

China outlook

# Covid-19: Shock unfolding, recovery tracking

March 2020

Jian Chang\* **Chief China Economist** +852 2903 2654 jian.chang@barclays.com Barclays Bank, Hong Kong

Eric Zhu\* **China Economist** +852 2903 2655 eric.zhu@barclays.com Barclays Bank, Hong Kong

Yingke Zhou\* **China Economist** +852 2903 2653 yingke.zhou@barclays.com Barclays Bank, Hong Kong

\*This author is a debt research analyst in the Fixed Income. Currencies and Commodities Research department and is neither an equity research analyst nor subject to all of the independence and disclosure standards applicable to analysts who produce debt research reports under U.S. FINRA Rule 2242.

This is a Special Report that is not an equity or a debt research report under U.S. FINRA Rules 2241-2242. PLEASE SEE ANALYST CERTIFICATIONS AND IMPORTANT DISCLOSURES BEGINNING ON PAGE 52.

## Shock unfolding, recovery tracking

- High-frequency data suggest a steady recovery in manufacturing and services, with the latter still lagging. In particular, home sales fell c.40% y/y, compared with a c.70% drop in February; the contraction in auto sales eased to 45% from c.80%. Baidu's migration index rose to 90% of last year versus c.50%. Coal consumption recovered to 17% below the year-earlier level, compared with c.20% below in February.
- However, this pace of normalization still points to a sizable contraction in March activity. Our weekly tracker estimates that the fall in services and manufacturing still stood at ~35% and ~20% y/y, respectively in the week to 16 March, though much better than the declines of 70% and 50%, respectively in February. Together with the ~20%y/y contraction in Jan-Feb, this would bring the Q1 GDP decline to 15%.
- Therefore, we lowered our 2020 GDP growth forecast to 1.3% y/y, versus 5.8% before the Covid-19 outbreak. This also reflects weaker domestic demand versus the pre-outbreak level and rapid deterioration external demand amid a deep global recession (see <u>Global Synthesis: Forecasting the fallout</u>, 20 March), which should be partially mitigated by some recovery of lost Q1 output and stepped up policy stimulus.
- Downside risks to our forecast include weaker external/domestic demand and/or delayed normalization, which could drag GDP into contraction by 2-3%. Upside risks include larger policy stimulus, stronger payback of Q1 losses and/or a quicker resolution of the global outbreak, which could lift growth to 2-3%.
- Our baseline forecast suggests a meaningful rebound in Q2 and a decent recovery in H2, where we see
  demand as a bigger challenge than capacity in light of the worsening global outbreak and its cascading
  effects on asset prices and economic activity. Moreover, our quarterly path assumes that services activity
  will return to normal in April-May and manufacturing returning to pre-virus capacity by late March.
- The spread of the disease remains critical to gauge the pace of normalization. The outbreak in China has appeared largely contained since mid-March, with zero local infections reported for 10 of the past 11 days (Wuhan/Hubei reporting zero cases since 18 March). However, imported cases began to surge as more overseas Chinese returned, with the total number rising to 353 in 19 provinces as of 22 March, from 189 in 12 provinces on 18 March and only ~20 in early March. As a result, fewer provinces (11 as of 22 March versus 18 as of 18 March) have reported zero cases for >14 days, adding risks to a further delay.



# Roadmap

Covid-19 outbreak: Watch for local infection vs imported cases	4
Forecast scenarios: An unprecedented shock	. 10
Tracking the recovery: High-frequency indicators and our trackers	18
A deep Q1 slump: confirmed by Jan-Feb data	26
Policy response: measured and targeted so far	30
Inflation: Covid-19 adds uncertainties	. 48
Economic Calendar	. 51

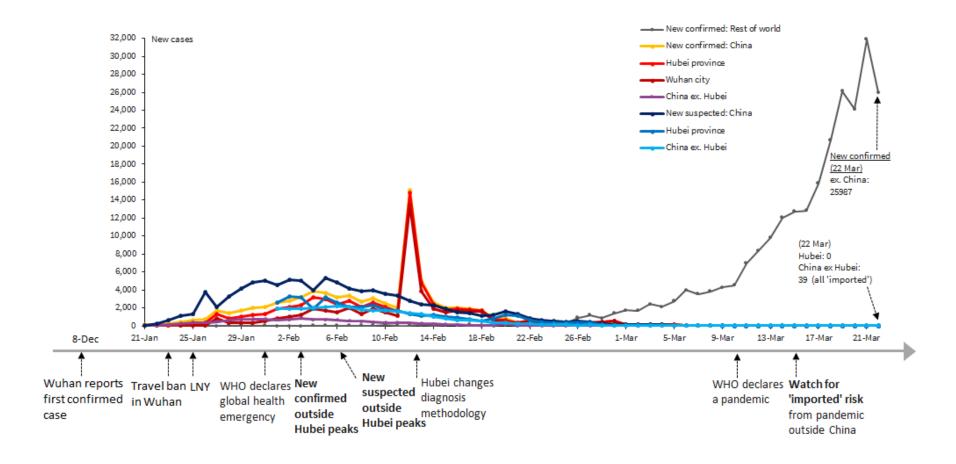


# Covid-19 outbreak: Watch for local infection vs imported cases

See China: COVID-19: Activity tracking-watch for a turning point 21 February 2020, China: COVID-19: Activity tracking (27 Feb 2020) 27 February 2020, China: COVID-19: Activity tracking (6 Mar) 6 March 2020, China: COVID-19 - Activity tracking: Services fall deeper vs manufacturing, 13 March 2020, China: CUtting GDP on deep Q1 slump, demand shock, 13 March 2020, China: COVID-19 - Activity tracking: Downgrade 2020 GDP to 1.3%, 19 Mar 2020



### Covid-19: Battleground shifts from China to the RoW



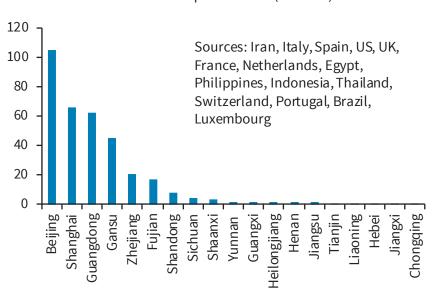
Source: PRC and Hubei NHC, WHO, Barclays Research



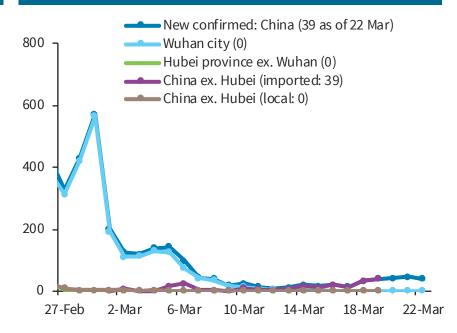
### China: Imported cases surged, but local infections ~zero

# 353 imported cases in 19 provinces as of 22 Mar vs 189 cases (12 provinces) on 18 Mar

#### Cumulative imported cases (1-22 Mar)



# Local infection cases have stayed zero for 10 out of the past 11 days



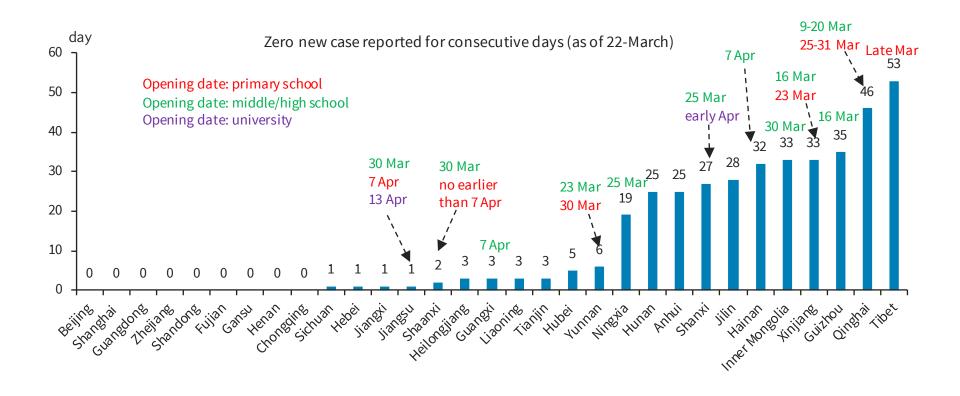
Note: Wuhan/Hubei, China's epicenter, have reported zero new cases since 18 March

Source: PRC NHC, Barclays Research

Source: PRC NHC, Barclays Research



# Fewer provinces are on zero-case trend now with more imported cases

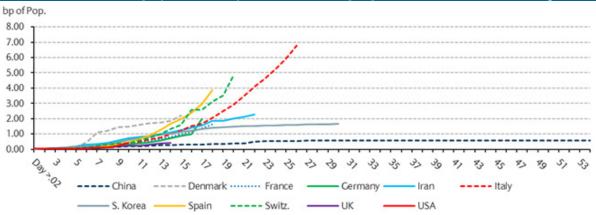


Note: 11 provinces reported zero cases ≥ 14 consecutive days as of 22 Mar, compared to 18 provinces as of 18 Mar. Source: PRC and provincial NHC, Barclays Research



### Global pandemic: Significant casualties, more lockdowns

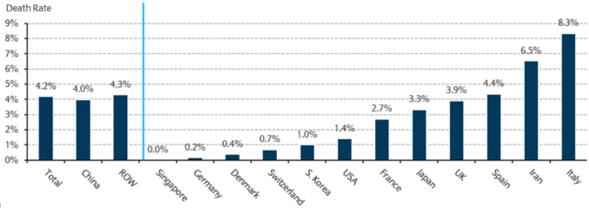
The outbreak is spreading at a faster rate outside China than it did in China (Total reported cases as bp (1/10,000) of the total population, start on day first >0.02bp)



. Source: WHO, Johns Hopkins Resource Center, Barclays Research

Total deaths reported by the WHO stood at 5,530 RoW (vs China: 3,248) as of 19 Mar (Note: the reporting mechanisms could vary across countries)

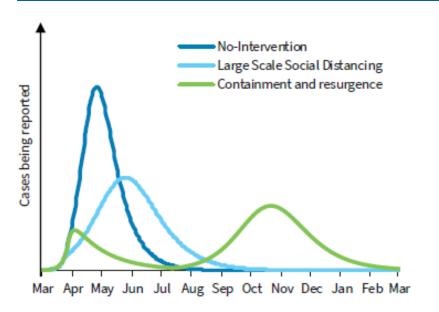




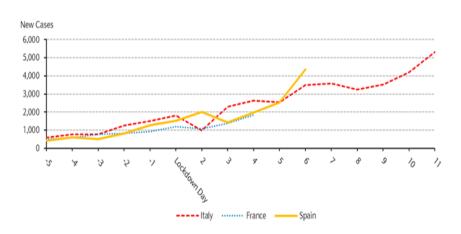


## Dr. Zhang Wenhong: Outbreak unlikely to end by summer

# The path of Covid-19 remains uncertain; much depends on government strategies



# It remains to be seen when and how effectively lockdowns will work



Note: Dr. Zhang is Director of Huashan Hospital's Department of Infectious Disease and of the Shanghai panel overseeing the treatment of Covid-19. He gave an outlook on global pandemic in an article published on 15 March in his department's official social media account.

