housing market (Figure 9.7). Housing affordability is a major problem in China's big cities, but overall is reasonable in smaller cities. However, income inequality implies that home purchases will remain unaffordable for low-income households, and housing as the most important household assets in China tends to be unevenly distributed. The Survey and Research Center for China Household Finance reported high home ownership rates in China, while 22.1% of urban households own more than one property. The vacancy rate is high

at 21.4% based on the same survey, with tier-2 (22.2%) and tier-3 (21.8%) cities having higher vacancy rates than tier-1 cities (16.8%).

These structural imbalances point at certain features for China's housing market going forward. First, there will be large volumes of both construction and destruction. While new home demand remains strong in population-inflow cities, vacant or poor quality existing homes in population-outflow cities will be driven out of the market. Second, the housing market outlook tends to vary across cities. Thirdly, the private and public housing markets will coexist, including the rental market, to develop into a multi-tier, multi-source market as elaborated by policy guidelines in recent years.

What does it mean for housing policy in 2020? Based on the CEWC statement, we do not expect any change in nationwide housing policy. This means no further tightening or relaxation in mortgage policy, real estate tax policy or other restrictive measures. It also means that the introduction of a property tax is unlikely to enter the legislative procedure in 2020, instead it will be postponed further.

City-specific policy adjustment will continue to be the dominant theme in 2020. In practice, we expect this means marginal relaxation at the city level, due to two major pressures faced by local government. First, fiscal pressure is increasing for local government, against the backdrop of a weaker tax base (due to tax cuts and the economic slowdown), weak land sales and sticky fiscal spending. Land sales, as well as real estate-related taxes, jointly are equivalent to 109% of local government tax revenue (Figure 9.8). Second, our forecasts of slowing real estate investment will impose increasing pressure on local government to relax property tightening measures to support stability in the housing market, the local economy and the local financial sector.

Figure 9.8: Local government revenue

RMB bn

Off-budget: Land sales

8000

LG: Real estate related tax

LG: Tax revenue

6000

11 12 13 14 15 16 17 18

Source: MOF, J.P. Morgan

Two policy measures in 2020 could affect housing market dynamics. The first is *hukou* reform. On December 25 the

Haibin Zhu (852) 2800-7039 haibin.zhu@jpmorgan.com Grace Ng (852) 2800-7002 grace.h.ng@jpmorgan.com Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com

State Council announced the full abolition of *hukou* (resident permit) restrictions in all cities with urban populations below 3 million, and the relaxation of *hukou* policies in cities with urban populations between 3 and 5 million. This is not completely new but re-emphasized the relaxation of restrictions at the highest level. Local governments will introduce measures to attract young talent. Second is the rural land reform, as the new rule on rural land transfers took effect from January 1, 2020. Although this is restricted to transfer of rural land without change in usage (e.g. from rural to urban land use), it could be the beginning of rural land as a new asset class will affect the urbanization strategy and wealth distribution.

Economic Research Ten questions about China in 2020 January 10, 2020 J.P.Morgan

Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com Economic Research Ten questions about China in 2020

January 10, 2020

J.P.Morgan

10. What is the outlook for consumption?

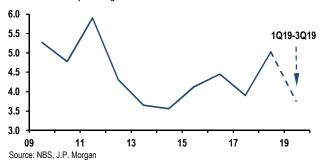
China's consumption data have been somewhat confusing in recent years. On the one hand, retail sales data have generally disappointed over the past two years. Retail sales growth, in nominal terms, slowed notably to 9.0%oya in 2018 and to 8.0% in the first 11 months last year from 10.8% average annual growth during 2014-17. Stripping out price changes, retail sales volume growth also slowed significantly to 6.1%oya in Jan-Nov 2019 from 6.9%oya in 2018 a 10.0% average annual pace in the previous four years (Figure 10.1).

Figure 10.1: Retail sales growth



However, the GDP expenditure accounts present a different picture: consumption growth appears strong, as the consumption contribution to headline GDP growth has trended upward in recent years (Figure 10.2). While consumption contributed 3.6%-pts to GDP growth in 2014, accounting for 48.8% of 7.3%oya GDP growth, by 2018 consumption's contribution had grown to 5.0%-pts to account for 76.2% of 6.2% overall GDP growth.

