

China Musings

10 key debates on, and reasons to buy, China in 2022

We have held extensive client conversations in the past 6 weeks to discuss the <u>outlook for Chinese stocks</u> in 2022. We summarize the key debates, recent market developments, and our refreshed views to kick-off the new year:

- 1. **Is China investable?** We'd say Yes, especially for investors whose investable universe goes beyond the ADR market where forced delisting remains a risk.
- 2. Slowing GDP growth equals bad returns? No. Our economists look for 4.8% GDP growth for 2022, the lowest on record outside of crisis years. But empirically, decelerating GDP growth has low correlation with stock returns.
- 3. Can equities perform well on subdued profit growth? Yes, particularly after a "Major" correction and when the equity cycle morphs from "Despair" to "Hope". Our EPSg estimate (7%) is below consensus (13%) for 2022.
- **4. What could re-rate equities?** Policy (easing), politics (transition), and regulation (moderation). China is likely to be an outlier globally to loosen policy in 2022, thereby helping compress the high risk premia embedded in valuations.
- **5. Is the worst of regulation tightening behind us?** We think Yes, in terms of its intensity, and the risks seem well priced per our indicators. Policy clarity is also improving, notably on issues such as VIE and overseas listing.
- **6. Are valuations really attractive?** Yes. Index valuations (12x) are at recent-year lows and at significant discounts to global equities. Forward returns tend to be strong at current PE levels, inline with the results from our macro PE model.
- 7. Will the property credit turmoil spoil the party? Unlikely. Property activities look set to slow significantly but a contagion scenario could be avoided on GS's base case, inline with the latest pricing in asset markets.
- **8. Will the zero-Covid policy be relaxed?** Not until late 2022, implying a bumpy recovery path for consumer equities, but trading opportunities elsewhere.
- **9. China A or H?** We like both: China A is a big, liquid, growthy but underowned asset class, and we think China H offers compelling tactical upside optionality.
- **10.** Buy laggards (Internet) or winners (policy beneficiaries)? Not a binary decision, but Growth and "Common Prosperity" are the key overlays.

Kinger Lau, CFA

+852-2978-1224 | kinger.lau@gs.com Goldman Sachs (Asia) L.L.C.

Timothy Moe, CFA

+65-6889-1199 | timothy.moe@gs.com Goldman Sachs (Singapore) Pte

Si Fu, Ph.D.

+852-2978-0200 | si.fu@gs.com Goldman Sachs (Asia) L.L.C.

Kevin Wang, CFA

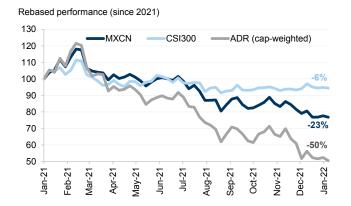
+852-2978-2446 | kevin.wang@gs.com Goldman Sachs (Asia) L.L.C.

1. Is China investable?

Unprecedented regulatory tightening targeting the private economy (see our regulation series <u>here</u>) and lingering risks about <u>forced delisting of Chinese ADRs</u> from US exchanges have resulted in the worst ever correction (-50%) in China Internet/Tech stocks last year, with US1.5tn of market cap lost, a significant reduction in positioning across mutual fund (450bps underweight) and hedge fund investors, existential concerns about the ADR market, and questions about the <u>investability of Chinese assets</u>.

- While we recognize the difficult investment landscape for Chinese ADRs, we'd be hard pressed to label China as "uninvestable" because:
 - ADRs represent only 5% of the US\$18tn aggregate market value of Chinese equities, with close to 80% of the remaining market cap residing in domestic A shares where foreign ownership is merely at 4.5%;
 - regulatory shifts may have structurally changed the investment logic and the
 profitability profile for certain sectors (e.g. After School Tutoring), but there are
 plenty of listed companies that could benefit from structural policy
 tailwinds;
 - **c. the regulation cycle may start to improve** in terms of intensity and clarity (see Section 5);
 - d. the ADR delisting clock has started ticking after the SEC announced the final rule implementation for <u>HFCAA</u> on Dec 2 but the 3-year transition window should allow more than **70 ADRs to relist in HK** where most US institutional investors can continue to trade these companies if they wish; and
 - e. market opening up/reform momentum has remained strong in the domestic A-share market, notably the launch of MSCI China A50 Connect Index futures in HK and the creation of <u>Beijing Stock Exchange</u> late in 2021, arguably making it **more investable/accessible to international investors**, partly reflected by record-high Northbound inflows in 2021 and an overweight allocation in A shares by global mutual funds.
- For 2022, we stay **Overweight Chinese A shares** (upgraded in Feb 2020) and raised China Offshore to Overweight (in Nov 2021) from Marketweight, forecasting 13% and 30% price returns respectively. See Section 9 for details.

Exhibit 1: Significant divergence among Chinese equity markets in 2021, with A shares staying resilient but ADRs halving in market value



Source: FactSet, MSCI, Wind, Goldman Sachs Global Investment Research

Exhibit 3: Regulatory and macro concerns have resulted in significant underweight allocations by investors in Chinese stocks, notably China Offshore



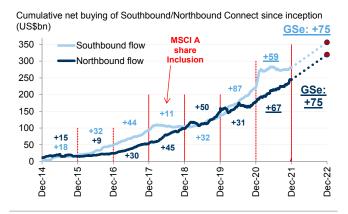
Source: EPFR, MSCI, Goldman Sachs Global Investment Research

Exhibit 2: ADRs represent only 5% of aggregate Chinese equity market cap



Source: FactSet, Wind, Bloomberg, Goldman Sachs Global Investment Research

Exhibit 4: Northbound net buying reached an all-time high in 2021, reflecting continued interest from international investors in A shares



Source: Wind, Goldman Sachs Global Investment Research

2. Slowing GDP growth equals bad returns?

- **GS** economics team calls for 4.8% real GDP growth for 2022, below Bloomberg Consensus of 5.2% and trend growth for China at 5-5.7% per PBOC's estimate. Their forecast implies a noticeable growth deceleration from 7.8% in 2021 (albeit due to Covid disruptions), and would be the lowest yoy growth on record outside of crisis years over the past 4 decades.
- The economic headwinds are multi-faceted but well-telegraphed: a prolonged property market deleveraging, China's zero Covid policy and its drags on consumption (see Section 8), partially normalizing export growth as the world re-opens, elevated upstream inflation that could weigh on corporate profitability, and other structural issues, notably an aging population and high system-wide leverage.
- Despite a challenging macro backdrop, we don't think it there is a valid argument to write off Chinese equities for 2022. In fact, we note a very weak/inconclusive

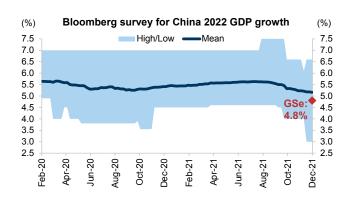
relationship between annual GDP growth (real and nominal) **and equity market returns** on a concurrent basis, suggesting that other macro (e.g. policy, see next section) and micro factors are also influential in framing the risk/reward and driving the performance for Chinese stocks.

Exhibit 5: Our economists expect China to grow 4.8% in 2022, with recovering consumption being the key growth contributor

		2019	2020	2021F	2022F
GDP	% yoy	6.0	2.3	7.8	4.8
Domestic Demand	pp	5.2	1.7	6.8	4.9
Consumption	% yoy	6.2	-0.9	8.3	6.7
Household Consumption	% yoy	6.4	-1.7	11.0	7.0
Gross Capital Formation	% yoy	4.0	5.3	5.3	2.8
Net Exports	pp	0.7	0.7	1.1	-0.1
Exports of Goods (nominal USD)	% yoy	0.5	3.6	28	12
Imports of Goods (nominal USD)	% yoy	-2.7	-0.6	32	14
Inflation					
CPI	% yoy	2.9	2.5	0.9	2.7
Core CPI	% yoy	1.7	0.7	0.9	1.8
PPI	% yoy	-0.5	-1.8	8.2	4.5
Other					
Current Account	% GDP	0.7	1.9	1.7	1.6
USDCNY (eop)	level	6.96	6.53	6.35	6.20
OMO 7-Day Repo Rate	%	2.50	2.20	2.20	2.20
TSF Stock Growth (eop)	%	10.7	13.3	10.5	10.5
Augmented Fiscal Deficit	% GDP	11.8	16.5	11.0	12.0

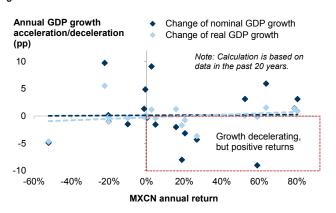
Source: Goldman Sachs Global Investment Research

Exhibit 6: Market expectation on GDP growth has been trending down



 $Source: Bloomberg, \ Goldman \ Sachs \ Global \ Investment \ Research$

Exhibit 7: Very weak concurrent relationships between annual GDP growth and stock returns



Source: Bloomberg, Goldman Sachs Global Investment Research

3. Can equities perform well on subdued profit growth?

- Indeed, we forecast 7% EPS growth for MSCI China in 2022, meaningfully below consensus expectation of 13%.
- Our 2022 EPS forecast can be broken down into 9% top-line revenue growth, which is broadly in-line with nominal GDP growth, and a net margin assumption of 9.5%, the lowest in the past 2 decades. Our cautious earnings outlook for next year is

attributable to: a) our economists' below-consensus GDP growth forecast % for 2022; b) the **growth drags from a slowing property market** which is linked to about 15% of aggregate market earnings, and the potential downward revisions there; and, c) wide PPI-CPI gaps, at least in 1H, which could pressure profit margins in select downstream sectors.