Source: Stylized scenario based on Anderson et. Al (2020). Barclays Research

Source: Barclays Research



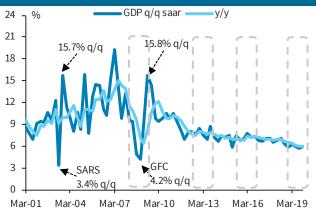
# Forecast scenarios: An unprecedented shock

See China Coronavirus: Evaluating the potential economic impact 1 February 2020, China: Coronavirus: GDP forecast downgrade 7 February 2020, China: COVID-19: Activity tracking-watch for a turning point 21 February 2020, China: COVID-19: Activity tracking (27 Feb 2020) 27 February 2020, China: COVID-19: Activity tracking: Services fall deeper vs manufacturing, 13 March 2020, China: CUIIIng GDP on deep Q1 slump, demand shock, 13 March 2020, China: Jan-Feb data suggest -10% y/y 1Q contraction, 16 March 2020, China: COVID-19 - Activity tracking: Downgrade 2020 GDP to 1.3%, 19 Mar 2020



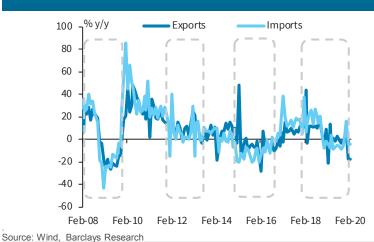
## Expect a greater shock than past recessions

#### **GDP** growth path

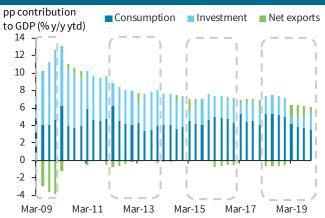


The cycles refers to four most-recent economic down cycles (2008-09, 2012-13, 2015-16, 2018-19), see China: This easing cycle is different, 5 Sep 2019. Source: Haver, Barclays Research

#### **Exports and imports contraction**

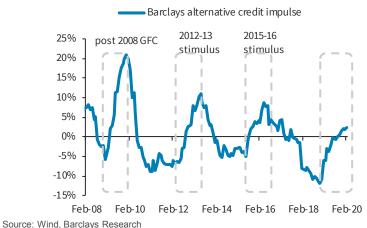


#### C/ I/ NX contribution



Source: Wind, Barclays Research

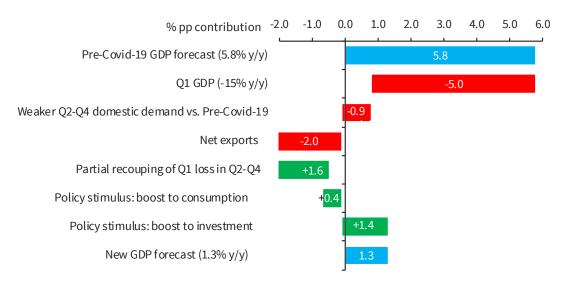
#### **Credit stimulus boost**





### China GDP baseline forecast and risk scenarios

	Current (previous: 13 March)		ent (previous: 13 March) Pre-COVID-19		Upside risk (larger policy stimulus or stronger payback of Q1 loss and/or a quick containment of the global outbreak)	
%	y/y	q/q saar	y/y	y/y	y/y	
Q1	-15.0 (-8.0)	-56.1 (-39.8)	5.8	-20.0 ~ -16.0	-15.0	
Q2	5.0 (5.3)	147.3 (82.3)	5.8	-2.0~ 3.0	5.0 ~ 6.0	
Q3	5.9 (6.3)	9.2 (9.5)	5.8	3.0~ 5.0	7.0~ 9.0	
Q4	6.9 (7.5)	10.2 (11.0)	5.7	4.0~ 6.5	8.0 ~ 10	
2020	1.3 (3.2)		5.8	-3.0~ 0.3	1.9 ~ 3.2	



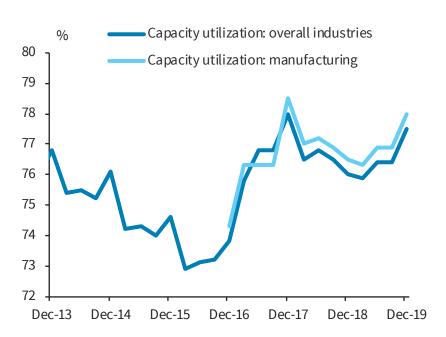
Source: Haver, Wind, Barclays Research

See China Coronavirus: Evaluating the potential economic impact 1 February 2020, China: Coronavirus: GDP forecast downgrade 7 February 2020, China: Cutting GDP on deep Q1 slump, demand shock, 13 March 2020, China: COVID-19 - Activity tracking: Downgrade 2020 GDP to 1.3%, 19 Mar 2020

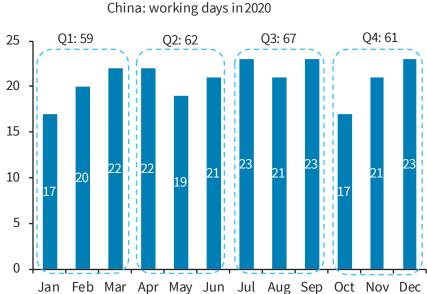


## Capacity less of a constraint than demand

# We expect effective capacity utilization back to ~75% in Q2



# More working days in Q2 and Q3 than in Q1



Source: Wind, Barclays Research

Source: The State Council, Barclays Research

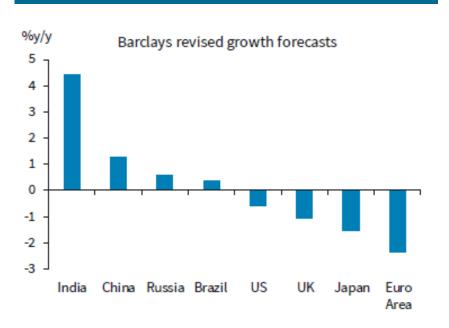


### Our forecast factors in a global recession not depression

#### ... that has similar dimension to 2009's...

#### Global growth (based on PPP) %v/v Barclays f'cast 3.0 (growth <2.5% = recession) 2.5 2.0 1.5 1.0 0.5 0.0 -0.5 -1.0 1982 1993 1998 2001 2009 Baseline Worse 2020 case 2020

#### ... as G7 economies contract



Note: IMF classifies global growth of 2.5% y/y as a world recession. Source: IMF WEO, Haver, Barclays Research

Note: chart shows 2020 baseline growth forecasts. Source: Barclays Research



### Global forecasts: sharp H1 fall, gradual H2 recovery

			R	leal GDF				Real	GDP	
		% overprevious period, saar			% annual change					
	Weight#	4Q19	1Q 20	2020	3Q20	4020	2018	2019	2020 2	2021
Global*	100.0	6.0	↑ -14.5 ↓	30.1 ↑	7.6	↑ 6.4 °	3.9	3.2	0.4 ↓	3.9 ↑
Advanced	40.9	0.3	-1.8 ↓	-8.7 🗼	2.5	↑ 2.7	2.2	1.7	-1.3 ↓	1.3
Emerging*	59.1	9.9	↑ -23.2 ↓	56.3 1	11.0	↑ 9.0	5.1	4.2	1.5 ↓	5.6 ↑
BRIC	40.4	4.8	-32.0 ↓	83.9 †	12.1	↑ 9.3	5.9	5.1	2.0 ↓	6.2
Americas*	25.8	14.6	↑ -1.5 ↓	-6.5 1	2.6	↑ 2.6	2.5	1.9	-0.7 ↓	1.3 ↓
United States	18.6	2.1	-0.5	-7.0 ]	0.0	↓ 1.0 .	2.9	2.3	-0.6 🚶	0.9 👃
Europe and Africa	24.1	0.9	↓ -1.7 ↓	-10.3 J	4.7	↑ 4.3 <sup>4</sup>	2.1	1.3	-1.2 ↓	1.9 ↑
Euro area	13.4	0.5	-3.4 ↓	-13.5 ↓	4.2	↑ 4.9 °	1.9	1.2	-2.4 ↓	1.5 ↑
France	2.7	-0.2	-2.7 ↓	-11.2 ↓	4.9	↑ 4.7 °	1.7	1.3	-1.8 ↓	1.8 ↑
Germany	3.9	0.1	-3.0 ↓	-11.7 ↓	3.5	↑ 4.7 °	1.5	0.6	-2.3 ↓	1.6 ↑
Italy	2.1	-1.2	-5.3 ↓	-16.7 <u></u>	7.1	↑ 5.6 °	0.7	0.3	-3.7 ↓	1.6 ↑
Spain	1.7	2.1	-2.7 ↓	-10.9 ↓	4.3	↑ 4.5 °	2.4	2.0	-1.4 ↓	1.6 ↑
United Kingdom	2.7	0.1	0.8	-15.0 ↓	10.3	↑ 5.2 °	1.3	1.4	-1.1 ↓	2.3 ↑
Asia/Pacific	50.1	4.1	-27.2 ↓	67.5 ↑	11.4	† 9.4 f	5.4	4.8	1.6 ↓	6.1 ↑
Japan	5.0	-7.1	-3.1	0.2	1.4	1.2	0.3	0.7	-1.6	1.3
Australia	1.2	2.1	-3.6 ↓	-2.6 ļ	7.7	↑ 4.2 °	2.7	1.8	0.6 ↓	2.6 ↑
Emerging Asia	44.0	5.4	-30.5 ‡	76.7 ↑	12.6	10.4	6.1	5.3	2.0 ↓	6.6 ↑
China	23.7	6.0	-56.1 Ļ	147.3 ↑	9.2	10.2	6.7	6.1	1.3 ↓	6.9

Note: Arrows appear next to numbers if current forecasts differ from that of the previous week by 0.5pp or more for quarterly annualized GDP, by 0.2pp or more for annual GDP and by 0.2pp or more for Inflation. Weights used for real GDP are based on IMF PPP-based GDP (5y centered moving averages)". # IMF PPP-based GDP weights for 2019.