Figure 10.2: Consumption contribution to overall GDP growth contribution to %oya GDP growth

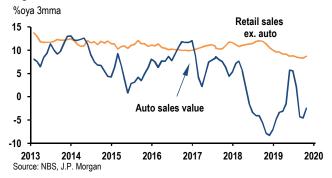


We have previously argued that such conflicting signals from the consumption-related data reflected: (1) slowing auto sales that have been a major drag on retail sales, while retail sales ex. autos largely have held steady through late 2018; (2) strength in services consumption that supported solid growth in the consumption components of GDP, but is

not included in the retail sales data (see: "Special report: China's economy bends but does not break," September 7, 2018).

With the ongoing US-China trade conflict and slowing economic momentum, consumption weakness appears to have broadened beyond the auto sector, as retail sales ex. autos began to slow in late 2018 (Figure 10.3), while the consumption contribution to headline GDP growth eased rather significantly to 3.8%-pts in the first three quarters of 2019, accounting for 60.5% of overall GDP growth (Figure 10.2), despite the personal income tax cuts implemented since late 2018 (see "China's fiscal package," November 2018).

Figure 10:3: retail sales breakdown



Looking back, cautious private-sector sentiment amid the lingering US-China trade conflict and slowing economic growth appears to have weighed on the labor market and hence household income, slowing the consumption trend last year. Indeed, the nationwide urban survey unemployment rate ticked up about 0.2%-pt to average to 5.2% in the first eleven months last year, compared to the same period in 2018. With regard to employment growth, the steady uptrend in urban new job creation in recent years appears to have peaked in mid-2018, coinciding with the onset of the US-China tariff war, and eased moderately in recent quarters (Figure 10.4).

Inflation has been another important factor impacting household purchasing power and hence consumer spending. Disposable income per capita, in nominal terms, appears to have grown steadily in recent years, with average annual growth at 8.8%oya during 2015-18 and a similar 8.8%oya pace during the first three quarters of 2019 (Figure 10.5). Meanwhile, rising CPI inflation, largely reflecting surging pork prices, has exerted significant drag on household purchasing power, with real disposable income growth slowing to 6.1%oya during 1Q19-3Q19 from 6.5% in 2018 and 7.3% in 2017.

Haibin Zhu (852) 2800-7039 haibin.zhu@jpmorgan.com Grace Ng (852) 2800-7002 grace.h.ng@jpmorgan.com Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com Economic Research Ten questions about China in 2020 January 10, 2020 J.P.Morgan

Figure 10.4: Urban new job creation

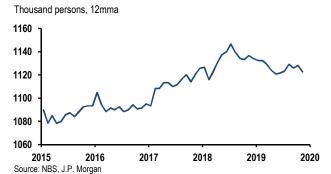
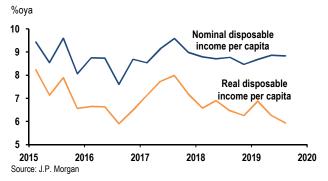
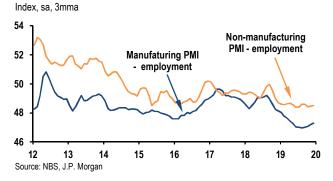


Figure 10.5: Nominal and real disposable income



Following the broad economic slowing last year, our forecasts look for moderate, relatively steady consumption growth in 2020. We expect the consumption contribution to headline GDP growth to remain at 3.8%-pts, while nominal retail sales likely will grow 8.2%oya in full-year 2020, up from an estimated 8.0% in 2019, partly reflecting higher CPI reflation.

Figure 10.6: NBS PMIs employment component

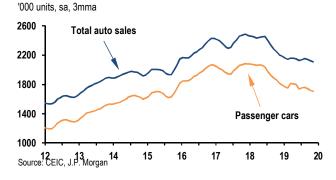


Regarding the fundamental drivers of the consumption outlook this year, first, along with the expected cyclical bottoming and moderate pickup in 1H20, labor market conditions likely will bottom and improve modestly. Indeed, it is worth noting that, after hitting its lowest level since the global financial crisis in June last year, the employment component of the NBS manufacturing PMI has recovered moderately toward yearend (Figure 10.6), sending tentative signals of a bottoming and potential improvement in labor market conditions and employment growth.