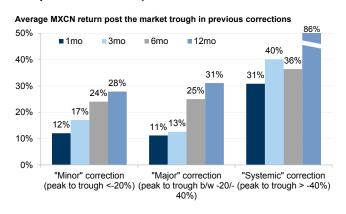
We however see several technical and cyclical offsets to the profit growth deceleration headwind: a) MSCI China has tended to trade well (+30% in 12 months on average) after reaching the troughs in a "Major" correction per our classification; b) MSCI China has never suffered 2 consecutive years of negative annual returns since 2002 if we exclude 2016 when the index returned -1.6% after a 10% correction in 2015; and, c) the Chinese equity cycle is likely transitioning into a "Hope" phase (from "Despair") where PE expansion normally trumps weak fundamental growth and drives strong equity gains.

Exhibit 8: Our EPS growth forecast is below consensus for 2022, reflecting the growth drags from a slowing property market



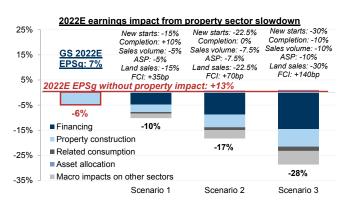
Source: FactSet, I/B/E/S, MSCI, Goldman Sachs Global Investment Research

Exhibit 10: The recent 33% peak-to-through market correction is reminiscent of a Major correction, which tends to precede a strong subsequent market recovery



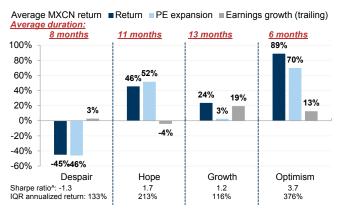
Source: MSCI, FactSet, Goldman Sachs Global Investment Research

Exhibit 9: The severity of the property market slowdown is a principal risk factor to our earnings forecast



Source: FactSet, CEIC, Goldman Sachs Global Investment Research

Exhibit 11: The Chinese equity cycle may morph into the Hope phase as 2022 progresses



^ is calculated as the average return/volatility, ignoring the risk-free rate

Source: MSCI, FactSet, Goldman Sachs Global Investment Research

4. What could re-rate equities?

Given our subdued profit growth outlook, **our constructive equity story is predicated on meaningful PE expansion upside**. In a nutshell, we see 3 potential catalysts for re-rating:

- 1. Policy easing: Since we published our 2022 Outlook on November 11, we note that the market narrative about China policy has changed from "Will China ease and when?" to "How much more will China loosen?" given the somewhat unexpected 50bps RRR cut on Dec 6, the rather symbolic 5bps cut in 1Y LPR on Dec 20, and the pro-growth rhetoric from official policy statements in the past month. For 2022, our economists expect another 50bps cut in RRR in 1Q, policy rates to stay low/potentially drift lower, fiscal policy to be front-loaded and turn more expansionary via higher augmented budget deficits and more (new) infra investments, TSF growth to remain broadly stable vs. 2021, and targeted/specific policy relaxation in local property markets where supply/demand pressures are the strongest.
- 2. Politics: The Chinese Communist Party will host its 20th National Party Congress in November 2022, where changes at the 7-member Politburo Standing Committee, China's top decision-making body, are expected. While datapoints are limited, growth momentum has usually been robust on easy policy leading up to the once-every-five-years political event, and the equity market has tended to perform well on PE expansion, generating roughly 30% 12m returns on average ahead of the transition, with an 80% ex-post probability of positive returns.
- 3. Regulation: As we detail in the next section, we believe the regulation cycle will improve in 2022 in terms of its tightening intensity and clarity to investors, boding well for partial valuation recovery for the Internet sector.

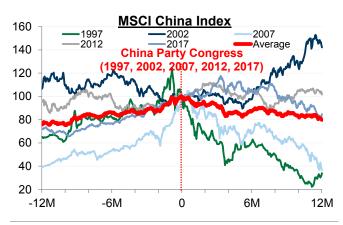
In aggregate, these potential policy changes suggest that **China could very well be the only major economy globally that will ease incrementally in 2022**, reversing its policy divergence vis-a-vis the world since mid-2020 when policy normalization began. This would help curtail the left-tail risk in growth expectations, and compress the high risk premia currently embedded in equity valuations (Section 6).

Exhibit 12: Likely stable monetary and credit, but easier fiscal policy in 2022

Туре	Instrument	2021	GS 2022F			
Monetary	RRR	Large bank avg: 11.5% Small/med bank avg: 8.5%				
	DR007	average 2.25%	average 2.25%			
	7-Day OMO	average 2.20%	2.2%			
	MLF (1-year)	average 2.95%	2.95%			
	LPR (1-year)	average 3.80%	-			
Fiscal	Effective on- budget deficit	4.0% of GDP	5.0% of GDP			
	Augmented fiscal deficit	11.0% of GDP	12.0% of GDP			
Credit	TSF stock	10.5% (eop yoy)	10.5% (eop yoy)			
Housing	Housing policy	significant tightening in H2	moderate easing			
FX	USDCNY	6.35 (eop)	6.20 (12m)			

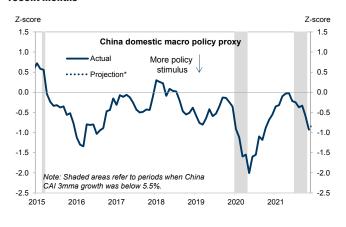
Source: Goldman Sachs Global Investment Research

Exhibit 14: Equities tend to trade well during political transition years



Source: FactSet, MSCI, Goldman Sachs Global Investment Research

Exhibit 13: Policy has begun to turn more growth supportive in recent months



Source: Wind, Haver Analytics, CEIC, Goldman Sachs Global Investment Research

Exhibit 15: While most markets will likely be tightening policy, China could ease at the margin in 2022

Monetary policy outlook for US, EU and APAC markets									
Markets	J 1	20	22	,	2023				
warkets	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
US	+25 bps	+25 bps	+25 bps		+25 bps	+25 bps	+25 bps		
Euro area		Таре	ring						
China									
HK			+25 bps	+25 bps		+25 bps		+25 bps	
India		+25 bps	+25 bps	+25 bps		+25 bps	+25 bps	+25 bps	
Indonesia			+25 bps	+50 bps	+50 bps	+25 bps	+25 bps	+25 bps	
Malaysia		+25 bps	+25 bps	+25 bps	+25 bps	+25 bps			
Philippines				+25 bps	+25 bps	+25 bps	+25 bps	+25 bps	
Singapore*		+100 bps							
Korea		+25 bps		+25 bps		+25 bps		+25 bps	
Taiwan	+12.5 bps	+12.5 bps		+12.5 bps		+12.5 bps		+12.5 bps	
Thailand				+25 bps	+25 bps	+25 bps	+25 bps	+25 bps	
Australia	Таре	ring						+15 bps	

*Note: Values refer to the GS expected increase of the MAS S\$NEER slope.