Source: Barclays Research



## Downside risks: Global pandemic and weaker demand

(Fear of) re-escalation in China; local infections would be a bigger concern than imported cases



Public caution / sustained containment measures lead to prolonged disruption to domestic activity

Global
governments are
forced to take
stronger measures
to contain the
outbreak



Prolonged disruption to economic activity outside China further weakens **external demand** 



Prolonged disruption to overseas supply chain further restricts China's domestic production

Source: Barclays Research



### China's base case economic forecasts

	2020F	2019	2018	2010-17 average
GDP (%y/y)	1.3	6.1	6.6	7.9
Consumption (pp)	1.4	3.5	5.0	4.3
Investment (pp)	1.9	1.9	2.2	3.8
Net exports (pp)	-2.0	0.7	-0.6	-0.2
FAI (%y/y)	~5	5.4	5.9	16.2
Property inv't (%y/y)	~5	9.9	9.5	16.7
Infrastructure inv't (%y/y)	~10-15	3.3	1.8	16.0
Manufacturing inv't (%y/y)	-5.0	3.1	9.5	16.2
Exports(%y/y)	-12.0	0.5	9.9	8.8
Retail sales(%y/y)	3.0	8.0	9.0	9.0
IP (%y/y)	1.1	5.7	6.2	9.5

See China Coronavirus: Evaluating the potential economic impact 1 February 2020, China: Coronavirus: GDP forecast downgrade 7 February 2020, China: Cutting GDP on deep Q1 slump, demand shock, 13 March 2020, China: COVID-19 - Activity tracking: Downgrade 2020 GDP to 1.3%, 19 Mar 2020

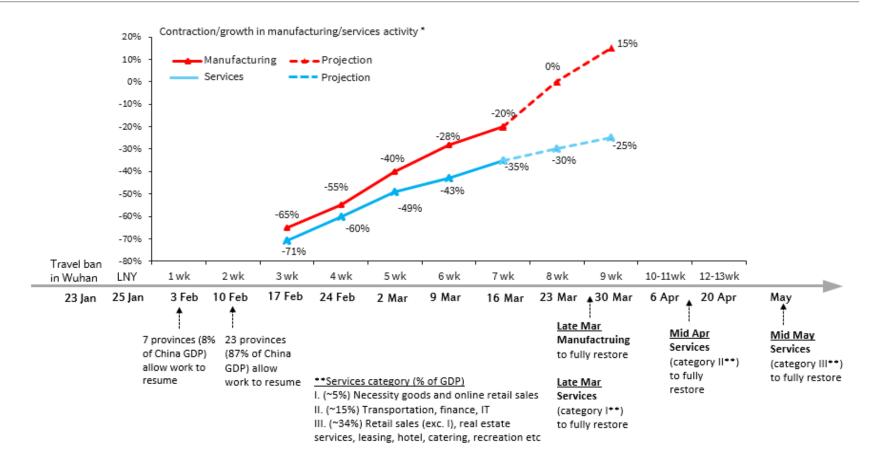


# Tracking the recovery: High-frequency indicators and our trackers

See China: COVID-19: Activity tracking-watch for a turning point 21 February 2020, China: COVID-19: Activity tracking (27 Feb 2020) 27 February 2020, China: COVID-19: Activity tracking (6 Mar) 6 March 2020, China: COVID-19 - Activity tracking: Services fall deeper vs manufacturing, 13 March 2020, China: COVID-19 - Activity tracking: Downgrade 2020 GDP to 1.3%, 19 Mar 2020



### Recovery on track but still a sizable March contraction



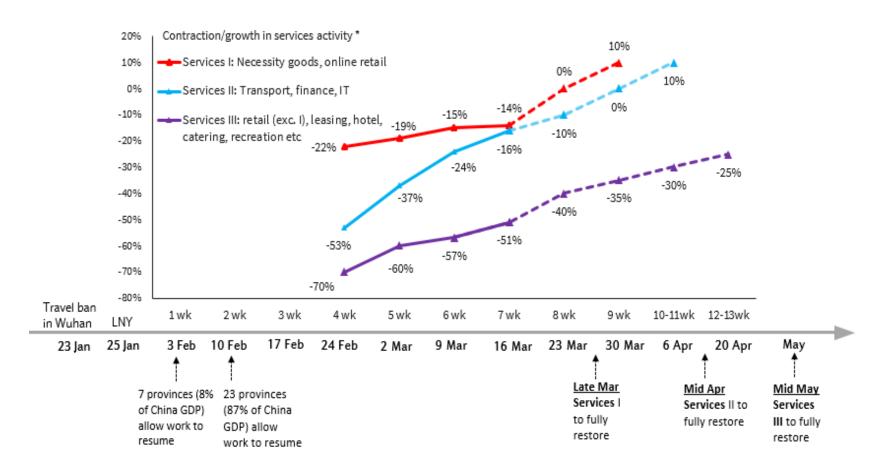
Note on methodology: The contraction or growth in manufacturing and services activity is now based on hard activity data instead of our estimated operation rates. Specifically, for manufacturing activity (30% of GDP), we take a simple average of implied y/y growth of: 1) the Baidu Migration Index; 2) manufacturing operation rate in textiles; 3) coal consumption by six major power plants (\*1.5); and 4) air quality index (\*1.5). For services activity (54% of GDP), we take a weighted average of implied y/y growth of: 1) category I services (proxied by road congestion); 2) category II services (proxied by manufacturing and migration index); and 3) category III (proxied by home sales, auto sales, and hotel revenue).

Source: Barclays Research

See China: COVID-19: Activity tracking-watch for a turning point 21 February 2020, China: COVID-19: Activity tracking (27 Feb 2020) 27 February 2020, China: COVID-19: Activity tracking: Services fall deeper vs manufacturing, 13 March 2020, China: COVID-19 - Activity tracking: Downgrade 2020 GDP to 1.3%, 19 Mar 2020



## Services: we account for varying levels of disruption



Note on methodology: The contraction or growth in manufacturing and services activity is now based on hard activity data instead of our estimated operation rates. Specifically, for manufacturing activity (30% of GDP), we take a simple average of implied y/y growth of: 1) the Baidu Migration Index; 2) manufacturing operation rate in textiles; 3) coal consumption by six major power plants (\*1.5); and 4) air quality index (\*1.5). For services activity (54% of GDP), we take a weighted average of implied y/y growth of: 1) category I services (proxied by road congestion); 2) category II services (proxied by manufacturing and migration index); and 3) category III (proxied by home sales, auto sales, and hotel revenue).

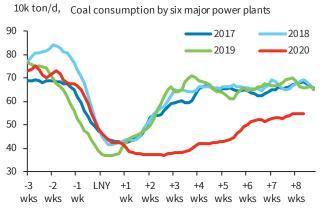
Source: Barclays Research

See China: COVID-19: Activity tracking-watch for a turning point 21 February 2020, China: COVID-19: Activity tracking (27 Feb 2020) 27 February 2020, China: COVID-19: Activity tracking: Services fall deeper vs manufacturing, 13 March 2020, China: COVID-19 - Activity tracking: Downgrade 2020 GDP to 1.3%, 19 Mar 2020



# Manufacturing: Tracking at down ~20% y/y

#### Coal consumption stabilized at ~-20% y/y



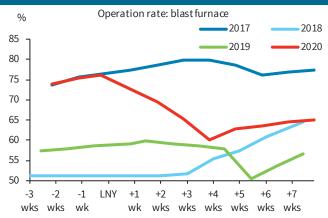
Source: Wind, Barclays Research

#### Air quality in main manufacturing hubs



Source: Wind, Barclays Research

#### Blast furnace operation improved gradually



Source: Wind, Barclays Research

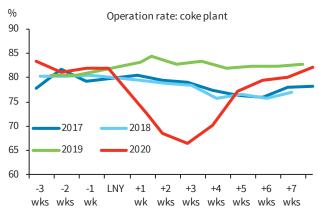
#### Air quality in main steel producer hubs





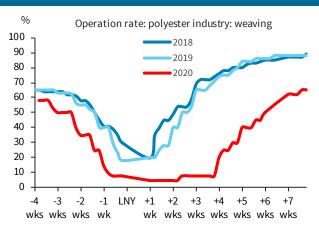
# Manufacturing operation rates: Roughly ~80%