In addition, regarding inflation dynamics, our baseline forecasts look for headline CPI inflation to peak at around 5%oya in 1Q20 and to stay higher than 4% through 2Q. Further out, inflation is expected to ease gradually in 2H, especially toward year-end. This suggests the inflation drag on consumers' real purchasing power will remain notable in 1H20 but fade in 2H20, supporting a moderate recovery in retail sales volume growth.

By industry, the auto sector has been a notable drag on retail sales in the past two years as note above. Looking ahead, we expect auto demand to stabilize going into 2020 after an estimated 10%oya decline in 2019, as the market normalizes after two years of consolidation (Figure 10.7). This shift will remove a notable drag on retail sales. Indeed, the latest industrial data suggest an uptick in auto production, which may reflect a bottoming and turnaround in the inventory cycle ahead of the expected improvement in demand conditions. In addition, as we expect fiscal policy support to focus on infrastructure investment and consumption going into 2020, the auto sector will likely be a key area of policy support.

Figure 10.7: Auto sales

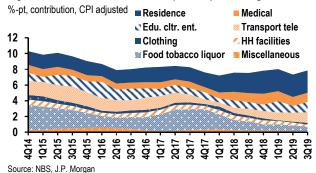


Services consumption will be the key driver of consumption growth in the medium term. Indeed, amid the slowing in overall consumption growth last year, per capita spending on education, culture and entertainment (which grew 13.5%oya in 1Q19-3Q19), medical care (10.9%) and residence (10.3%oya) continued to outperform overall consumer spending (8.3%oya, Figure 10.8). Going into 2020, firming labor market conditions and household income growth will

Haibin Zhu (852) 2800-7039 haibin.zhu@jpmorgan.com Grace Ng (852) 2800-7002 grace.h.ng@jpmorgan.com Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com Economic Research Ten questions about China in 2020 January 10, 2020 J.P.Morgan

be crucial to further unleash potential spending on a range of consumer services.

Figure 10.8: Contribution to consumption expenditure growth



Haibin Zhu (852) 2800-7039 haibin.zhu@jpmorgan.com Grace Ng (852) 2800-7002 grace.h.ng@jpmorgan.com Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com Economic Research Ten questions about China in 2020 January 10, 2020 J.P.Morgan

Analysts' Compensation: The research analysts responsible for the preparation of this report receive compensation based upon various factors, including the quality and accuracy of research, client feedback, competitive factors, and overall firm revenues.

Other Disclosures

J.P. Morgan is a marketing name for investment banking businesses of JPMorgan Chase & Co. and its subsidiaries and affiliates worldwide.

Any data discrepancies in this report could be the result of different calculations and/or adjustments.

Any long form nomenclature for references to China; Hong Kong; Taiwan; and Macau within this research report are Mainland China; Hong Kong SAR, China; Taiwan, China; Macau SAR, China.

Private Bank Clients: Where you are receiving research as a client of the private banking businesses offered by JPMorgan Chase & Co. and its subsidiaries ("J.P. Morgan Private Bank"), research is provided to you by J.P. Morgan Private Bank and not by any other division of J.P. Morgan, including but not limited to the J.P. Morgan corporate and investment bank and its research division.

Legal entity responsible for the production of research: The legal entity identified below the name of the Reg AC research analyst who authored this report is the legal entity responsible for the production of this research. Where multiple Reg AC research analysts authored this report with different legal entities identified below their names, these legal entities are jointly responsible for the production of this research.