Source: Goldman Sachs Global Investment Research

5. Is the worst of regulation tightening behind us?

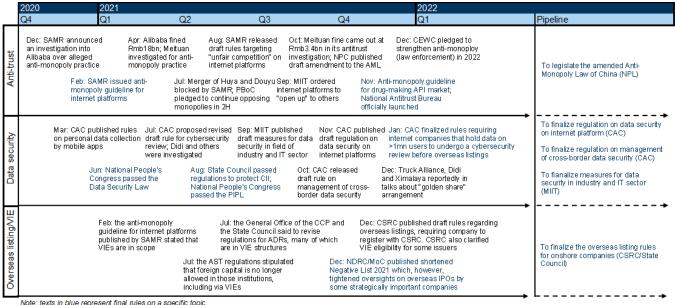
- Industry regulation has been front and center for (Offshore) Chinese stocks in the past year. We have been arguing that the ongoing regulatory tightening cycle has been unprecedented along 4 dimensions—duration, severity, scope, and velocity of new policy announcements—implying that investors are probably facing a new regulatory/governance regime.
- Feedback from our client conversations suggests that while more regulations could be unveiled in 2022 as the regulatory framework takes shape, most believe the worst is likely behind us in terms of the regulation intensity and the corresponding shocks to the market. This view could be explained by their expectation that the regulation cycle may be transitioning from an announcement phase into an implementation stage where improved policy transparency may help

investors better price the regulatory impacts on earnings and equity risk premium, consistent with the falling readings (tightening intensity) from our **POE Regulation Proxy** over the past few months, and official policy **announcements/clarifications**of late on issues such as the <u>VIE structures</u>, <u>overseas listing</u>, and <u>data/national</u>

security compliance.

■ While the regulation cycle seems to be turning more market-friendly, our <u>Regulation Barometer (GSSRCNRG)</u>, which aggregates 18 equity portfolio pairs across 4 main policy cohorts—Antitrust, Financial Markets, Data Security, and Social Sector—to estimate market-implied concerns on announced regulations, currently stands at 87 (in a scale of 0 to 100, roughly at 2 s.d.), implying that **a great deal of regulation uncertainty is already in the price**.

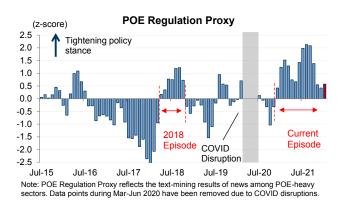
Exhibit 16: We believe the regulation cycle is transitioning from an announcement phase to an implemenation stage



Note: texts in blue represent final rules on a specific topic

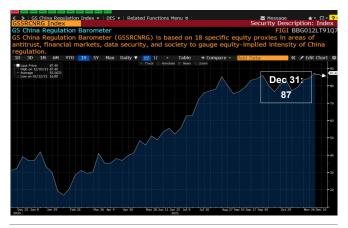
Source: SAMR, CAC, CSRC, NDRC, MoC, State Council, Data compiled by Goldman Sachs Global Investment Research

Exhibit 17: Our POE regulation proxy suggests that regulatory tightening intensity has meaningfully eased in recent months



Source: Factiva, MSCI, FactSet, Goldman Sachs Global Investment Research

Exhibit 18: GSSRCNRG remains elevated at 87, implying that a great deal of regulation risks could already be in the price



Source: Bloomberg, Goldman Sachs Global Investment Research

Exhibit 19: The announced regulations so far in this cycle can be broadly grouped under four main categories, in our view

	Anti-trust	Financial Markets	Data Security	Social Sector		
	SAMR issued guidelines (Nov 18) on strengthening Chinese companies' anti-monopoly management overseas, mainly applying to importers, exporters, and those conducting overseas business operations including overseas investments, mergers, intellectual property transfers	SASAC (Nov 19) published a notice to strictly limit the target and scale of financing guarantees for central SOEs	CAC issued a notice on Nov 14, soliciting public opinions on the draft regulation on the management of online data security. Based on the draft, China will establish a hierarchical data classification of data into "general", "Important" and "core" categories. Prospective IPOs in Hong Kong will need approval if authorities decide there's potential impact to national security.	8 ministries including SAMR jointly issued a notice on Nov 9 reiterating crackdown on the advertisement of off-campus tutoring		
Nov-21	SAMR (Nov 18) issued anti-monopoly guidelines for drug-making API market	CBIRC (Nov 24) said in a notice to keep promoting the campaign of "strengthening internal controls and compliance policies" for financial institutions		MIIT said on Nov 23 its cyberspace administration and police had summoned the cloud units of Alibaba and Baidu urging them to better prevent telecom network fraud		
	National Anti-monopoly Bureau, the former anti-monopoly department under SAMR, was officially launched on Nov 18. The bureau will create a fair, 25), Chinese regulators launched an investigation transparent and predictable competitive landscape for over 150 million Chinese market participants, said Xinhua News Agency			MilT required Tencent to submit new apps and updates for inspection before they can be uploaded after a total of 9 apps were found to have infringed users' rights and interests by the regulator previously		
	SAMR (Nov 20) imposed fines of RMB500k each on 43 past merger & acquisitions cases, including Alibaba, Baidu and JD.com for failing to declare market concentration risks to the authority for review	CBIRC (Nov 30) issued revised regulations requiring insurance groups to have a clear equity structure and a reasonable level of equity ownership in subsidiaries, focusing on their core insurance business		SAMR (Nov 26) published draft Measures for the Administration of Internet Advertisements that are open to public review until Dec 25		
	China policymakers would "strengthen anti- monopoly and be against unfair competition" in 2022, according to the statement issued after the annual Central Economic Work Conference	According to FT (Dec 8), China is reportedly drafting a blacklist that is expected to restrict tech start-ups from using VIE structures to raise international capital and listing overseas	China Financial Standards Technical Committee (CFSTC) issued a draft document on Dec 3 on standards of financial data security and evaluation method	Ministry of Culture and Tourism issued guidelines on strengthening the protection of minors in online culture and content market		
	SAMR announced 13 past merger & acquisition deals failed to report market concentration risks, and imposed a fine of RMB500k for each deal imposed a fine of RMB500k for each deal clients. The potential ban is driven by conce over data security and capital outflow, as Reuters reported		MIIT (Dec 9) ordered 106 apps to be removed from app stores following the campaign launched on Nov 3 targeting data violations such as unnecessary collection of users' personal information	The State Tobacco Monopoly Administration (Dec 2) issued draft rules governing e-cigarettes		
		China's e-commerce livestreaming KOL Viya was fined RMB 1.34bn for tax evasion, according to an announcement published by State Taxation Administration on its website on Dec 20	Reuters reported (Dec 15), citing people with knowledge of the matter, the Chinese government has been expanding the practice of taking minority stakes in private companies - known as "golden share" arrangements. According to Reuters, golden shares have been taken in Truck Alliance	CAC said on Dec 2 that it had summoned and fined social media company Douban RMB1.5mn over "unlawful release of information". According to CAC, Douban has been punished 20 times since Jan		
Dec-21		Local taxation bureau in Beijing, Shanghai, Zhejiang, Jiangsu and Guangdong separately issued announcements (Dec 22), asking celebrities and online streamers to "self-check" tax declarations and report business irregularity to local authorities by end of 2021, otherwise they will face more severe actions from the authorities	According to Southern Finance (Dec 22), a state-backed media, MIIT suspended a cooperative partnership with Alibaba Cloud for 6mo on alleged cybersecurity threats. MIIT earlier said that Alibaba Cloud failed to immediately report a security loophole related to Apache Log4[2, a Java-based tool widely used in enterprise systems	Ministry of Education said on Dec 13 that it was suspending new filing of online tutoring apps and withdrawing existing authorisations, including for apps that encourage bad learning habits by simply providing answers to exercises		
		CSRC (Dec 24) put forward updates on rules regarding overseas listings, requiring companies to register with CSRC before overseas offerings. CSRC clarified that companies with VIE structures are eligible for overseas listing if they meet compliance requirements, but didn't provide further details	algorithm recommendation technology, which will take effect on Mar 1, 2022. The finalized rules were approved by CAC in Nov 2021 after the	CAC (Dec 14) imposed RMB3mn fine on Weibo for repeatedly publishing illegal information, which was said to have violated cybersecurity law and minor-protection law. CAC said its Beijing bureau had imposed 44 penalties on Weibo totalling 14.3mn yuan for the year to Nov		
		NDRC and the Ministry of Commerce (Dec 27) published the 2021 "Negative List" for foreign investments that will take effect on Jan 1, 2022. The updated list was shortened to 31 items compared with 33 items in 2020. Companies that operate in industries where foreign investment is prohibited would need to apply for regulatory approval before overseas listings. Similar to domestic listing companies, foreign ownership in these companies is capped at 30% in aggregate and 10% for a single investor	CAC and 12 other ministries published rules on cybersecurity review which will become effective on Feb 15, 2022. Platform companies with data on more than 1mn users are required to go through a cybersecurity review before they can list abroad. The finalized rules were approved by CAC in Nov 2021	CAC's Beijing bureau said on Dec 20 that CAC had summoned Zhihu for "unlawful release of information" and demanded "immediate rectification" from the company. Some functions would be suspended during the rectification period, as Zhihu announced		
				China Netcasting Services Association published updated rules on Dec 15 regulating online short video content		
				CAC announced a 2-month campaign on Dec 23 targeting deceptive behaviors on online platforms, such as faking fans and reviews, boosting engagement statistics, etc.		