#### Mining and smelting: Coke plants



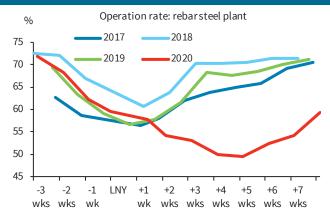
Source: Wind, Barclays Research

#### **Textiles: Weaving factories**



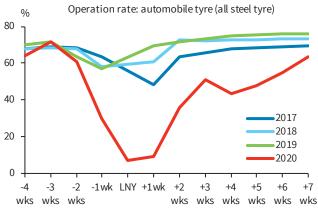
Source: Wind, Barclays Research

#### Mining and smelting: Steel plants



Source: Wind, Barclays Research

#### **Auto parts: Tire factories**

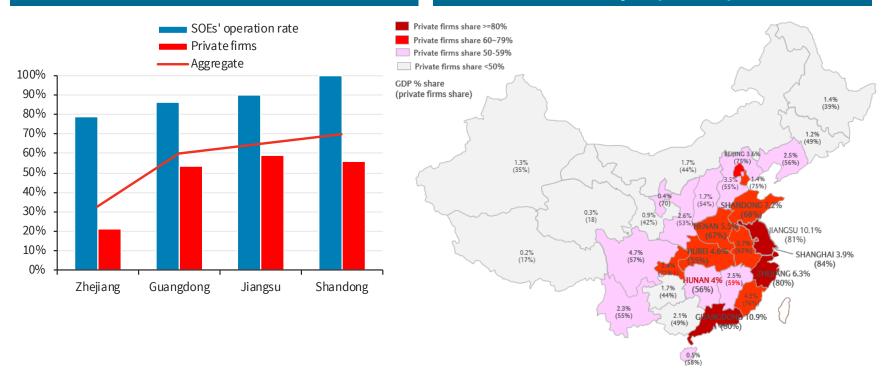




# Slower recovery by POEs/SMEs could account for the better official IP (sampling large firms) than we estimated

#### Lower operation rates in the private sector

# Private firms account for a larger share of GDP in economically important provinces

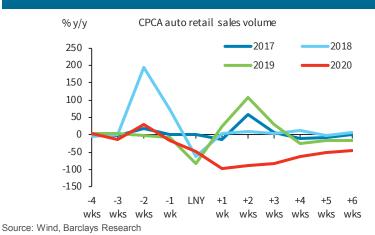


Source: SASAC, Barclays Research

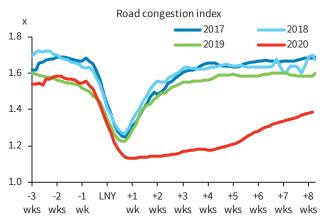


# Services: Tracking at down ~35% y/y...

#### Auto sales decline slowed to ~45% y/y

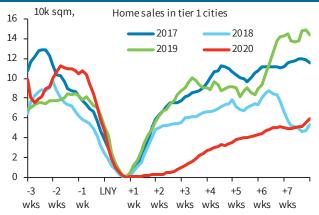


#### Road congestion index continued to increase



Source: AMAP, Wind, Barclays Research

#### Home sales decline eased to ~40% y/y



Source: Wind, Barclays Research

#### Hotel revenue per room barely recovered

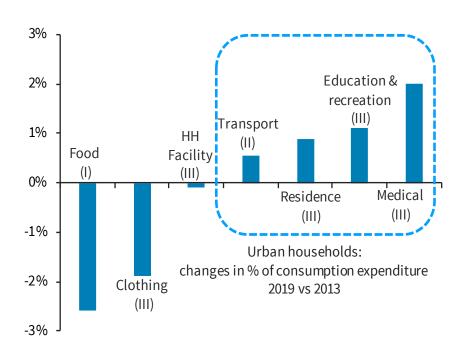


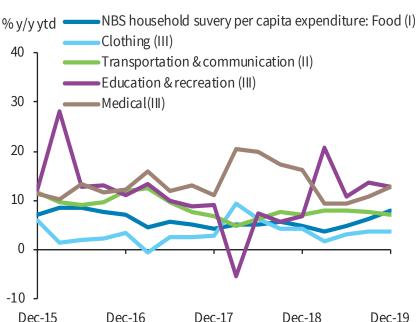


# ... which suggests consumption in the GDP data is likely to fall more sharply than retails sales, in our view

# Consumption expenditure has shifted toward services...

# ... led by education and recreation, and medical care





Source: Wind, Barclays Research



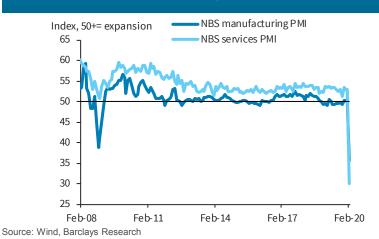
# A deep Q1 Slump: confirmed by Jan-Feb data

See China Coronavirus: Evaluating the potential economic impact 1 February 2020, China: Coronavirus: GDP forecast downgrade 7 February 2020, China: COVID-19: Activity tracking-watch for a turning point 21 February 2020, China: COVID-19: Activity tracking (27 Feb 2020) 27 February 2020, China: COVID-19: Activity tracking (6 Mar) 6 March 2020, China: COVID-19 - Activity tracking: Services fall deeper vs manufacturing, 13 March 2020, China: COVID-19 - Activity tracking: Downgrade 2020 GDP to 1.3%, 19 Mar 2020

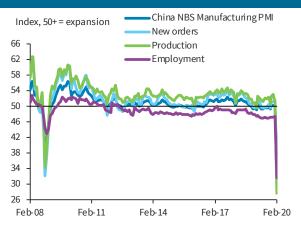


## Services PMI 29.6 fell more than manufacturing's 35.7

#### **NBS** manufacturing and services PMI

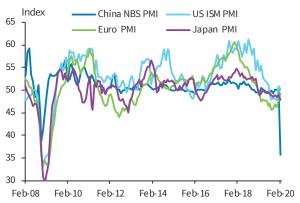


#### Manufacturing PMI breakdowns



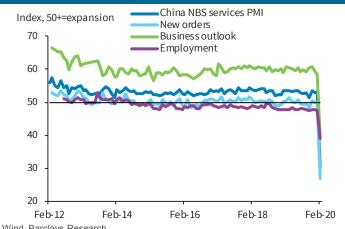
Source: Wind, Barclays Research

#### Global PMIs likely to follow China's path



Note: all PMIs refer to manufacturing Source: Wind. Barclays Research

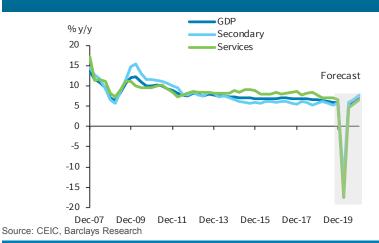
#### **Services PMI breakdowns**





## Jan-Feb official activity data: Double-digit contractions

#### 1Q GDP on track to contract ~15% y/y

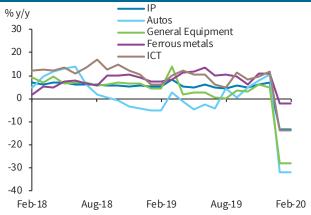


#### Jan-Feb retail sales down 20.5%



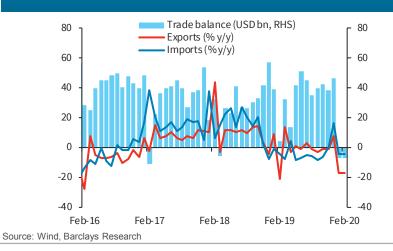
Source: Wind, Barclays Research

#### Jan-Feb industrial production down 13.5% y/y



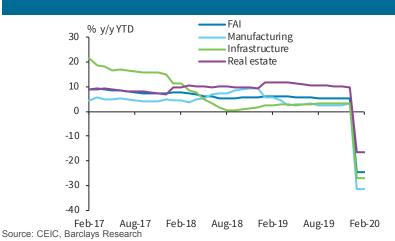
Source: CEIC, Barclays Research

#### Jan-Feb exports down 17.2%, imports down 4.0%



## Jan-Feb official activity data: FAI and housing market

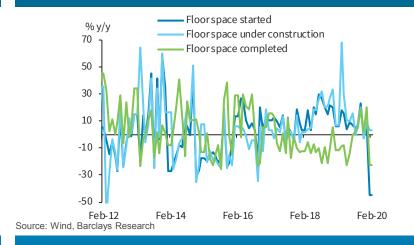




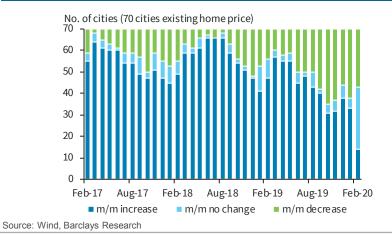
#### Home price by city tiers



#### Floor space started and completed



#### Home prices (2nd hand) in 70 cities





# Policy response: Measured and targeted so far

See China: Coronavirus: GDP forecast downgrade 7 February 2020, China: COVID-19: Activity tracking- watch for a turning point 21 February 2020, China: CUtting GDP on deep Q1 slump, demand shock, 13 March 2020, China: COVID-19 - Activity tracking: Downgrade 2020 GDP to 1.3%, 19 Mar 2020



## Smaller scale than past cycles so far despite the shock

	2008-09	2012-13	2015-16	2018 - Jan 20	Feb 20 -
Monetary/credit policy					
Barclays alternative credit aggregate growth (pp increase)	+18pp (Dec 2008-Nov 2009 )	+6.1pp (May 2012- May 2013)	+4.2pp (Apr 2015- Apr 2016)	+0.6pp (Nov 2018- Jan 2020)	+0.1pp
Benchmark interest rate cuts	216bp (Sep-Dec 2008)	56bp (Jun-Jul 2012)	125bp (Mar-Oct 2015)	0	0
RRR cuts (for major banks)	200bp (Oct – Dec 2008)	150bp (Dec 2011-May 2012)	300bp (Feb 2015 – Mar 2016)	400bp (~230bp netting out MLF replacement, April 2018 - Jan 2020)	~70bp (Mar 2020)
Fiscal policy					
Budget fiscal deficit as % of CDP (pp increase)	+2.1pp (2009)	+0.4pp (2013)	+0.7pp (2016)	+0.2pp (2019)	>0.2pp (2020E)
Augmented fiscal deficit as % of CDP (pp increase)	-	+1.3pp (2013)	+3.5pp (2016)	+1pp (2019)	+~5pp (2020E)
Tax & fee cuts as % of CDP (pp increase)	+0.5pp (2009)	-	0 (2016)	+0.8pp (2019)	-~1pp (2020E)

Source: Wind, Barclays Research See China: This easing cycle is different, 5 September 2019

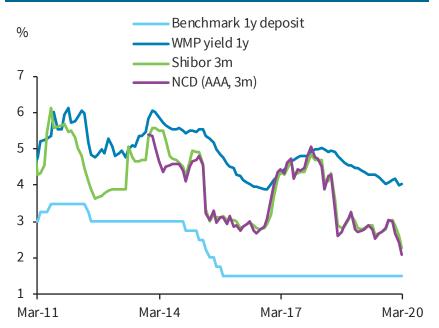


### PBoC has been cautious to lower interest rates

#### MLF/OMO rates cut once by only 10bp

#### Average loan rate (PBoC stat.) % LPR 1y 9 24 MLF 1y OMO 7D 8 -RRR (RHS) 22 20 6 18 5 16 4 14 3 12 Sep-15 Sep-18 Mar-11 Sep-12 Mar-14 Mar-17 Mar-20

# Banks' funding costs from WMPs and interbank declined; costs from deposits unchanged



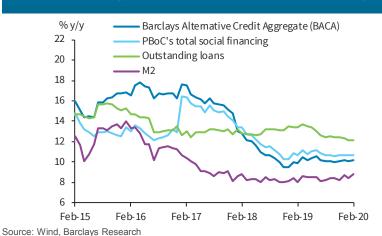
Source: Wind, Barclays Research

See PBoC Watching: Constraints, substitutes, triggers to rate cuts, 29 August 2019

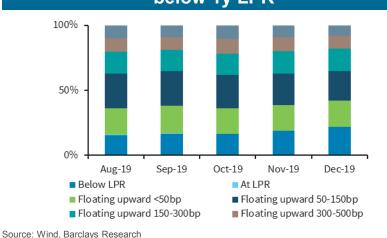


### Understanding the PBoC's caution – main tasks

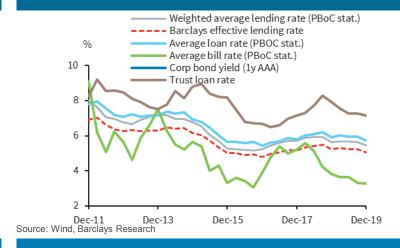
#### **Credit growth stabilized in February**



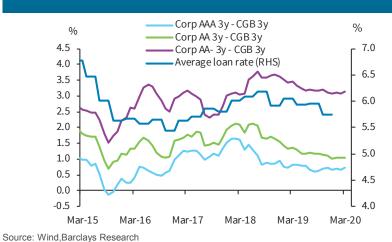
# More loans being priced below 1v LPR



#### Average loan rate fell 22bp in Q4



#### Credit spreads have been flat recently



See China: PBoC watching: Interest rate cuts in sight, 1 February 2019, and PBoC Watching: Constraints, substitutes, triggers to rate cuts, 29 August 2019

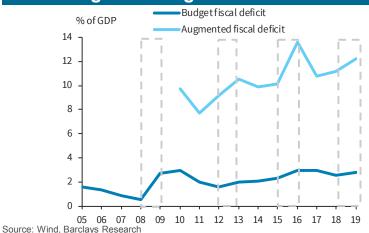


### Reduced stimulus likely due to policy room and efficacy

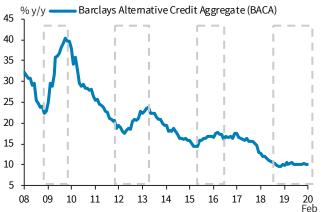
#### **Monetary policy:** RRR and benchmark interest rate



