China Financial Services

Testing the 'Impossible Trinity' Part II: Assessing further losses on bank credit portfolios

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In this second *Testing the 'Impossible Trinity'* report, we continue our analysis of the trade-offs between provisions, capital and dividends in the current environment. We assess the normalized provisioning level of banks, with the potential inclusion of further losses on banks' credit portfolios, in order to evaluate whether provision release remains an option to drive profits.

With these, we address top of mind questions, namely 1) where we are in the property credit cycle, 2) hidden losses in non-loan assets, and 3) the adjusted ROE and NPL coverage ratio of banks. In summary:

- The property credit cycle continues with an increasing NPL formation rate. Large banks may face relatively less pressure given already high reported property NPL ratios, averaging 4.5%, vs. 1.8% for smaller banks which may continue to recognize more NPL.
- Risky non-loan assets including corporate bonds and shadow credit can be captured in debt investments, which allows us to calculate the implied loss ratio for covered banks averaging at 6% vs. 25% for **CMB** (Neutral). This suggests **CMB** has less room going forward to lower provisions on non-loan assets.
- Additional losses and provisions required by banks could amount to Rmb 337/429bn (USD 48/61bn). Adj. bank ROE would be 9.6% vs. 12.0% before adjustment. **BoCom** (Sell) and **Huaxia** (Sell) would see large ROE decreases of 450/438bps vs. 247bps on average.

For our investment views on each bank, please see the third report in this series, *Testing the 'Impossible Trinity' III: Increasing dividend risk;* ***PSBC*** *up to Buy,* ***ICBC/ABC/Industrial*** *down to Sell*.

The author would like to thank Zihan Wang and Claire Ouyang for their contributions to this report.

I. Three questions answered: property credit cycle, non-loan asset losses and provisions, and adj. ROE with all loss

Banks have started to release provisions, which has supported profits at a time of soft revenue growth, against the backdrop of prolonged property credit cycle and overarching regulation to clean bank balance sheets. Although banks have built up a risk buffer since Covid, the sustainability of provision release to drive profit growth is top of investors' minds. We build a new bottom-up framework to assess potential additional NPL and provisions arising from banks' credit portfolios including property credits, loan book and debt investment. We conclude 1) Rmb ~337 bn (USD 48bn) more asset losses could be recognized, and Rmb ~429bn (USD 61bn) provisions required, resulting in an NPL coverage ratio decrease of -6ppts, book value dilution of -2%, CET1 ratio and ROE decrease by 20/239bps to 9.6%/11.5% in 2023E. We address three key investor questions below.

1. Where are we in property credit cycle?

To recap, we expect banks' loss taking order to be firstly property bonds and shadow credits given their mark-to-market pricing, and then bank loans (see Property Risk Monitor I, II, III and IV). As banks have reported increasing property NPL ratios and reduced total exposure (excluding mortgage) in five consecutive quarters, we expect most losses of property bonds and shadow credits to have been taken by market participants, and from here further losses should be recognized in bank balance sheets.

The framework suggests that divergence is set to widen between large banks and other banks, as the large banks have reported much higher NPL ratios for property loans, with an average of 4.5% vs. 1.8% for other covered banks. We would expect smaller banks to report more property NPLs going forward, while large banks such as **BOC** and **PSBC** could face less pressure on account of 1) the already high NPL ratio reported by **BOC**, which is close to our stressed estimates of ~8.0% loss ratio of banks; 2) the low property exposure of **PSBC**, which stands at 2% of total assets vs. 4% on average for covered banks. We expect Rmb 90/140bn (USD 13/20bn) losses and provisions to be recognized from property loans, with negative impacts on book value/ROE of -2%/-2ppts in aggregate for covered banks.