Source: SAMR, CBIRC, CSRC, MoC, NDRC, MIIT, CAC, MoE, State Council, CPCCC, Goldman Sachs Global Investment Research

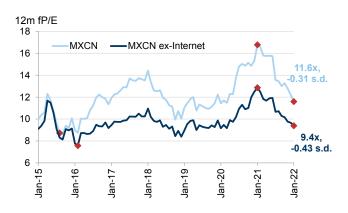
6. Are valuations really attractive?

MSCI China and CSI300 (post rebalancing on Dec 10) currently trade on 12m fP/E multiples of 11.6x and 14.3x, at -1.4 and +0.3 s.d, and in the 5%ile and 67%ile relative to their respective 5-year history. This compares to 18.6x and 17.1x when the markets reached their respective peaks 11 months ago. MSCI China is also being priced at **significant discounts to global equities** (33% to MSCI ACWI), with Offshore China Tech (Internet) trading 27% cheaper than US Tech, the widest gap in recent years.

While low absolute valuations may not be a convincing reason to buy equities, especially in an environment where profit growth is decelerating and regulatory concern is still elevated, we believe the valuation setup looks compelling to us, because:

- Empirically, prospective index returns have tended to be strong at current valuation levels (average 17% in 12 months);
- Our top-down macro PE model, which helps quantify how valuations based on our economists' forecasts on key macro variables, points to 14.5x fair fP/E for MXCN, implying 25% valuation gains from here;
- China Internet is trading on 21.8x fP/E, 0.7x fPEG, and 9.4% IERP, close to the trough levels in their respective 5Y ranges. Our sensitivity analysis suggests that the expectations of structural ROE impairment and/or sustained risk premia uplift are still prominently featured in its fair value distribution, implying that the removal of left-tail regulation risks from its DCF-based valuation should drive +20% re-rating for the sector;
- Equity duration years for China Offshore have shortened amid the de-rating and domestic bond yields have fallen in recent months, both lending valuation support to Chinese stocks at a time when the US is normalizing policy.

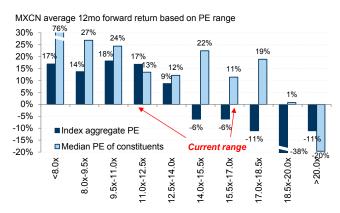
Exhibit 20: Chinese equities are being priced at the low-end of their recent-year valuation ranges



s.d. calculated based on valuations since Jan 2015

Source: FactSet, Goldman Sachs Global Investment Research

Exhibit 21: Empirically, forward returns tend to be strong at prevailing valuation levels



Source: MSCI, FactSet, Goldman Sachs Global Investment Research

Exhibit 22: Some bearish growth assumptions appear well discounted in Internet stocks' valuations

Potential 12M Upside for China Internet under different ERP & Earnings/ROE assumptions in a DCF model

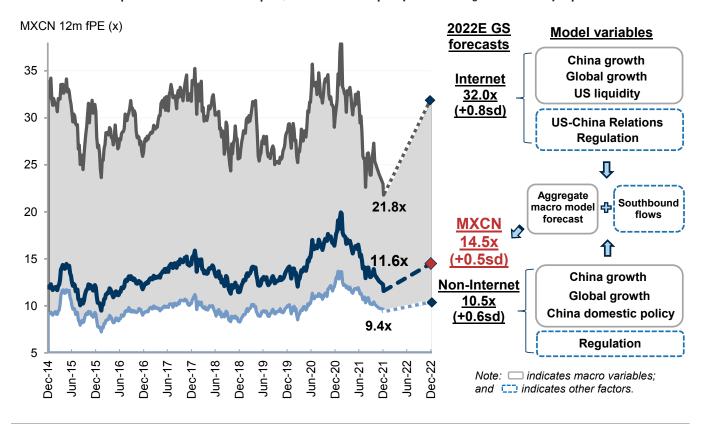
(Base Case: 30% Internet EPS Growth in 2022)

			Internet's ROE assumptions in the medium-term (Year 3-8 Average) under a DCF Model							
(China Internet Equity Risk Premium Scenario)	Equity Risk		quity Risk 18.0%		Consensus / GS Model: 17.0% medium- term ROE	Moderate Scenario: 16%	Bearish Scenario: 15%	Extreme Scenario: 14.0%		
Current Comparable SOE IERP Level	Eφ	9.7%	42%	19%	0%	-17%	-37%			
Current IERP Level (+1.7 s.d. above 5yr mean)	Risk Premium Assumptions	9.4%	55%	30%	9%	-9%	-31%			
Mid-Point b/w Current vs. GS Assumptions		8.7%	93%	62%	36%	13%	-15%			
Past 5-year Avg IERP	Equity (ERP)	7.9%	146%	106%	72%	43%	7%			
2021 Trough (Mid-Feb)		7.6%	170%	126%	89%	57%	17%			

(Current Market Priced / (More bearish scenarios/ assumptions if Implied Assumptions) markets expect negative returns in 12M)

Source: FactSet, Goldman Sachs Global Investment Research

Exhibit 23: We see the potential for valuations to expand/recover in 2022 as policy eases and regulation visibility improves



Source: MSCI, FactSet, Goldman Sachs Global Investment Research

7. Will the property credit turmoil spoil the party?

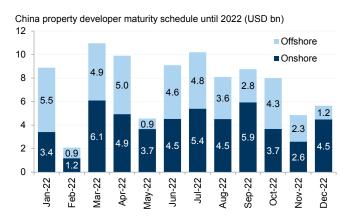
■ The property-centric risks and concerns have been well documented, but the

6 January 2022

significant size of the property market (<u>US\$60tn of notional value</u> including inventory), and its intricate linkages to the economy (~15-20% of GDP, two-thirds of household asset allocation) and the equity market earnings (15% of aggregate profits) make it the **most consequential risk factor and a major client pushback to our constructive market view.**

- GS Equity Research team's base case remains that whilst the liquidity issues at Evergrande (and other highly geared developers) may continue, the negative macro spillovers to the broader economy and financial markets should be largely contained as policymakers have begun shifting to a more supportive stance on the housing market in recent months via monetary, credit/mortgage, and various administrative measures (e.g. encouraging M&A, Hukou incentives).
- The coast is far from clear, given our property team's forecast that nationwide
 housing sales may fall 20% yoy in 2022, the most severe downturn in history, and the heavy principle repayment schedule in the high-yield credit market where more than US\$10bn of developer bonds will come due in 1Q22. For now, both the credit and equity markets seem to be pricing in a "muddle-through" scenario with property HY bonds trading at distressed levels but property IG credits being priced at very tight spreads, SOE developers substantially outperforming their POE peers in recent months, and cross-asset correlations (w.r.t property HY) implying limited macro contagion risks,
- On the brighter side, we believe asset reallocation flows from the US\$60th property market to equities (US\$13th for A shares) could accelerate in 2022 as the property market slowdown deepens and Chinese households' entrenched perception of ever-rising property prices comes into question. We estimate that Chinese households will generate Rmb11th of net investable capital in 2022, of which Rmb3th could be deployed in the equity market.

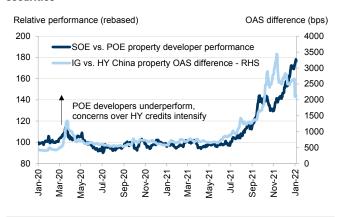
Exhibit 24: A heavy maturity schedule for China property developers over the next 12 months



Onshore: China property RMB bonds. Offshore: China USD HY property developer. Defaulted companies are excluded. USDCNY as of Nov 5 spot.

Source: Bloomberg, Goldman Sachs Global Investment Research

Exhibit 25: The credit and equity markets are pricing in significant differentiation between risky and less risky property-related securities



Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 26: Cross-asset correlations with property HY credits had increased in 2H21, but less significant than previous macro stress points

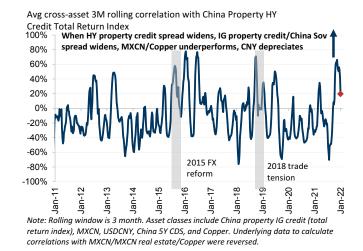
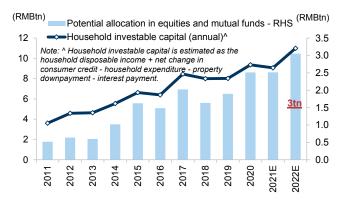


Exhibit 27: Asset reallocation flows from property to equities could be more visible in 2022 as the property market slows



Source: FactSet, MSCI, Bloomberg, Goldman Sachs Global Investment Research

Source: CEIC, Bloomberg, Goldman Sachs Global Investment Research

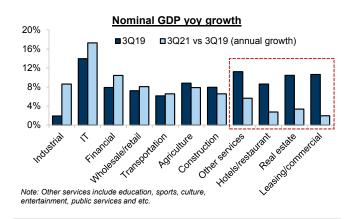
8. Will the zero-Covid policy be relaxed?