#### Fiscal policy: **Budget and augmented fiscal deficit**

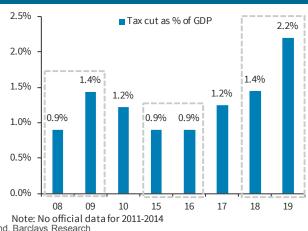


#### **Credit growth:** Barclays alternative credit aggregate



Source: Wind, Barclays Research

#### Fiscal policy: Tax cuts





# Policy responses since February

Monetary	
13-Mar	PBoC delivered targeted RRR cuts by 0.5-1pp and additional 1pp for joint-stock banks, releasing CNY550bn of liquidity.
11-Mar	PBoC stepped up support to corporate bond financing.
11-Mar	Premier Li urged use of targeted RRR cuts to lower financing costs for SMEs. He also added that as long as employment remains stable this year, it is less important to have slower or higher economic growth.
20-Feb	1-year LPR quoted 10bp lower to 4.05% and 5-year LPR 5bp lower to 4.75%.
17-Feb	1-year MLF rate cut by 10bp to 3.15%.
07-Feb	PBoC set up a CNY300bn special re-lending fund to offer preferential loans to key enterprises at 100bp lower than LPR 1-year rate in Jan.
03-Feb	PBoC injected CNY1.2 trn of liquidity through open market operations, lowering 7d and 14d OMO rates by 10bp.
01-Feb	The PBoC, MoF, CBIRC, CSRC and SAFE jointly published a total of 30 measures on enhancing financial support for combating the coronavirus and reviving the real economy, including ensuring sufficient liquidity, providing key enterprises with preferential loans at favorable rates, providing credit support for enterprises which are heavily affected by the epidemic, simplifying the business procedures and requirements etc
Fiscal	
18-Feb	The State Council asked to lower or waive employers' social insurance contributions and deferring their payments to the housing provident fund.
11-Feb	MoF frontloaded CNY848bn of new LG bonds quota, including CNY290bn special bonds and CNY558bn general bonds.
05-Feb	The State Council announced more tax and fee exemption to support coronavirus containment and the economy, including VAT exemption for some transportation and courier; waiving the registration fee for drugs and medical equipment for coronavirus containment; waiving the payment for civil aviation development fund; also calling for banks to offer preferential loans at fiscally subsidized interest rates below 1.6% for key enterprises.
02-Feb	MoF said the central government will subsidize 50% of interests for PBoC's relending to key enterprises during epidemic control, and also subsidize interests for loans to MSEs and individuals who are heavily affected by the epidemic.
Housing	More than 20 provinces/cities have proposed/announced measures to relax hukou rules (essentially linked to home purchase) and measures to support property market. These include deferring land purchase payment; properly delaying the dates of start and completion of buildings; lowering the ratio of deposit for land bidding; deferring or exempting tax and fees of agencies; offering fund subsidies to long-term rental companies.
	Nanning has allowed to use Housing Provident Fund to buy the second house, with the down payment ratio below 40%. A regional bank in Zhejiang Province has lowered the down payment ratio to 20% from 30% for the first house.
Local governmer	nt policies
Credit	Provide credit support for industries and firms which are heavily affected by the epidemic; forbid withdrawing or delaying loans to relevant firms.
	Returning parts of payment of social insurance of last year to employers who won't cut or cut fewer jobs.
Lowering	Deferring employers' payment of social insurance.
operation costs	Reducing or exempting rental cost for SMEs.
	Reducing or exempting tax such as property tax and urban land use tax for SMEs.
Mitigating losses	Hainan launched the first specially designed insurance product to cover losses incurred by businesses as a result of the Covid-19 outbreak.



# Boosting consumption a priority: Vouchers issued by LGs

Date	Province	City	Consumption voucher program
03-Mar	Shandong	Jinan	The city will issue CNY20mn worth of vouchers to residents for cultural and tourism consumption.
05-Mar	Zhejiang	Hangzhou	Jiande City (under the jurisdiction of Hangzhou) will roll out CNY10mn worth of vourchers to tourists.
06-Mar	Liaoning		The province encourages municipal governments to issue vouchers for cultural and tourism consumption.
12-Mar	Zhejiang		The province will roll out CNY1bn worth of voucher and CNY100mn "red packet" program to boost cultural and tourism consumption.
13-Mar	Jiangsu	Nanjing	The city will issue CNY318mn worth of vouchers to residents in a bid to facilitate seven categories of consumption, including catering, sports, travelling, culture and recreation, etc.
13-Mar	Zhejiang	Ningbo	The city will issue CNY100mn worth of vouchers to boost the consumption. The coupon will offer residents a discount for spending in cinemas, hotels, bookstores, and gyms.
13-Mar	Hebei		The province will hand out CNY15mn worth of sports vouchers.



### Further policy easing we expect

Monetary/credit	RRR	MLF 1y rate	OMO 7d rate	LPR 1y	Benchmark deposite rate	BACA (chg)		
2018	-250bp	+5bp	+5bp	no change	no change	-5.3pp		
2019	-150bp	-5bp	-5bp	-16bp	no change	+0.6pp		
2020 Q1 (as of 23 Mar)	-~120bp	-10bp	-10bp	-10bp	no change	+0.1pp		
2020 (expected for rest of year)	-100~150bp	-35~50bp	-35~50bp	-35 ~ 50bp	-10bp			
Fiscal	Fiscal deficit (as % of GDP) LG bo			(in CNY)	Tax cut	ts (total as % of	GDP; items in CN	IY)
						(i) Individual	(ii) Corporate (i	ii) Corporate

FISCAL	riscal deficit	(as % of GDP)	LG bond	S (IN CNY)	Tax cuts (total as % of GDP; Items in CNY)					
	Budget	Augmented	General	Special	Total (% of GDP)	(i) Individual incometax	(ii) Corporate VAT	(iii) Corporate incometax		
2018	2.6%	11.2%	0.83trn	1.35trn	1.4%	~100bn	~400bn	~170bn		
2019	2.8%	12.6%	0.93trn	2.15trn	2.2%	~400bn	~1000bn	~200bn		
2020 (expected)	>3.0%	17~18%	~1trn	3.3~4trn	less	targeted	targeted	likely		

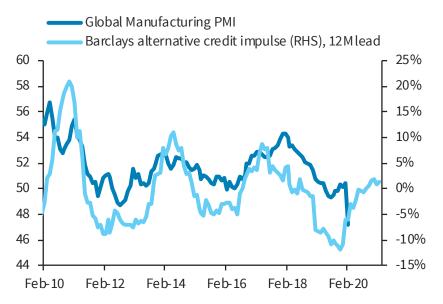
#### Source: Wind, Barclays Research

See PBoC Watching: Constraints, substitutes, triggers to rate cuts, 29 August 2019, China: This easing cycle is different, 5 September 2019, China Investor Trip: Slower growth tests policy patience, 4 October 2019, China PBoC Watching: RRR cut delivered; we expect MLF rate cut in November, 6 September 2019, China Quarterly Outlook: Soft demand, recovering momentum 20 November 2019, China CEWC: 2020 macro policy: domestic focused, more credit support to manufacturing, and likely reduced fiscal impulse, 13 December 2019, See China Coronavirus: Evaluating the potential economic impact 1 February 2020, China: Coronavirus: GDP forecast downgrade 7 February 2020, China: COVID-19: Activity tracking- watch for a turning point 21 February 2020, China: COVID-19 - Activity tracking: Downgrade 2020 GDP to 1.3%, 19 Mar 2020

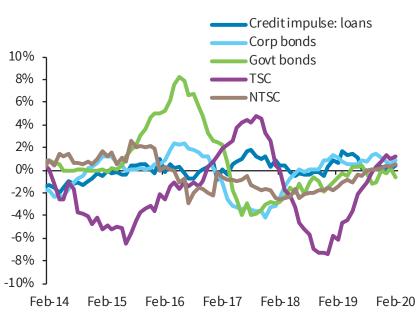


## Credit impulse: Pre-outbreak improving trend to sustain

### **Credit impulse turned positive pre Covid-19**



### Credit impulse breakdown

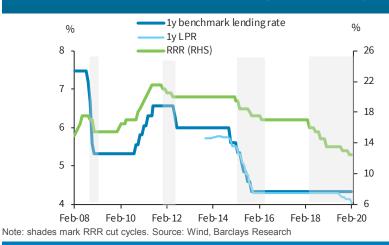


Source: Wind, Barclays Research

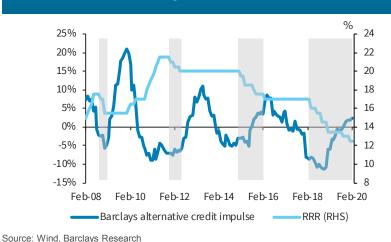


## RRR cuts: Driven by liquidity, growth and sentiment

### RRR and benchmark lending rate cut cycles



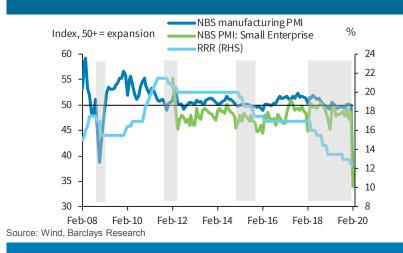
### Credit impulse vs RRR cuts



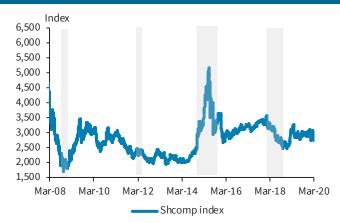
See China: PBoC watching: Gauging policy direction from Governor Yi's comments, 10 March 2019

# BARCLAYS



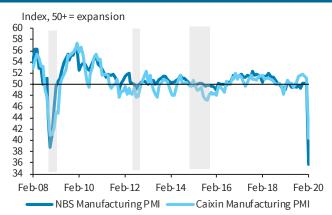


### Equity market vs RRR cuts



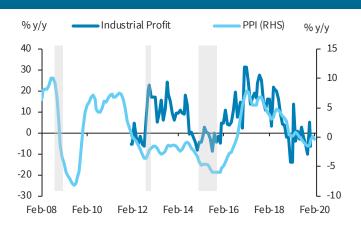
## Typical economic conditions for rate cut cycles