2. Can banks reduce provisions set aside on non-loan assets?

In the past few quarters, banks like **CMB** reduced the provisions set against non-loan assets to lower new provisions on bank credit portfolios, while more provisions were built up against the loan book. On net, this results in lowering provisions to drive profit growth, while the NPL coverage ratio based only on the loan book increased. Our analysis suggests that non-loan assets provision release could be increasingly difficult, as the implied loss ratio of credit portfolio in debt investment book could be 25% for **CMB** vs. 6% on average for covered banks.

3. What would happen if banks were to restate NPL in 2023E?

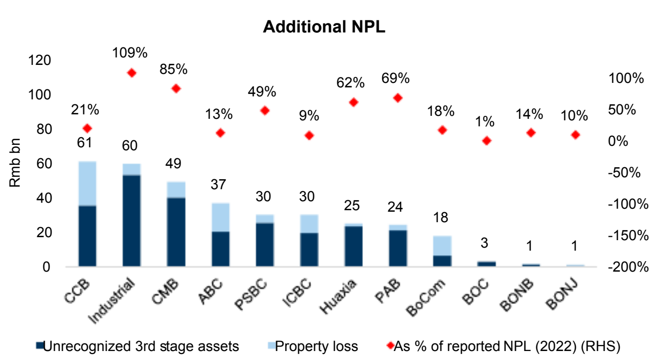
Our analysis suggests that covered banks would be able to maintain CET1 ratio above the minimum requirement, book value dilution would not be significant, with 2% markdown on average for covered banks, but net profits would decrease by 21% in aggregate, with NPL coverage ratio down by 6ppts in aggregate and 23ppts on average. Notably, **CMB** could have the largest NPL coverage ratio decrease with 138ppts. To arrive at this conclusion, we assume banks fully recognize the loss in 2023E by booking provisions, although banks may recognize losses over multiple years, which would smooth earnings growth.

Exhibit 1: Summary of additional NPL and provision required for property risk and non-loan assets
Rmb bn