- China has seen rising Covid cases starting late December alongside the latest wave of pandemic outbreaks linked to Omicron, with Shaanxi province being the new epicenter and its provincial capital Xi'an (13mn population) enforcing comprehensive lockdown.
- While the reported cases in China are just a fraction of the infections in other major economies, our economists believe China will maintain its zero-(tolerance) Covid policy (ZCP) through at least late 2022 on political (social stability ahead of the 20th National Party Congress which will be held in Oct/Nov 2022) and economic (costs of "live with Covid" may outweigh the benefits of opening up) considerations. Specifically, they estimate the impact of recurring but small local Covid-19 outbreaks to be -0.9pp on China's 2022 GDP growth, which has already been reflected in their current growth forecast, although the growth hit could be exponentially higher in a nationwide lockdown scenario.
- The strict Covid policy also suggests that the demand normalization path for Chinese consumers will stay bumpy, with the service economy, particularly discretionary items such as tourism, catering, and offline entertainment still operating below their respective trend growth rates in the pre-pandemic era.
- Some sectors should benefit from restrained consumption and travel curbs but other than typical Stay-at-home proxies, such as online gaming and E-commerce platforms, which are also exposed to regulatory risk, we screen for industries that performed well during previous domestic Covid outbreaks and are sensitive to our economists' Effective Lockdown index. We note that Pharma, Food & Staples Retailing, Durables, Communication Equipment, and Logistics could present sensible investment opportunities for investors who take a more cautious view

6 January 2022

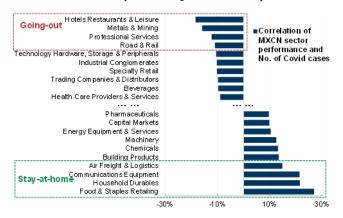
on the Covid development in China.

Exhibit 28: Service-related sectors are yet to recover to their trend growth level



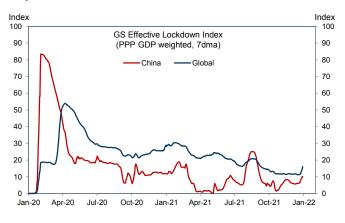
Source: Wind, Goldman Sachs Global Investment Research

Exhibit 30: Tourism and catering usually trade negatively as Covid cases rise whereas Staples and Logistics could outperform



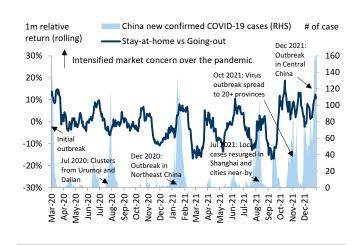
Source: FactSet, NHC, Goldman Sachs Global Investment Research

Exhibit 29: China has imposed more restrictive measures to contain the pandemic since late December



Source: Goldman Sachs Global Investment Research, University of Oxford (covidtracker.bsg.ox.ac.uk), Google LLC "Google COVID-19 Community Mobility Reports"; accessed: Jan 04 2022; Wind

Exhibit 31: Stay-at-home proxies have started to outperform in recent weeks



Source: FactSet, NHC, Goldman Sachs Global Investment Research

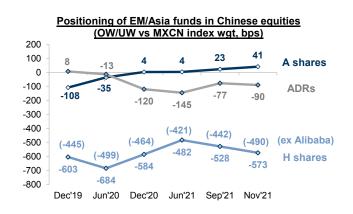
9. China A or Offshore?

- We are Overweight both China A and China Offshore in our regional allocation framework, although they present different value propositions to investors in our view.
- We think China A's investment continues to rest on its significant size and depth, under-representation in global benchmarks and low FINI ownership, continued market opening-up momentum, relatively strong economic and earnings growth potential in a global context, and other market appeals revolving around diversification benefits, abundant alpha opportunities, and potential inefficiency gains. Importantly, the A-share market also appears more insulated from further

regulation tightening risk, more favorably sensitive to potential macro policy easing, and better placed for long-term growth initiatives. In sum, we see **China A as a strategic asset class that is too important to ignore for global equity investors**.

Our optimism towards China Offshore is nevertheless more tactical in nature, given last year's drawdown in the Internet sector which accounts for 40% of MSCI China index weight. The fundamental outlook remains uncertain, but depressed headline valuations and light positioning suggest that the risk/reward is compelling if our expectation of policy easing and a moderating regulation cycle materializes.

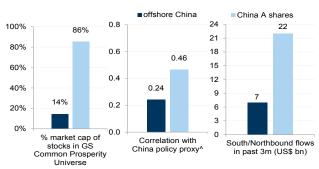
Exhibit 32: Investor positioning is particularly light in the HK market



Alibaba is counted under H shares (9988.HK) while other secondary-listing names are under ADRs.

Source: FactSet, MSCI, Goldman Sachs Global Investment Research

Exhibit 33: Chinese A shares look better positioned from a top-down macro and regulation perspective



A Based on monthly data since 2012. Cffshore China proxied by MXCN while China A shares proxied by CSI300 index. Higher correlation indicates performance more sensitive to policy stimulus. Connect flows as of Dec 31, 2021.

Source: Bloomberg, Wind, FactSet, Goldman Sachs Global Investment Research

10. Buy laggards (Internet) or winners (policy beneficiaries)?

- Statistically, our framework for analyzing the ex-post probability of leadership rotation between last-year winners (top-quartile performing index constituents) and laggards (bottom-quartile) in the ensuing year suggests a 50/50 chance for performance reversal for the two groups in 2022.
- Top-down, we believe the more important alpha-generating factor for 2022 is Growth, especially when GDP growth will likely operate below trend but liquidity conditions should be largely supportive domestically, a combination which tends to bode well for Growth premium expansion.
- Along the Growth axis, sectorally, we like the valuation recovery case for Internet Retailing and Media post their significant de-rating and their potential to return to a strong organic growth trajectory in 2022 and 2023 after the 40% regulation-provoked earnings downgrades last year. We are also Overweight on Autos, Consumer Durables (e.g. Sportswear) and Semis given their favorable policy exposures to the "Common Prosperity" theme. To fund the overweights, we would avoid the property-related cohorts, notably Real Estate (prefer SOE developers over POE players), Materials (especially steel and cement), and Banks where profitability will likely come under pressure as the property market slows and

local rates likely drift lower.

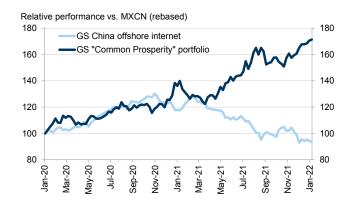
Thematically, we'd continue to focus on our <u>"Common Prosperity" portfolio</u> to gain diversified exposures to long-term policy directions. The portfolio has lost 2% since its inception on Oct 25, outpacing MSCI China by 12pp.

Exhibit 34: Our analysis shows a balanced risk for leadership rotation between last-year winners and laggards

	Since 2010									
	7.7	Return Stocks)		Return (IXCN)						
	Leaders	Laggards	Leaders Laggards							
Average (Annual)	11%	3%	7%	-1%						
Median (Annual)	4%	1%	4%	3%						
Probability of outperformance	50%	50%								

Source: FactSet, MSCI, Goldman Sachs Global Investment Research

Exhibit 36: Buying Structural Policy Growth, and out of-favor Internet Growth in 2022



Source: FactSet, Bloomberg, MSCI, Goldman Sachs Global Investment Research

Exhibit 35: Our enivsaged macro backdrop of slowing growth but easier policy should bode well for Growth premium expansion



Based on current MXCN constituents. Valuation gaps: New China less Old China.