# Past three rate cut cycles suggest lending rate most likely lowered when PMI contracts...

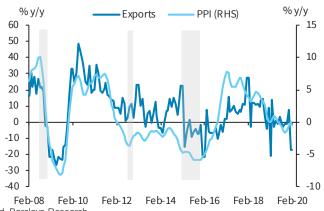


Note: shades mark rate cut cycles. Source: Wind, Barclays Research

### ... industrial profits contract...

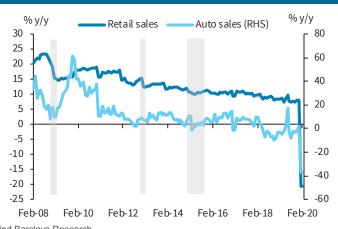


### ... export growth deteriorates, PPI plummets



Source: Wind, Barclays Research

#### ... and retail sales slow



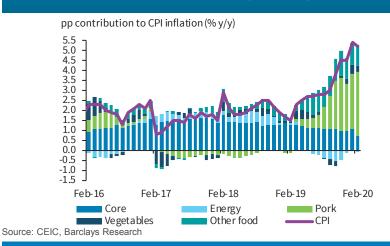
Source: Wind, Barclays Research

See China: PBoC watching: Interest rate cuts in sight, 1 February 2019, PBoC Watching: Constraints, substitutes, triggers to rate cuts. 29 August 2019

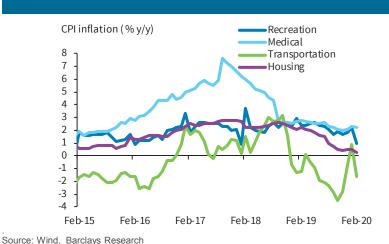


## Monetary easing could be delayed on elevated y/y CPI

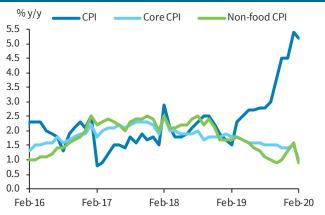
### Pickup in inflation driven by rising food prices



### ... led by recreation, and transportation ...

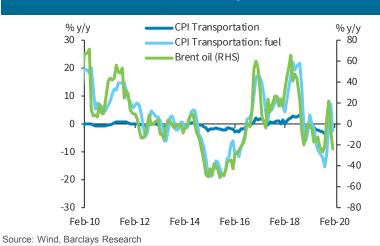


#### Non-food inflation declined...



Source: CEIC, Barclays Research

### ... amid declining oil prices

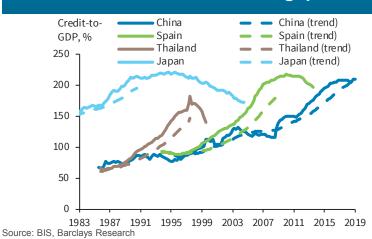


See China: CPI inflation surges on LNY and coronavirus, 1 February 2020, PBoC Watching: Constraints, substitutes, triggers to rate cuts, 29 August 2019

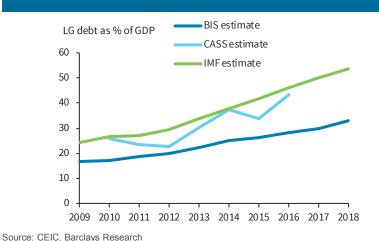


### Medium-term financial risks and debt remains a concern

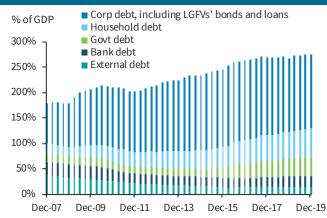
### China's credit/GDP gap



### Unsustainable local-government debt



### Debt/GDP rose 6pp in 19 vs 18



Source: Bloomberg, Wind, Barclays Research

### **Bubble concerns on sustained price increases**



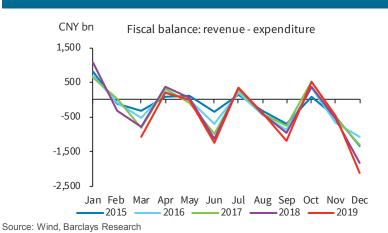
Source: CEIC, Barclays Research

See China: The unfolding effects of deleveraging, 9 August 2018, and PBoC watching: A Q&A on interest rate outlook, 6 August 2019

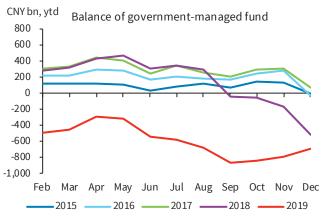


## Fiscal: budget deficit likely to break 3%, more LG bonds

#### Fiscal deficit wider than usual...

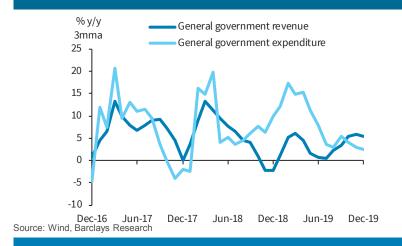


### Larger deficit in government-managed fund

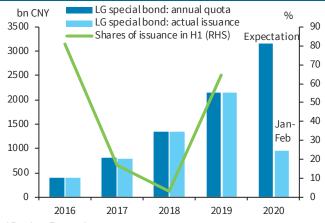


#### Source: Wind, Barclays Research

#### ... due to large-scale tax and fee cuts



### Large LG special bonds issuance in Jan



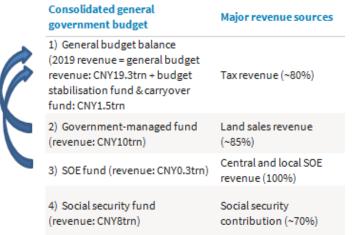


## Fiscal: Overall deficit likely to rise by 5-6pp of GDP

### **Augmented fiscal deficit increases**

#### ■ Budget deficit (IMF) LG special bonds ■ Policy bank bonds % of GDP ■ I GFV bonds PSL ■ Railway bonds ■ Special construction fund ■ PPP 14 12 10 8 6 4 2 2015 2016 2017 2018 2019

### Consolidated general government budget



Source: Wind, Barclays Research See <u>China: Fiscal policy: High expectations, constrained reality,</u> 4 January 2019 Source: Wind, Barclays Research

2) and 3)

contribute to

1) budget

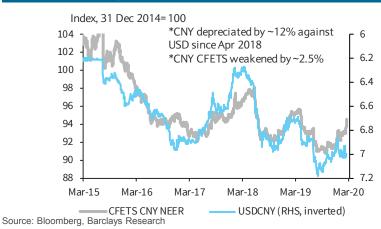
stabilisation

fund

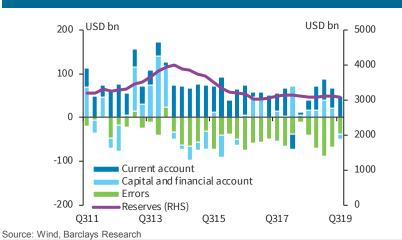


## CNY: Market expectations well anchored

# **CNY** depreciated against USD during periods of tariff escalation



### **Current account registered surplus in Q1-Q3**

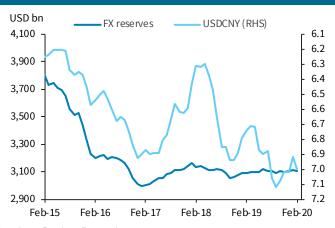


#### Yield differentials have narrowed



Source: Bloomberg, Barclays Research

### FX reserves stay above USD3trn



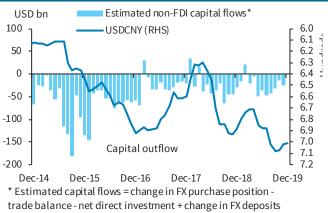
Source: Bloomberg, Barclays Research

See China Outlook: CNY breaks 7.0, Sino-US tension escalates, 9 August 2019, PBoC Watching: Constraints, substitutes, triggers to rate cuts, 29 August 2019



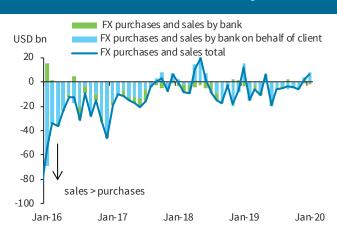
### Capital outflows remain contained

# High-frequency data suggest capital outflows are still contained



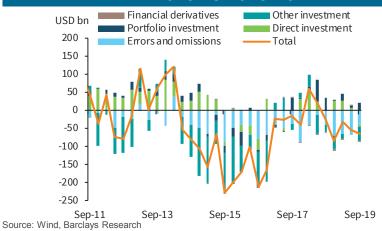
Source: Wind, Barclays Research

### FX settlement and sales by banks

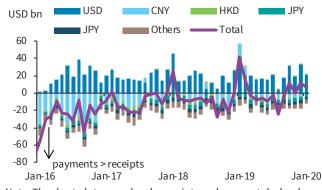


Source: Wind, Barclays Research

# BOP data show milder capita outflows in 2019 vs 2015-16



# Balance of cross-border receipts and payments by banks on behalf of clients

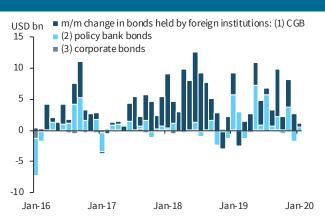


Note: The chart plots cross-border receipts and payments by banks on behalf of clients by currencies



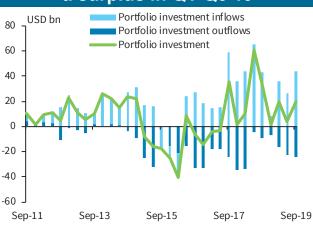
### Persistent bond inflows vs volatile equity flows

#### Bond inflows rebounded in Q4



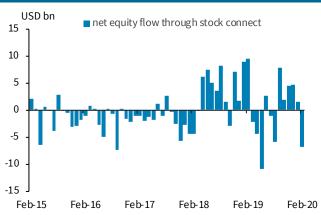
Source: Wind, Barclays Research

### Portfolio flows registered a surplus in Q1-Q3 19



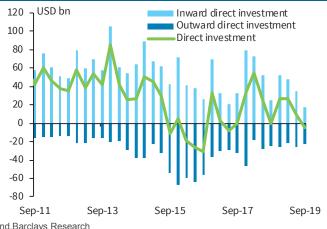
Source: Wind, Barclays Research

### **Equity flows fluctuated in 2019**



Source: Wind, Barclays Research

### FDI flows have slowed since Q2 19





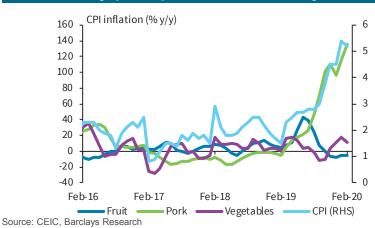
## Inflation: Covid-19 adds uncertainties