Legal Entities Disclosures

U.S.: JPMS is a member of NYSE, FINRA, SIPC and the NFA. JPMorgan Chase Bank, N.A. is a member of FDIC. Canada: J.P. Morgan Securities Canada Inc. is a registered investment dealer, regulated by the Investment Industry Regulatory Organization of Canada and the Ontario Securities Commission and is the participating member on Canadian exchanges. U.K.: JPMorgan Chase N.A., London Branch, is authorised by the Prudential Regulation Authority and is subject to regulation by the Financial Conduct Authority and to limited regulation by the Prudential Regulation Authority. Details about the extent of our regulation by the Prudential Regulation Authority are available from J.P. Morgan on request. J.P. Morgan Securities plc (JPMS plc) is a member of the London Stock Exchange and is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. Registered in England & Wales No. 2711006. Registered Office 25 Bank Street, London, E14 5JP. Germany: This material is distributed in Germany by J.P. Morgan Securities plc, Frankfurt Branch which is regulated by the Bundesanstalt für Finanzdienstleistungsaufsich and also by J.P. Morgan AG (JPM AG) which is a member of the Frankfurt stock exchange and is regulated by the Federal Financial Supervisory Authority (BaFin), JPM AG is a company incorporated in the Federal Republic of Germany with registered office at Taunustor 1, 60310 Frankfurt am Main, the Federal Republic of Germany. South Africa: J.P. Morgan Equities South Africa Proprietary Limited is a member of the Johannesburg Securities Exchange and is regulated by the Financial Services Board. Hong Kong: J.P. Morgan Securities (Asia Pacific) Limited (CE number AAJ321) is regulated by the Hong Kong Monetary Authority and the Securities and Futures Commission in Hong Kong and/or J.P. Morgan Broking (Hong Kong) Limited (CE number AAB027) is regulated by the Securities and Futures Commission in Hong Kong. JP Morgan Chase Bank, N.A., Hong Kong is organized under the laws of U.S.A. with limited liability. Korea: This material is issued and distributed in Korea by or through J.P. Morgan Securities (Far East) Limited, Seoul Branch, which is a member of the Korea Exchange(KRX) and is regulated by the Financial Services Commission (FSC) and the Financial Supervisory Service (FSS). Australia: J.P. Morgan Securities Australia Limited (JPMSAL) (ABN 61 003 245 234/AFS Licence No: 238066) is regulated by ASIC and is a Market, Clearing and Settlement Participant of ASX Limited and CHI-X. Taiwan: J.P. Morgan Securities (Taiwan) Limited is a participant of the Taiwan Stock Exchange (company-type) and regulated by the Taiwan Securities and Futures Bureau. India: J.P. Morgan India Private Limited (Corporate Identity Number - U67120MH1992FTC068724), having its registered office at J.P. Morgan Tower, Off. C.S.T. Road, Kalina, Santacruz - East, Mumbai - 400098, is registered with Securities and Exchange Board of India (SEBI) as a 'Research Analyst' having registration number INH000001873. J.P. Morgan India Private Limited is also registered with SEBI as a member of the National Stock Exchange of India Limited and the Bombay Stock Exchange Limited (SEBI Registration Number - INZ000239730) and as a Merchant Banker (SEBI Registration Number - MB/INM000002970). Telephone: 91-22-6157 3000, Facsimile: 91-22-6157 3990 and Website: www.jpmipl.com. For non local research reports, this material is not distributed in India by J.P. Morgan India Private Limited. Thailand: This material is issued and distributed in Thailand by JPMorgan Securities (Thailand) Ltd., which is a member of the Stock Exchange of Thailand and is regulated by the Ministry of Finance and the Securities and Exchange Commission and its registered address is 3rd Floor, 20 North Sathorn Road, Silom, Bangrak, Bangkok 10500. Indonesia: PT J.P. Morgan Sekuritas Indonesia is a member of the Indonesia Stock Exchange and is regulated by the OJK a.k.a. BAPEPAM LK. Philippines: J.P. Morgan Securities Philippines Inc. is a Trading Participant of the Philippine Stock Exchange and a member of the Securities Clearing Corporation of the Philippines and the Securities Investor Protection Fund. It is regulated by the Securities and Exchange Commission. Brazil: Banco J.P. Morgan S.A. is regulated by the Comissao de Valores Mobiliarios (CVM) and by the Central Bank of Brazil. Mexico: J.P. Morgan Casa de Bolsa, S.A. de C.V., J.P. Morgan Grupo Financiero is a member of the Mexican Stock Exchange and authorized to act as a broker dealer by the National Banking and Securities Exchange Commission. Singapore: This material is issued and distributed in Singapore by or through J.P. Morgan Securities Singapore Private Limited (JPMSS) [MCI (P) 058/04/2019 and Co. Reg. No.: 199405335R], which is a member of the Singapore Exchange Securities Trading Limited and/or JPMorgan Chase Bank, N.A., Singapore branch (JPMCB Singapore) [MCI (P) 070/09/2019], both of which are regulated by the Monetary Authority of Singapore. This material is issued and distributed in Singapore only to accredited investors, expert investors and institutional investors, as defined in Section 4A of the Securities and Futures Act, Cap. 289 (SFA). This material is not intended to be issued or distributed to any retail investors or any other investors that do not fall into the classes of "accredited investors," 'expert investors" or "institutional investors," as defined under Section 4A of the SFA. Recipients of this document are to contact JPMSS or JPMCB Singapore in respect of any matters arising from, or in connection with, the document. Japan: JPMorgan Securities Japan Co., Ltd. and JPMorgan Chase Bank, N.A., Tokyo Branch are regulated by the Financial Services Agency in Japan. Malaysia: This material is issued and distributed in Malaysia by JPMorgan Securities (Malaysia) Sdn Bhd (18146-X) which is a Participating Organization of Bursa Malaysia Berhad and a holder of Capital Markets Services License issued by the Securities Commission in Malaysia. Pakistan: J. P. Morgan Pakistan Broking (Pvt.) Ltd is a member of the Karachi Stock Exchange and regulated by the Securities and Exchange Commission of Pakistan. Dubai: JPMorgan Chase Bank, N.A., Dubai Branch is regulated by the Dubai Financial Services Authority (DFSA) and its registered address is Dubai International Financial Centre - Building 3, Level 7, PO Box 506551, Dubai, UAE. Russia: CB J.P. Morgan Bank International LLC is regulated by the Central Bank of Russia. Argentina: JPMorgan Chase Bank Sucursal Buenos Aires is regulated by Banco Central de la República Argentina ("BCRA"- Central Bank of Argentina) and Comisión Nacional de Valores ("CNV"- Argentinian Securities Commission")