Source: MSCI, FactSet, Goldman Sachs Global Investment Research

Exhibit 37: Recovering growth and policy-driven growth are the key themes that run through our sector recommendations

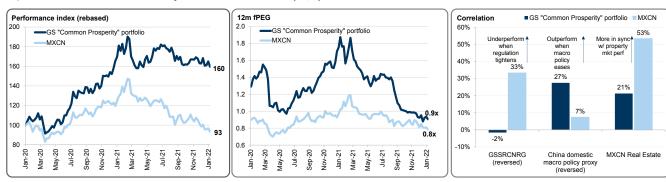
Allocation	MXCN industry groups	21-23E EPS CAGR	22E P/E (X)	22E P/B (X)	22E PEG
	Autos	39%	31.7	3.0	1.0
	Consumer Durables	22%	24.8	5.6	1.4
Overweight	Media	21%	24.2	3.0	1.0
_	Retailing	25%	21.0	2.6	0.7
	Semis	24%	31.6	5.2	1.2
	Capital Goods	12%	9.3	1.1	0.9
	Consumer Svcs	48%	23.8	1.6	0.6
	Div Financials	11%	8.3	0.9	0.8
	Energy	-5%	6.0	0.6	-
	Food Bev	24%	26.8	5.7	1.2
Marketweight	HC Equip & Svcs	20%	20.8	2.2	1.0
	Insurance	15%	5.2	0.7	0.5
	Pharma Biotech	38%	56.6	5.3	1.4
	Tech Hardware	15%	15.7	2.9	1.2
	Transportation	-12%	10.3	1.2	-
	Utilities	12%	12.6	1.4	1.1
	Banks	7%	4.2	0.5	0.6
Underweight	Materials	10%	8.7	1.5	1.4
Onderweight	Real Estate	9%	5.0	0.6	0.6
	Telecom	15%	14.0	0.7	1.1

Source: FactSet, Goldman Sachs Global Investment Research

Exhibit 38: Our "Common Prosperity" portfolio has outperformed the aggregate market, with low sensitivity to regulation risk and limited exposures to the property market

				Top 50	based on avg ra	anking						
<u> </u>	<u>=</u>	砧			671 0.27	0000		Q []	őÖ.Ö			
Ticker	Name	GICS Sub-Industry	Basket weight	R&D intensity	Revenue CAGR (2020-22E)	ROE	Listed Mkt Cap (US\$bn)	6M ADVT (US\$mn)	22E PEG (x)	2021-23E EPS CAGR (%)	GS Ratings	
			Co.	mmon Prosperi	ty Portfolio							
1810 HK	Xiaomi	Hardware Storage & Peripherals	5.0%	4%	29%	16%	48.5	275	1.1	14	В	
601012 CG	LONGi Green Energy	Semiconductors	5.0%	4%	41%	22%	72.1	1,097	1.4	28	B*	
601888 CG	China Tourism Group Duty Free	Specialty Stores	5.0%	0%	45%	22%	65.6	406	0.8	36	B*	
002475 CS	Luxshare Precision	Electronic Comp.	5.0%	7%	32%	23%	56.4	393	1.2	36	В	
2331 HK	Li Ning	Apparel Accessories & Luxury	5.0%	2%	31%	20%	26.5	181	1.7	23	B*	
000651 CS	Gree	Household Appliances	5.0%	3%	14%	25%	34.9	342	0.6	14	В	
300274 CS	Sungrow Power Supply	Electrical Comp. & Equip.	5.0%	5%	29%	14%	30.9	601	1.5	41	B*	
600276 CG	Hengrui Pharma	Pharmaceuticals	5.0%	17%	22%	23%	50.6	384	2.1	17	В	
TCOM UW	Trip.com	Hotels Resorts & Cruise Lines	4.6%	34%	40%	4%	16.4	150	0.3	188	В	
2020 HK	ANTA Sports	Footwear	4.4%	2%	31%	27%	39.1	159	1.2	25	В	
002714 CS	Muyuan Foods	Packaged Foods & Meats	3.7%	1%	46%	29%	47.7	375	0.2	54	В	
603501 CG	Will Semiconductor	Semiconductors	3.3%	8%	32%	16%	42.6	301	1.8	27	B B	
002812 CS	Yunnan Energy New Material	Paper Packaging	3.1%	4%	58%	17%	35.6	323	1.3	55		
603986 CG	Giga Device Semiconductor	Semiconductors	2.6%	11%	47% 56%	17%	18.4	436	2.2	18	B B	
300450 CS 300124 CS	Wuxi Lead	Electronic Manuf. Svcs	2.5%	9%	56% 32%	20% 17%	17.5 28.9	184 268	1.5	45 29	В	
	Inovance Technology	Industrial Machinery			16%	23%		40			В В	
1093 HK 600703 CG	CSPC Pharma	Pharmaceuticals	2.2%	9% 8%	38%	8%	13.3	510	1.3	12 45	В	
968 HK	Sanan Optoelectronics	Semiconductors	2.2%	2%	27%	20%	14.7	70	0.8	18	В В	
	Xinyi Solar	Semiconductor Equip.			30%		25.4		1.0		В	
600745 CG 600196 CG	Wingtech Technology Fosun Pharma	Electronic Manuf. Svcs Pharmaceuticals	1.8%	5% 10%	19%	7% 9%	15.2	256 340	1.0	42 21	N N	
002050 CS	Sanhua Intelligent Controls	Industrial Machinery	1.5%	4%	22%	15%	14.5	88	1.8	27	B*	
300782 CS	Maxscend Microelectronics	Electronic Comp.	1.5%	8%	62%	40%	17.2	237	1.8	32	B	
601877 CG	Chint Electrics	Electrical Comp. & Equip.	1.4%	3%	20%	19%	16.8	280	1.3	19	N N	
600754 CG	Jin Jiang Int'l Hotels	Hotels Resorts & Cruise Lines	1.3%	0%	31%	5%	8.6	41	1.1	172	B	
603659 CG	Putailai New Energy	Specialty Chemicals	1.2%	5%	54%	7%	17.2	186	1.1	43	N N	
002008 CS	Han's Laser Technology	Industrial Machinery	1.1%	10%	18%	13%	8.7	161	1.4	20	В	
354 HK	Chinasoft Int'l	IT Consulting & Other Svcs	1.1%	7%	26%	13%	3.8	34	0.7	25	B*	
300496 CS	Thunder Software Tech	Application Software	1.1%	18%	43%	13%	9.0	110	1.7	42	В	
300568 CS	Senior Technology Material	Commodity Chemicals	1.0%	6%	62%	9%	4.3	159	0.6	83	N	
300003 CS	Lepu Medical Technology	Health Care Equip.	1.0%	8%	18%	20%	6.6	68	0.7	16	В	
1347 HK	Hua Hong Semiconductor	Semiconductors	0.9%	41%	34%	6%	6.8	53	1.3	22	B*	
6186 HK	Feihe	Packaged Foods & Meats	0.9%	1%	26%	39%	12.1	35	0.5	18	В	
002007 CS	Biological Engineering	Biotechnology	0.8%	4%	19%	21%	8.4	77	1.4	19	N	
603486 CG	Ecovacs Robotics	Household Appliances	0.8%	5%	53%	21%	13.3	92	1.1	33	N	
688169 CG	Roborock Technology	Household Appliances	0.7%	5%	37%	19%	8.0	74	0.9	31	В	
603517 CG	Juewei Food	Packaged Foods & Meats	0.7%	0%	23%	20%	6.7	57	1.4	16	В	
603816 CG	Jason Furniture	Home Furnishings	0.6%	2%	24%	18%	7.6	37	1.1	23	N	
601865 CG	Flat Glass	Semiconductors	0.5%	4%	50%	23%	13.9	135	1.2	31	N	
3692 HK	Hansoh Pharma	Pharmaceuticals	0.5%	14%	24%	14%	14.3	11	1.5	17	В	
300144 CS	Songcheng Performance	Leisure Facilities	0.5%	3%	99%	14%	6.2	59	0.7	86	В	
780 HK	Tongcheng-Elong	Hotels Resorts & Cruise Lines	0.5%	21%	36%	2%	4.0	11	0.5	29	N	
603160 CG	Goodix Technology	Semiconductors	0.5%	22%	7%	29%	7.7	53	1.2	40	N	
300558 CS	Betta Pharma	Pharmaceuticals	0.5%	37%	30%	12%	5.2	38	1.7	34	N	
300146 CS	By-health	Personal Products	0.5%	2%	25%	20%	7.4	56	1.1	20	В	
002916 CS	Shennan Circuit	Electronic Comp.	0.5%	5%	17%	19%	9.4	59	1.5	23	N	
688188 CG	Friendess Electronics Tech	Electronic Equip. & Instr.	0.5%	13%	42%	15%	5.9	36	1.5	32	В	
002508 CS	Robam	Household Appliances	0.5%	4%	17%	24%	5.5	57	1.1	15	В	
603338 CG	Dingli Machinery	Industrial Machinery	0.5%	3%	36%	21%	6.2	62	1.5	27	В	
002032 CS	Zhejiang Supor	Household Appliances	0.5%	2%	15%	29%	7.8	25	1.7	13	N	
Average				8%	34%	18%	20	190	1.2	36		
Aggregate							990	9,484	61.3	1,797		

Notes: Prices as of Jan 4, 2022; Valuation items are I/B/E/S consensus. GS Ratings: B=Buy, N=Neutral, and * indicates the Asia Pacific Conviction List. *Data is only available for China A shares. China A shares with foreign ownership reaching 30% limit are excluded. Companies under US investment restrictions are excluded. Basket weights of individual stocks are restricted to be within [0.5%, 5%].