See China: CPI inflation surges on LNY and coronavirus, 10 Feb 2020

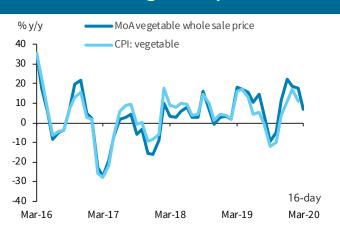


## Watch for coronavirus impact on food prices

# Food inflation was largely driven by pork prices in February...



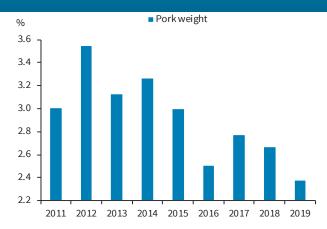
### ... and inflation in vegetable prices is slowing



### ... but pork prices started to ease in March



### Pork's weight in CPI basket was lowered



Source: Wind, Barclays Research

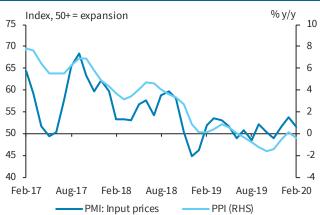


Source: Wind, Barclays Research

See China: CPI inflation surges on LNY and coronavirus, 1 February 2020, PBoC Watching: Constraints, substitutes, triggers to rate cuts, 29 August 2019

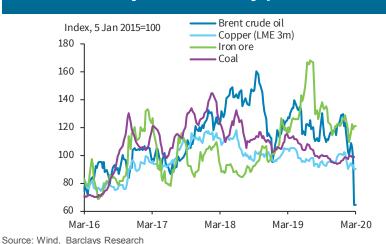
## PPI returned to deflation on declining commodity prices

### **PPI and input prices**

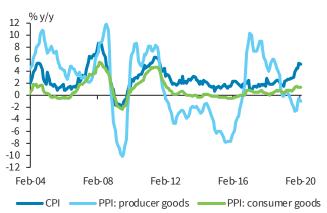


Source: CEIC, Barclays Research

### **Major commodity prices**

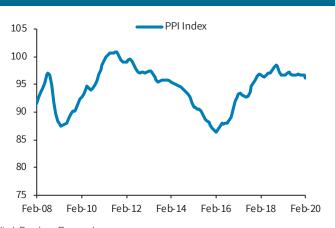


#### PPI breakdown and CPI



Source: CEIC, Barclays Research

#### **PPI** index



Source: Wind, Barclays Research

For details, see China: PPI deflation in sight, 15 February 2019, PBoC Watching: Constraints, substitutes, triggers to rate cuts, 29 August 2019



### 2020 China economic calendar

#### (Beijing time, UTC/GMT+8)

Indicators	Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
NBS manufacturing/non- manufacturing PMI	09:00	31/Fri	29/Sat	31/Tue	30/Thu	31/Sun	30/Tue	31/Fri	31/Mon	30/Wed	31/Sat	30/Mon	31/Thu
Caixin manufacturing PMI	09:45	2/Thu	3/Mon	2/Mon	1/Wed	6/Wed	1/Mon	1/Wed	3/Mon	1/Tue	30-Sep/ Wed	2/Mon	1/Tue
FX reserves		7/Tue	7/Fri	9/Mon	7/Tue	7/Thu	8/Mon	7/Tue	7/Fri	7/Mon	9/Fri	9/Mon	7/Mon
Trade		14/Mon	7/Fri	7/Sat	14/Tue	7/Thu	7/Sun	14/Tue	7/Fri	7/Mon	13/Tue	7/Sat	7/Mon
CPI, PPI	09:30	9/Thu	10/Mon	10/Tue	10/Fri	12/Tue	10/Wed	9/Thu	10/Mon	9/Wed	15/Thu	10/Tue	9/Wed
Money and credit		10~15	10~15	10~15	10~15	10~15	10~15	10~15	10~15	10~15	10~15	10~15	10~15
Activities (IP, FAI, retail sales); GDP*	10:00	*17/Fri	-	16/Mon	*17/Fri	15/Fri	15/Mon	*16/Thu	14/Fri	15/Tue	*19/Mon	16/Mon	15/Tue
70-city housing prices	09:30	16/Thu	17/Mon	16/Mon	16/Thu	18/Mon	15/Mon	16/Thu	14/Fri	14/Mon	20/Tue	16/Mon	14/Mon
Industrial profit	09:30		3/Mon	27/Fri	27/Mon	27/Wed	28/Sun	27/Mon	27/Thu	27/Sun	27/Tue	27/Fri	27/Sun
FOMC meeting		30/Thu 3:00		19/Thu 2:00	30/Thu 2:00		11/Thu 2:00	30/Thu 2:00		17/Thu 2:00		6/Fri 3:00	17/Thu 3:00

All in Beijing time. Source: Bloomberg, Barclays Research.



### **Analyst Certifications and Important Disclosures**

#### Analyst Certification(s)

We, Jian Chang, Eric Zhu and Yingke Zhou, hereby certify (1) that the views expressed in this research report accurately reflect our personal views about any or all of the subject securities or issuers referred to in this research report and (2) no part of our compensation was, is or will be directly or indirectly related to the specific recommendations or views expressed in this research report.

#### Important Disclosures:

Barclays Research is produced by the Investment Bank of Barclays Bank PLC and its affiliates (collectively and each individually, "Barclays").

All authors contributing to this research report are Research Analysts unless otherwise indicated. The publication date at the top of the report reflects the local time where the report was produced and may differ from the release date provided in GMT.

#### Availability of Disclosures:

For current important disclosures regarding any issuers which are the subject of this research report please refer to https://publicresearch.barclays.com or alternatively send a written request to: Barclays Research Compliance, 745 Seventh Avenue, 13th Floor, New York, NY 10019 or call +1-212-526-1072.

Barclays Capital Inc. and/or one of its affiliates does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that Barclays may have a conflict of interest that could affect the objectivity of this report. Barclays Capital Inc. and/or one of its affiliates regularly trades, generally deals as principal and generally provides liquidity (as market maker or otherwise) in the debt securities that are the subject of this research report (and related derivatives thereof). Barclays trading desks may have either a long and / or short position in such securities, other financial instruments and / or derivatives, which may pose a conflict with the interests of investing customers. Where permitted and subject to appropriate information barrier restrictions, Barclays fixed income research analysts regularly interact with its trading desk personnel regarding current market conditions and prices. Barclays fixed income research analysts receive compensation based on various factors including, but not limited to, the quality of their work, the overall performance of the firm (including the profitability of the Investment Banking Department), the profitability and revenues of the Markets business and the potential interest of the firm's investing clients in research with respect to the asset class covered by the analyst. To the extent that any historical pricing information was obtained from Barclays trading desks, the firm makes no representation that it is accurate or complete. All levels, prices and spreads are historical and do not necessarily represent current market levels, prices or spreads, some or all of which may have changed since the publication of this document. Barclays Research Department produces various types of research including, but not limited to, fundamental analysis, equity-linked analysis, quantitative analysis, and trade ideas. Recommendations and trade ideas contained in one type of Barclays Research may differ from those contained in other type

In order to access Barclays Statement regarding Research Dissemination Policies and Procedures, please refer to https://publicresearch.barcap.com/S/RD.htm. In order to access Barclays Research Conflict Management Policy Statement, please refer to: https://publicresearch.barcap.com/S/CM.htm.

All pricing information is indicative only. Unless otherwise indicated, prices are sourced from Refinitiv and reflect the closing price in the relevant trading market, which may not be the last available price at the time of publication.

#### Types of investment recommendations produced by Barclays FICC Research:

In addition to any ratings assigned under Barclays' formal rating systems, this publication may contain investment recommendations in the form of trade ideas, thematic screens, scorecards or portfolio recommendations that have been produced by analysts in FICC Research. Any such investment recommendations produced by non-Credit Research teams shall remain open until they are subsequently amended, rebalanced or closed in a future research report. Any such investment recommendations produced by the Credit Research teams are valid at current market conditions and may not be otherwise relied upon.

#### Disclosure of other investment recommendations produced by Barclays FICC Research:

Barclays FICC Research may have published other investment recommendations in respect of the same securities/instruments recommended in this research report during the preceding 12 months. To view all investment recommendations published by Barclays FICC Research in the preceding 12 months please refer to https://live.barcap.com/go/research/Recommendations.



### Important Disclosures Continued

#### Legal entities involved in producing Barclays Research:

Barclays Bank PLC (Barclays, UK)

Barclays Capital Inc. (BCI, US)

Barclays Bank Ireland PLC, Frankfurt Branch (BBI, Frankfurt)

Barclays Bank Ireland PLC, Paris Branch (BBI, Paris)

Barclays Bank Ireland PLC, Milan Branch (BBI, Milan)

Barclays Securities Japan Limited (BSJL, Japan)

Barclays Bank PLC, Hong Kong branch (Barclays Bank, Hong Kong)

Barclays Capital Canada Inc. (BCCI, Canada)

Barclays Bank Mexico, S.A. (BBMX, Mexico)

Barclays Securities (India) Private Limited (BSIPL, India)

Barclays Bank PLC, India branch (Barclays Bank, India)

Barclays Bank PLC, Singapore branch (Barclays Bank, Singapore)

Barclays Bank PLC, DIFC Branch (Barclays Bank, DIFC)



### Disclaimer

This publication has been produced by Barclays Research Department in the Investment Bank of Barclays Bank PLC and/or one or more of its affiliates (collectively and each individually, "Barclays"). It has been prepared for institutional investors and not for retail investors. It has been distributed by one or more Barclays affiliated legal entities listed below. It is provided to our clients for information purposes only, and Barclays makes no express or implied warranties, and expressly disclaims all warranties of merchantability or fitness for a particular purpose or use with respect to any data included in this publication. To the extent that this publication states on the front page that it is intended for institutional investors and is not subject to all of the independence and disclosure standards applicable to debt research reports prepared for retail investors under U.S. FINRA Rule 2242, it is an "institutional debt research report" and distribution to retail investors is strictly prohibited. Barclays also distributes such institutional debt research reports to various issuers, media, regulatory and academic organisations for their own internal informational news gathering, regulatory or academic purposes and not for the purpose of making investment decisions regarding any debt securities. Media organisations are prohibited from re-publishing any opinion or recommendation concerning a debt issuer or debt security contained in any Barclays institutional debt research reports. Any such recipients that do not want to continue receiving Barclays institutional debt research reports should contact debtresearch@barclays.com. Clients that are subscribed to receive equity research reports, will not receive certain cross asset research reports co-authored by equity and FICC research analysts that are distributed as "institutional debt research reports as they have agreed to accept such reports. Eligible clients may get access to such cross asset reports by contacting debtresearch@barclays.com. Barclays will not t

Without limiting any of the foregoing and to the extent permitted by law, in no event shall Barclays, nor any affiliate, nor any of their respective officers, directors, partners, or employees have any liability for (a) any special, punitive, indirect, or consequential damages; or (b) any lost profits, lost revenue, loss of anticipated savings or loss of opportunity or other financial loss, even if notified of the possibility of such damages, arising from any use of this publication or its contents.