Haibin Zhu (852) 2800-7039 haibin.zhu@jpmorgan.com Grace Ng (852) 2800-7002 grace.h.ng@jpmorgan.com Carol Wei Liao (852) 2800-2801 carol.w.liao@jpmorgan.com Anita Xu (852) 2800-2163 anita.xu@jpmorgan.com Economic Research
Ten questions about China in
2020
January 10, 2020

J.P.Morgan

Country and Region Specific Disclosures

U.K. and European Economic Area (EEA): Unless specified to the contrary, issued and approved for distribution in the U.K. and the EEA by JPMS plc. Investment research issued by JPMS plc has been prepared in accordance with JPMS plc's policies for managing conflicts of interest arising as a result of publication and distribution of investment research. Many European regulators require a firm to establish, implement and maintain such a policy. Further information about J.P. Morgan's conflict of interest policy and a description of the effective internal organisations and administrative arrangements set up for the prevention and avoidance of conflicts of interest is set out at the following link https://www.jpmorgan.com/jpmpdf/1320742677360.pdf. This report has been issued in the U.K. only to persons of a kind described in Article 19 (5), 38, 47 and 49 of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (all such persons being referred to as "relevant persons"). This document must not be acted on or relied on by persons who are not relevant persons. Any investment or investment activity to which this document relates is only available to relevant persons and will be engaged in only with relevant persons. In other EEA countries, the report has been issued to persons regarded as professional investors (or equivalent) in their home jurisdiction. Australia: This material is issued and distributed by JPMSAL in Australia to "wholesale clients" only. This material does not take into account the specific investment objectives, financial situation or particular needs of the recipient. The recipient of this material must not distribute it to any third party or outside Australia without the prior written consent of JPMSAL. For the purposes of this paragraph the term "wholesale client" has the meaning given in section 761G of the Corporations Act 2001. J.P. Morgan's research coverage universe spans listed securities across the ASX All Ordinaries index, securities listed on offshore markets, unlisted issuers and investment products which Research management deem to be relevant to the investor base from time to time. J.P. Morgan seeks to cover companies of relevance to the domestic and international investor base across all GIC sectors, as well as across a range of market capitalisation sizes. Germany: This material is distributed in Germany by J.P. Morgan Securities plc, Frankfurt Branch which is regulated by the Bundesanstalt für Finanzdienstleistungsaufsicht. Korea: This report may have been edited or contributed to from time to time by affiliates of J.P. Morgan Securities (Far East) Limited, Seoul Branch. Singapore: As at the date of this report, JPMSS is a designated market maker for certain structured warrants listed on the Singapore Exchange where the underlying securities may be the securities discussed in this report. Arising from its role as designated market maker for such structured warrants, JPMSS may conduct hedging activities in respect of such underlying securities and hold or have an interest in such underlying securities as a result. The updated list of structured warrants for which JPMSS acts as designated market maker may be found on the website of the Singapore Exchange Limited: http://www.sgx.com. In addition, JPMSS and/or its affiliates may also have an interest or holding in any of the securities discussed in this report – please see the Important Disclosures section above. For securities where the holding is 1% or greater, the holding may be found in the Important Disclosures section above. For all other securities mentioned in this report, JPMSS and/or its affiliates may have a holding of less than 1% in such securities and may trade them in ways different from those discussed in this report. Employees of JPMSS and/or its affiliates not involved in the preparation of this report may have investments in the securities (or derivatives of such securities) mentioned in this report and may trade them in ways different from those discussed in this report. Taiwan: Research relating to equity securities is issued and distributed in Taiwan by J.P. Morgan Securities (Taiwan) Limited, subject to the license scope and the applicable laws and the regulations in Taiwan. According to Paragraph 2, Article 7-1 of Operational Regulations Governing Securities Firms Recommending Trades in Securities to Customers (as amended or supplemented) and/or other applicable laws or regulations, please note that the recipient of this material is not permitted to engage in any activities in connection with the material which may give rise to conflicts of interests, unless otherwise disclosed in the "Important Disclosures" in this material. India: For private circulation only, not for sale. Pakistan: For private circulation only, not for sale. New Zealand: This material is issued and distributed by JPMSAL in New Zealand only to "wholesale clients" (as defined in the Financial Advisers Act 2008). The recipient of this material must not distribute it to any third party or outside New Zealand without the prior written consent of JPMSAL. Canada: This report is distributed in Canada by or on behalf of J.P.Morgan Securities Canada Inc. The information contained herein is not, and under no circumstances is to be construed as an offer to sell securities described herein, or solicitation of an offer to buy securities described herein, in Canada or any province or territory thereof. The information contained herein is under no circumstances to be construed as investment advice in any province or territory of Canada and is not tailored to the needs of the recipient. Dubai: This report has been distributed to persons regarded as professional clients or market counterparties as defined under the DFSA rules. Brazil: Ombudsman J.P. Morgan: 0800-7700847 / ouvidoria.jp.morgan@jpmorgan.com.

General: Additional information is available upon request. Information has been obtained from sources believed to be reliable but JPMorgan Chase & Co. or its affiliates and/or subsidiaries (collectively J.P. Morgan) do not warrant its completeness or accuracy except with respect to any disclosures relative to JPMS and/or its affiliates and the analyst's involvement with the issuer that is the subject of the research. All pricing is indicative as of the close of market for the securities discussed, unless otherwise stated. Opinions and estimates constitute our judgment as of the date of this material and are subject to change without notice. Past performance is not indicative of future results. This material is not intended as an offer or solicitation for the purchase or sale of any financial instrument. The opinions and recommendations herein do not take into account individual client circumstances, objectives, or needs and are not intended as recommendations of particular securities, financial instruments or strategies to particular clients. The recipient of this report must make its own independent decisions regarding any securities or financial instruments mentioned herein. JPMS distributes in the U.S. research published by non-U.S. affiliates and accepts responsibility for its contents. Periodic updates may be provided on companies/industries based on company specific developments or announcements, market conditions or any other publicly available information. Clients should contact analysts and execute transactions through a J.P. Morgan subsidiary or affiliate in their home jurisdiction unless governing law permits otherwise.

"Other Disclosures" last revised January 01, 2020.

Copyright 2020 JPMorgan Chase & Co. All rights reserved. This report or any portion hereof may not be reprinted, sold or redistributed without the written consent of J.P. Morgan.