Source: FactSet, IBES, Goldman Sachs Global Investment Research

Disclosure Appendix

Reg AC

We, Kinger Lau, CFA, Timothy Moe, CFA, Si Fu, Ph.D. and Kevin Wang, CFA, hereby certify that all of the views expressed in this report accurately reflect our personal views, which have not been influenced by considerations of the firm's business or client relationships.

Unless otherwise stated, the individuals listed on the cover page of this report are analysts in Goldman Sachs' Global Investment Research division.

Disclosures

Regulatory disclosures

Disclosures required by United States laws and regulations

See company-specific regulatory disclosures above for any of the following disclosures required as to companies referred to in this report: manager or co-manager in a pending transaction; 1% or other ownership; compensation for certain services; types of client relationships; managed/co-managed public offerings in prior periods; directorships; for equity securities, market making and/or specialist role. Goldman Sachs trades or may trade as a principal in debt securities (or in related derivatives) of issuers discussed in this report.

The following are additional required disclosures: **Ownership and material conflicts of interest:** Goldman Sachs policy prohibits its analysts, professionals reporting to analysts and members of their households from owning securities of any company in the analyst's area of coverage. **Analyst compensation:** Analysts are paid in part based on the profitability of Goldman Sachs, which includes investment banking revenues. **Analyst as officer or director:** Goldman Sachs policy generally prohibits its analysts, persons reporting to analysts or members of their households from serving as an officer, director or advisor of any company in the analyst's area of coverage. **Non-U.S. Analysts:** Non-U.S. analysts may not be associated persons of Goldman Sachs & Co. LLC and therefore may not be subject to FINRA Rule 2241 or FINRA Rule 2242 restrictions on communications with subject company, public appearances and trading securities held by the analysts.

Additional disclosures required under the laws and regulations of jurisdictions other than the United States

The following disclosures are those required by the jurisdiction indicated, except to the extent already made above pursuant to United States laws and regulations. Australia: Goldman Sachs Australia Pty Ltd and its affiliates are not authorised deposit-taking institutions (as that term is defined in the Banking Act 1959 (Cth)) in Australia and do not provide banking services, nor carry on a banking business, in Australia. This research, and any access to it, is intended only for "wholesale clients" within the meaning of the Australian Corporations Act, unless otherwise agreed by Goldman Sachs. In producing research reports, members of the Global Investment Research Division of Goldman Sachs Australia may attend site visits and other meetings hosted by the companies and other entities which are the subject of its research reports. In some instances the costs of such site visits or meetings may be met in part or in whole by the issuers concerned if Goldman Sachs Australia considers it is appropriate and reasonable in the specific circumstances relating to the site visit or meeting. To the extent that the contents of this document contains any financial product advice, it is general advice only and has been prepared by Goldman Sachs without taking into account a client's objectives, financial situation or needs. A client should, before acting on any such advice, consider the appropriateness of the advice having regard to the client's own objectives, financial situation and needs. A copy of certain Goldman Sachs Australia and New Zealand disclosure of interests and a copy of Goldman Sachs' Australian Sell-Side Research Independence Policy Statement are available at: https://www.goldmansachs.com/disclosures/australia-new-zealand/index.html. Brazil: Disclosure information in relation to CVM Resolution n. 20 is available at https://www.gs.com/worldwide/brazil/area/gir/index.html. Where applicable, the Brazil-registered analyst primarily responsible for the content of this research report, as defined in Article 20 of CVM Resolution n. 20, is the first author named at the beginning of this report, unless indicated otherwise at the end of the text. Canada: Goldman Sachs Canada Inc. is an affiliate of The Goldman Sachs Group Inc. and therefore is included in the company specific disclosures relating to Goldman Sachs (as defined above). Goldman Sachs Canada Inc. has approved of, and agreed to take responsibility for, this research report in Canada if and to the extent that Goldman Sachs Canada Inc. disseminates this research report to its clients. Hong Kong: Further information on the securities of covered companies referred to in this research may be obtained on request from Goldman Sachs (Asia) L.L.C. India: Further information on the subject company or companies referred to in this research may be obtained from Goldman Sachs (India) Securities Private Limited, Research Analyst - SEBI Registration Number INH000001493, 951-A, Rational House, Appasaheb Marathe Marg, Prabhadevi, Mumbai 400 025, India, Corporate Identity Number U74140MH2006FTC160634, Phone +91 22 6616 9000, Fax +91 22 6616 9001. Goldman Sachs may beneficially own 1% or more of the securities (as such term is defined in clause 2 (h) the Indian Securities Contracts (Regulation) Act, 1956) of the subject company or companies referred to in this research report. Japan: See below. Korea: This research, and any access to it, is intended only for "professional investors" within the meaning of the Financial Services and Capital Markets Act, unless otherwise agreed by Goldman Sachs. Further information on the subject company or companies referred to in this research may be obtained from Goldman Sachs (Asia) L.L.C., Seoul Branch. New Zealand: Goldman Śachs New Zealand Limited and its affiliates are neither "registered banks" nor "deposit takers" (as defined in the Reserve Bank of New Zealand Act 1989) in New Zealand. This research, and any access to it, is intended for "wholesale clients" (as defined in the Financial Advisers Act 2008) unless otherwise agreed by Goldman Sachs. A copy of certain Goldman Sachs Australia and New Zealand disclosure of interests is available at: https://www.goldmansachs.com/disclosures/australia-new-zealand/index.html. Russia: Research reports distributed in the Russian Federation are not advertising as defined in the Russian legislation, but are information and analysis not having product promotion as their main purpose and do not provide appraisal within the meaning of the Russian legislation on appraisal activity. Research reports do not constitute a personalized investment recommendation as defined in Russian laws and regulations, are not addressed to a specific client, and are prepared without analyzing the financial circumstances, investment profiles or risk profiles of clients. Goldman Sachs assumes no responsibility for any investment decisions that may be taken by a client or any other person based on this research report. Singapore: Goldman Sachs (Singapore) Pte. (Company Number: 198602165W), which is regulated by the Monetary Authority of Singapore, accepts legal responsibility for this research, and should be contacted with respect to any matters arising from, or in connection with, this research. Taiwan: This material is for reference only and must not be reprinted without permission. Investors should carefully consider their own investment risk. Investment results are the responsibility of the individual investor. United Kingdom: Persons who would be categorized as retail clients in the United Kingdom, as such term is defined in the rules of the Financial Conduct Authority, should read this research in conjunction with prior Goldman Sachs research on the covered companies referred to herein and should refer to the risk warnings that have been sent to them by Goldman Sachs International. A copy of these risks warnings, and a glossary of certain financial terms used in this report, are available from Goldman Sachs International on request.

European Union and United Kingdom: Disclosure information in relation to Article 6 (2) of the European Commission Delegated Regulation (EU) (2016/958) supplementing Regulation (EU) No 596/2014 of the European Parliament and of the Council (including as that Delegated Regulation is implemented into United Kingdom domestic law and regulation following the United Kingdom's departure from the European Union and the European Economic Area) with regard to regulatory technical standards for the technical arrangements for objective presentation of investment recommendations or other information recommending or suggesting an investment strategy and for disclosure of particular interests or indications of conflicts of interest is available at https://www.gs.com/disclosures/europeanpolicy.html which states the European Policy for Managing Conflicts of Interest in Connection with Investment Research.

Japan: Goldman Sachs Japan Co., Ltd. is a Financial Instrument Dealer registered with the Kanto Financial Bureau under registration number Kinsho

69, and a member of Japan Securities Dealers Association, Financial Futures Association of Japan and Type II Financial Instruments Firms Association. Sales and purchase of equities are subject to commission pre-determined with clients plus consumption tax. See company-specific disclosures as to any applicable disclosures required by Japanese stock exchanges, the Japanese Securities Dealers Association or the Japanese Securities Finance Company.