	Large						Joint-stock				Regional			
Rmb bn	ICBC	CCB	BOC	ABC	BoCom	PSBC	CMB	PAB	Industrial	Huaxia	BONJ	BONB	Aggregate	Average
NPL coverage ratio	**202%**	**228%**	**189%**	**296%**	**176%**	**371%**	**437%**	**262%**	**215%**	**147%**	**368%**	**476%**	**239%**	**281%**
NPL	368	337	246	301	113	66	63	41	56	47	11	9	1,658	138
LLR	745	768	465	892	198	244	275	108	120	69	41	43	3,967	331
Additional NPL	**30**	**61**	**3**	**37**	**18**	**30**	**49**	**24**	**60**	**25**	**1**	**1**	**337**	**28**
- unrecognized 3rd stage assets	19	35	3	20	6	25	40	21	53	23	0	1	247	21
- property loss	11	25	0	17	12	5	9	3	6	2	1	0	90	8
Existing debt provision	33	41	10	20	3	28	43	16	45	17	3	2	262	22
Additional provision	**49**	**112**	**35**	**101**	**43**	**8**	**17**	**22**	**25**	**16**	**3**	**0**	**429**	**36**
- unrecognized 3rd stage assets	33	74	35	76	26	0	3	14	15	13	0	0	289	24
- property loss	16	38	0	25	17	8	14	8	10	3	2	0	140	12
Adj. NPL coverage ratio	**208%**	**231%**	**205%**	**300%**	**188%**	**292%**	**299%**	**223%**	**165%**	**142%**	**390%**	**451%**	**234%**	**258%**
vs. before adj. (ppts)	5	4	16	4	12	-78	-138	-38	-50	-5	22	-25	-6	-23
Driven by NPL increase (ppts)	**-15**	**-35**	**-2**	**-32**	**-24**	**-116**	**-191**	**-96**	**-111**	**-51**	**-27**	**-50**	**-40**	**-63**
- unrecognized 3rd stage assets	-10	-22	-2	-18	-9	-103	-170	-87	-105	-49	-7	-50	-31	-53
- property loss	-5	-13	0	-14	-15	-13	-22	-9	-6	-2	-20	0	-9	-10
Driven by provision increase (ppts)	**20**	**38**	**18**	**36**	**35**	**37**	**54**	**58**	**61**	**46**	**49**	**25**	**35**	**40**
- unrecognized 3rd stage assets	16	29	18	29	22	29	41	47	53	42	31	25	28	32
- property loss	4	10	0	7	13	8	12	11	8	4	18	0	7	8
Adj. net NPL formation rate	**0.8%**	**1.0%**	**0.7%**	**0.9%**	**1.2%**	**0.7%**	**2.7%**	**4.3%**	**2.0%**	**6.6%**	**12.0%**	**0.6%**	**1.3%**	**2.8%**
Before adj.	0.7%	0.7%	0.7%	0.7%	0.9%	0.4%	2.0%	3.6%	0.9%	5.6%	11.9%	0.5%	1.0%	2.4%
Diff. (bps)	11	26	1	16	22	37	73	65	108	104	8	9	26	40
Impact (2023E):														
△NPAT (Rmb bn)	-42	-92	-29	-85	-41	-7	-14	-17	-22	-12	-2.2	-0.3	-363	-30
As % of NPAT	-11%	-28%	-12%	-32%	-42%	-8%	-9%	-34%	-23%	-47%	-11%	-1%	-21%	-22%
Adj. NPAT	328	241	209	183	56	86	137	34	71	14	18	26	1,402	117
Adj. book value	3,373	2,882	2,216	2,343	886	745	910	395	712	272	137	175	15,045	1,254
vs. before adj.	**-1%**	**-2%**	**-1%**	**-2%**	**-3%**	**-1%**	**-1%**	**-4%**	**-2%**	**-3%**	**-1%**	**0%**	**-2%**	**-2%**
Adj. ROE	**10.1%**	**8.6%**	**9.8%**	**8.0%**	**6.4%**	**12.0%**	**15.8%**	**9.0%**	**10.4%**	**5.2%**	**13.4%**	**15.8%**	**9.6%**	**10.4%**
Before adj.	11.3%	11.7%	11.1%	11.6%	10.9%	13.0%	17.3%	13.3%	13.4%	9.6%	15.0%	16.0%	12.0%	12.8%
diff. (bps)	-123	-314	-130	-357	-450	-97	-152	-429	-300	-438	-159	-20	-239	-247
Adj. CET-1 ratio	**13.5%**	**13.1%**	**11.5%**	**10.4%**	**9.7%**	**9.2%**	**13.3%**	**8.2%**	**9.6%**	**9.0%**	**9.5%**	**9.4%**	**11.5%**	**10.5%**
Before adj.	13.6%	13.4%	11.6%	10.7%	10.0%	9.2%	13.5%	8.5%	9.9%	9.3%	9.7%	9.4%	11.7%	10.7%
diff. (bps)	-12	-29	-11	-27	-31	-6	-14	-33	-21	-30	-11	-2	-20	-19

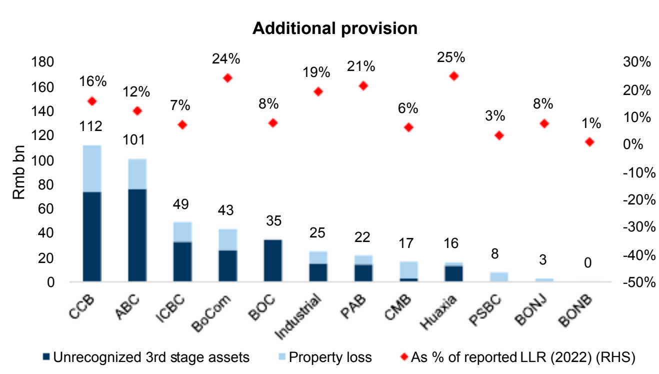
Source: Company data, Goldman Sachs Global Investment Research