Other than disclosures relating to Barclays, the information contained in this publication has been obtained from sources that Barclays Research believes to be reliable, but Barclays does not represent or warrant that it is accurate or complete. Barclays is not responsible for, and makes no warranties whatsoever as to, the information or opinions contained in any written, electronic, audio or video presentations of third parties that are accessible via a direct hyperlink in this publication or via a hyperlink to a third-party web site ('Third-Party Content'). Any such Third-Party Content has not been adopted or endorsed by Barclays, does not represent the views or opinions of Barclays, and is not incorporated by reference into this publication. Third-Party Content is provided for information purposes only and Barclays has not independently verified its accuracy or completeness.

The views in this publication are solely and exclusively those of the authoring analyst(s) and are subject to change, and Barclays Research has no obligation to update its opinions or the information in this publication. Unless otherwise disclosed herein, the analysts who authored this report have not received any compensation from the subject companies in the past 12 months. If this publication contains recommendations, they are general recommendations that were prepared independently of any other interests, including those of Barclays and/or its affiliates, and/or the subject companies. This publication does not contain personal investment recommendations or investment advice or take into account the individual financial circumstances or investment objectives of the clients who receive it. The securities and other investments discussed herein may not be suitable for all investors. Barclays is not a fiduciary to any recipient of this publication. Investors must independently evaluate the merits and risks of the investments discussed herein, consult any independent advisors they believe necessary, and exercise independent judgment with regard to any investment decision. The value of and income from any investment may fluctuate from day to day as a result of changes in relevant economic markets (including changes in market liquidity). The information herein is not intended to predict actual results, which may differ substantially from those reflected. Past performance is not necessarily indicative of future results. The information provided does not constitute a financial benchmark and should not be used as a submission or contribution of input data for the purposes of determining a financial benchmark.

United Kingdom: This document is being distributed (1) only by or with the approval of an authorised person (Barclays Bank PLC) or (2) to, and is directed at (a) persons in the United Kingdom having professional experience in matters relating to investments and who fall within the definition of "investment professionals" in Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (the "Order"); or (b) high net worth companies, unincorporated associations and partnerships and trustees of high value trusts as described in Article 49(2) of the Order; or (c) other persons to whom it may otherwise lawfully be communicated (all such persons being "Relevant Persons"). Any investment or investment activity to which this communication relates is only available to and will only be engaged in with Relevant Persons. Any other persons who receive this communication should not rely on or act upon it. Barclays Bank PLC is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority and is a member of the London Stock Exchange.

European Economic Area ("EEA"): This material is being distributed in the EEA by Barclays Bank PLC. Barclays Bank PLC is not registered in France with the Autorité des marchés financiers or the Autorité de contrôle prudentiel.

Americas: The Investment Bank of Barclays Bank PLC undertakes U.S. securities business in the name of its wholly owned subsidiary Barclays Capital Inc., a FINRA and SIPC member. Barclays Capital Inc., a U.S. registered broker/dealer, is distributing this material in the United States and, in connection therewith accepts responsibility for its contents. Any U.S. person wishing to effect a transaction in any security discussed herein should do so only by contacting a representative of Barclays Capital Inc. in the U.S. at 745 Seventh Avenue, New York, New York 10019.

Non-U.S. persons should contact and execute transactions through a Barclays Bank PLC branch or affiliate in their home jurisdiction unless local regulations permit otherwise.

This material is distributed in Canada by Barclays Capital Canada Inc., a registered investment dealer, a Dealer Member of IIROC (www.iiroc.ca), and a Member of the Canadian Investor Protection Fund (CIPF).

This material is distributed in Mexico by Barclays Bank Mexico, S.A. This material is distributed in the Cayman Islands and in the Bahamas by Barclays Capital Inc., which it is not licensed or registered to conduct and does not conduct business in, from or within those jurisdictions and has not filed this material with any regulatory body in those jurisdictions.



### Disclaimer (continued)

**Japan:** This material is being distributed to institutional investors in Japan by Barclays Securities Japan Limited. Barclays Securities Japan Limited is a joint-stock company incorporated in Japan with registered office of 6-10-1 Roppongi, Minato-ku, Tokyo 106-6131, Japan. It is a subsidiary of Barclays Bank PLC and a registered financial instruments firm regulated by the Financial Services Agency of Japan. Registered Number: Kanto Zaimukyokucho (kinsho) No. 143.

Asia Pacific (excluding Japan): Barclays Bank PLC, Hong Kong Branch is distributing this material in Hong Kong as an authorised institution regulated by the Hong Kong Monetary Authority. Registered Office: 41/F, Cheung Kong Center, 2 Queen's Road Central, Hong Kong.

All Indian securities-related research and other equity research produced by Barclays' Investment Bank are distributed in India by Barclays Securities (India) Private Limited (BSIPL). BSIPL is a company incorporated under the Companies Act, 1956 having CIN U67120MH2006PTC161063. BSIPL is registered and regulated by the Securities and Exchange Board of India (SEBI) as a Research Analyst: INH000001519; Portfolio Manager INP000002585; Stock Broker/Trading and Clearing Member: National Stock Exchange of India Limited (NSE) Capital Market INB231292732, NSE Currency derivatives INE231450334, Bombay Stock Exchange Limited (BSE) Capital Market INB011292738, BSE Futures & Options INF011292738; Depository Participant (DP) with the National Securities & Depositories Limited (NSDL): DP ID: IN-DP-NSDL-299-2008; Investment Adviser: INA000000391. The registered office of BSIPL is at 208, Ceejay House, Shivsagar Estate, Dr. A. Besant Road, Worli, Mumbai – 400 018, India. Telephone No: +91 2267196000. Fax number: +91 22 67196100. Any other reports produced by Barclays' Investment Bank are distributed in India by Barclays Bank PLC, India Branch, an associate of BSIPL in India that is registered with Reserve Bank of India (RBI) as a Banking Company under the provisions of The Banking Regulation Act, 1949 (Regn No BOM43) and registered with SEBI as Merchant Banker (Regn No INM000002129) and also as Banker to the Issue (Regn No INB100000950). Barclays Investments and Loans (India) Limited, registered with RBI as Non Banking Financial Company (Regn No RBI CoR-07-00258), and Barclays Wealth Trustees (India) Private Limited, registered with Registrar of Companies (CIN U93000MH2008PTC188438), are associates of BSIPL in India that are not authorised to distribute any reports produced by Barclays' Investment Bank.

This material is distributed in Singapore by the Singapore branch of Barclays Bank PLC, a bank licensed in Singapore by the Monetary Authority of Singapore. For matters in connection with this material, recipients in Singapore may contact the Singapore branch of Barclays Bank PLC, whose registered address is 10 Marina Boulevard, #23-01 Marina Bay Financial Centre Tower 2, Singapore 018983.

This material is distributed to persons in Australia by Barclays Bank PLC. None of Barclays Bank PLC, nor any other Barclays group entity, holds an Australian financial services licence and instead relies on an exemption from the requirement to hold such a licence. This material is intended to only be distributed to "wholesale clients" as defined by the Australian Corporations Act 2001. This material is distributed in New Zealand by Barclays Bank PLC, but it has not been registered, filed or approved by any New Zealand regulatory authority or under or in accordance with the Financial Markets Conduct Act of 2013, and this material is not a disclosure document under New Zealand law.

Middle East: Nothing herein should be considered investment advice as defined in the Israeli Regulation of Investment Advisory, Investment Marketing and Portfolio Management Law, 1995 ("Advisory Law"). This document is being made to eligible clients (as defined under the Advisory Law) only. Barclays Israeli branch previously held an investment marketing license with the Israel Securities Authority but it cancelled such license on 30/11/2014 as it solely provides its services to eligible clients pursuant to available exemptions under the Advisory Law, therefore a license with the Israel Securities Authority is not required. Accordingly, Barclays does not maintain an insurance coverage pursuant to the Advisory Law.

This material is distributed in the United Arab Emirates (including the Dubai International Financial Centre) and Qatar by Barclays Bank PLC. Barclays Bank PLC in the Dubai International Financial Centre (Registered No. 0060) is regulated by the Dubai Financial Services Authority (DFSA). Principal place of business in the Dubai International Financial Centre: The Gate Village, Building 4, Level 4, PO Box 506504, Dubai, United Arab Emirates. Barclays Bank PLC-DIFC Branch, may only undertake the financial services activities that fall within the scope of its existing DFSA licence. Related financial products or services are only available to Professional Clients, as defined by the Dubai Financial Services Authority. Barclays Bank PLC in the UAE is regulated by the Central Bank of the UAE and is licensed to conduct business activities as a branch of a commercial bank incorporated outside the UAE in Dubai (Licence No.: 13/1844/2008, Registered Office: Building No. 6, Burj Dubai Business Hub, Sheikh Zayed Road, Dubai City) and Abu Dhabi (Licence No.: 13/952/2008, Registered Office: Al Jazira Towers, Hamdan Street, PO Box 2734, Abu Dhabi). This material does not constitute or form part of any offer to subscribe for or purchase, any securities or investment products in the UAE (including the Dubai International Financial Centre) and accordingly should not be construed as such. Furthermore, this information is being made available on the basis that the recipient acknowledges and understands that the entities and securities to which it may relate have not been approved, licensed by or registered with the UAE Central Bank, the Dubai Financial Services Authority or any other relevant licensing authority or governmental agency in the UAE. The content of this report has not been approved by or filled with the UAE Central Bank or Dubai Financial Services Authority. Barclays Bank PLC in the Qatar Financial Centre (Registered No. 00018) is authorised by the Qatar Financial Centre Regulatory Authority (QFCRA). Barclays Bank PLC-

Russia: This material is not intended for investors who are not Qualified Investors according to the laws of the Russian Federation as it might contain information about or description of the features of financial instruments not admitted for public offering and/or circulation in the Russian Federation and thus not eligible for non-Qualified Investors. If you are not a Qualified Investor according to the laws of the Russian Federation, please dispose of any copy of this material in your possession.

IRS Circular 230 Prepared Materials Disclaimer: Barclays does not provide tax advice and nothing contained herein should be construed to be tax advice. Please be advised that any discussion of U.S. tax matters contained herein (including any attachments) (i) is not intended or written to be used, and cannot be used, by you for the purpose of avoiding U.S. tax-related penalties; and (ii) was written to support the promotion or marketing of the transactions or other matters addressed herein. Accordingly, you should seek advice based on your particular circumstances from an independent tax advisor.

© Copyright Barclays Bank PLC (2020). All rights reserved. No part of this publication may be reproduced or redistributed in any manner without the prior written permission of Barclays. Barclays Bank PLC is registered in England No. 1026167. Registered office 1 Churchill Place, London, E14 5HP. Additional information regarding this publication will be furnished upon request.

AS9163