Global product; distributing entities

The Global Investment Research Division of Goldman Sachs produces and distributes research products for clients of Goldman Sachs on a global basis. Analysts based in Goldman Sachs offices around the world produce research on industries and companies, and research on macroeconomics, currencies, commodities and portfolio strategy. This research is disseminated in Australia by Goldman Sachs Australia Pty Ltd (ABN 21 006 797 897); in Brazil by Goldman Sachs do Brasil Corretora de Títulos e Valores Mobiliários S.A.; Public Communication Channel Goldman Sachs Brazil: 0800 727 5764 and / or contatogoldmanbrasil@gs.com. Available Weekdays (except holidays), from 9am to 6pm. Canal de Comunicação com o Público Goldman Sachs Brasil: 0800 727 5764 e/ou contatogoldmanbrasil@gs.com. Horário de funcionamento: segunda-feira à sexta-feira (exceto feriados), das 9h às 18h; in Canada by either Goldman Sachs Canada Inc. or Goldman Sachs & Co. LLC; in Hong Kong by Goldman Sachs (Asia) L.L.C.; in India by Goldman Sachs (India) Securities Private Ltd.; in Japan by Goldman Sachs Japan Co., Ltd.; in the Republic of Korea by Goldman Sachs (Asia) L.L.C., Seoul Branch; in New Zealand by Goldman Sachs New Zealand Limited; in Russia by OOO Goldman Sachs; in Singapore by Goldman Sachs (Singapore) Pte. (Company Number: 198602165W); and in the United States of America by Goldman Sachs & Co. LLC. Goldman Sachs International has approved this research in connection with its distribution in the United Kingdom.

Effective from the date of the United Kingdom's departure from the European Union and the European Economic Area ("Brexit Day") the following information with respect to distributing entities will apply:

Goldman Sachs International ("GSI"), authorised by the Prudential Regulation Authority ("PRA") and regulated by the Financial Conduct Authority ("FCA") and the PRA, has approved this research in connection with its distribution in the United Kingdom.

European Economic Area: GSI, authorised by the PRA and regulated by the FCA and the PRA, disseminates research in the following jurisdictions within the European Economic Area: the Grand Duchy of Luxembourg, Italy, the Kingdom of Belgium, the Kingdom of Denmark, the Kingdom of Norway, the Republic of Finland, Portugal, the Republic of Cyprus and the Republic of Ireland; GS -Succursale de Paris (Paris branch) which, from Brexit Day, will be authorised by the French Autorité de contrôle prudentiel et de resolution ("ACPR") and regulated by the Autorité de contrôle prudentiel et de resolution and the Autorité des marches financiers ("AMF") disseminates research in France; GSI - Sucursal en España (Madrid branch) authorized in Spain by the Comisión Nacional del Mercado de Valores disseminates research in the Kingdom of Spain; GSI - Sweden Bankfilial (Stockholm branch) is authorized by the SFSA as a "third country branch" in accordance with Chapter 4, Section 4 of the Swedish Securities and Market Act (Sw. lag (2007:528) om värdepappersmarknaden) disseminates research in the Kingdom of Sweden; Goldman Sachs Bank Europe SE ("GSBE") is a credit institution incorporated in Germany and, within the Single Supervisory Mechanism, subject to direct prudential supervision by the European Central Bank and in other respects supervised by German Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht, BaFin) and Deutsche Bundesbank and disseminates research in the Federal Republic of Germany and those jurisdictions within the European Economic Area where GSI is not authorised to disseminate research and additionally, GSBE, Copenhagen Branch filial af GSBE, Tyskland, supervised by the Danish Financial Authority disseminates research in the Kingdom of Denmark; GSBE - Sucursal en España (Madrid branch) subject (to a limited extent) to local supervision by the Bank of Spain disseminates research in the Kingdom of Spain; GSBE - Succursale Italia (Milan branch) to the relevant applicable extent, subject to local supervision by the Bank of Italy (Banca d'Italia) and the Italian Companies and Exchange Commission (Commissione Nazionale per le Sociétà e la Borsa "Consob") disseminates research in Italy; GSBE - Succursale de Paris (Paris branch), supervised by the AMF and by the ACPR disseminates research in France; and GSBE - Sweden Bankfilial (Stockholm branch), to a limited extent, subject to local supervision by the Swedish Financial Supervisory Authority (Finansinpektionen) disseminates research in the Kingdom of Sweden.

General disclosures

This research is for our clients only. Other than disclosures relating to Goldman Sachs, this research is based on current public information that we consider reliable, but we do not represent it is accurate or complete, and it should not be relied on as such. The information, opinions, estimates and forecasts contained herein are as of the date hereof and are subject to change without prior notification. We seek to update our research as appropriate, but various regulations may prevent us from doing so. Other than certain industry reports published on a periodic basis, the large majority of reports are published at irregular intervals as appropriate in the analyst's judgment.

Goldman Sachs conducts a global full-service, integrated investment banking, investment management, and brokerage business. We have investment banking and other business relationships with a substantial percentage of the companies covered by our Global Investment Research Division. Goldman Sachs & Co. LLC, the United States broker dealer, is a member of SIPC (https://www.sipc.org).

Our salespeople, traders, and other professionals may provide oral or written market commentary or trading strategies to our clients and principal trading desks that reflect opinions that are contrary to the opinions expressed in this research. Our asset management area, principal trading desks and investing businesses may make investment decisions that are inconsistent with the recommendations or views expressed in this research.

We and our affiliates, officers, directors, and employees, will from time to time have long or short positions in, act as principal in, and buy or sell, the securities or derivatives, if any, referred to in this research, unless otherwise prohibited by regulation or Goldman Sachs policy.

The views attributed to third party presenters at Goldman Sachs arranged conferences, including individuals from other parts of Goldman Sachs, do not necessarily reflect those of Global Investment Research and are not an official view of Goldman Sachs.

Any third party referenced herein, including any salespeople, traders and other professionals or members of their household, may have positions in the products mentioned that are inconsistent with the views expressed by analysts named in this report.

This research is focused on investment themes across markets, industries and sectors. It does not attempt to distinguish between the prospects or performance of, or provide analysis of, individual companies within any industry or sector we describe.

Any trading recommendation in this research relating to an equity or credit security or securities within an industry or sector is reflective of the investment theme being discussed and is not a recommendation of any such security in isolation.

This research is not an offer to sell or the solicitation of an offer to buy any security in any jurisdiction where such an offer or solicitation would be illegal. It does not constitute a personal recommendation or take into account the particular investment objectives, financial situations, or needs of individual clients. Clients should consider whether any advice or recommendation in this research is suitable for their particular circumstances and, if appropriate, seek professional advice, including tax advice. The price and value of investments referred to in this research and the income from them may fluctuate. Past performance is not a guide to future performance, future returns are not guaranteed, and a loss of original capital may occur. Fluctuations in exchange rates could have adverse effects on the value or price of, or income derived from, certain investments.

Certain transactions, including those involving futures, options, and other derivatives, give rise to substantial risk and are not suitable for all investors. Investors should review current options and futures disclosure documents which are available from Goldman Sachs sales representatives or at https://www.theocc.com/about/publications/character-risks.jsp and

https://www.fiadocumentation.org/fia/regulatory-disclosures_1/fia-uniform-futures-and-options-on-futures-risk-disclosures-booklet-pdf-version-2018.

Transaction costs may be significant in option strategies calling for multiple purchase and sales of options such as spreads. Supporting documentation will be supplied upon request.

Differing Levels of Service provided by Global Investment Research: The level and types of services provided to you by the Global Investment Research division of GS may vary as compared to that provided to internal and other external clients of GS, depending on various factors including your individual preferences as to the frequency and manner of receiving communication, your risk profile and investment focus and perspective (e.g., marketwide, sector specific, long term, short term), the size and scope of your overall client relationship with GS, and legal and regulatory constraints. As an example, certain clients may request to receive notifications when research on specific securities is published, and certain clients may request that specific data underlying analysts' fundamental analysis available on our internal client websites be delivered to them electronically through data feeds or otherwise. No change to an analyst's fundamental research views (e.g., ratings, price targets, or material changes to earnings estimates for equity securities), will be communicated to any client prior to inclusion of such information in a research report broadly disseminated through electronic publication to our internal client websites or through other means, as necessary, to all clients who are entitled to receive such reports.

All research reports are disseminated and available to all clients simultaneously through electronic publication to our internal client websites. Not all research content is redistributed to our clients or available to third-party aggregators, nor is Goldman Sachs responsible for the redistribution of our research by third party aggregators. For research, models or other data related to one or more securities, markets or asset classes (including related services) that may be available to you, please contact your GS representative or go to https://research.gs.com.

Disclosure information is also available at https://www.gs.com/research/hedge.html or from Research Compliance, 200 West Street, New York, NY 10282.

© 2022 Goldman Sachs.

No part of this material may be (i) copied, photocopied or duplicated in any form by any means or (ii) redistributed without the prior written consent of The Goldman Sachs Group, Inc.