Exhibit 2: Additional losses could amount to Rmb 337bn or USD 48bn (2023E)



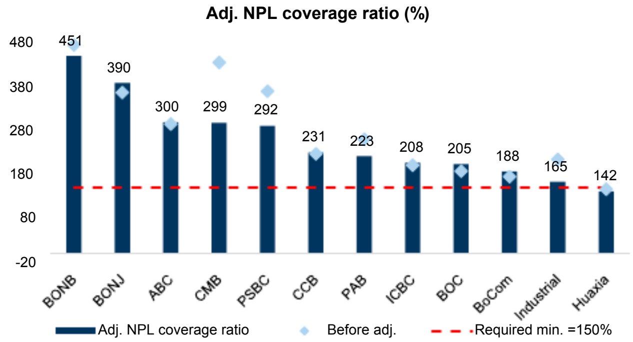
Source: Goldman Sachs Global Investment Research

Exhibit 3: Additional provisions required by banks could amount to Rmb 429bn or USD 61bn (2023E)



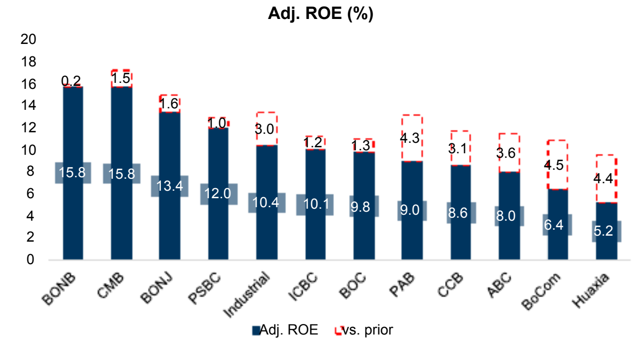
Source: Goldman Sachs Global Investment Research

Exhibit 4: Adj. NPL coverage ratio would be 234% vs. 239% before adjustment (2023E)



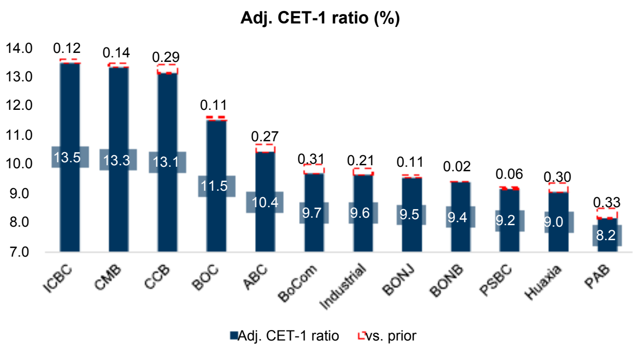
Source: Goldman Sachs Global Investment Research

Exhibit 5: The adj. bank ROE would be 9.6% vs. 12.0% before adjustment (2023E)



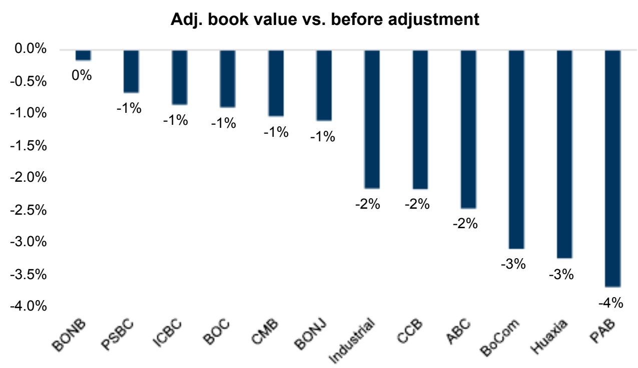
Source: Goldman Sachs Global Investment Research

Exhibit 6: Adj. Bank CET1 ratio would be 11.5% vs. 11.7% before adjustment (2023E)



Source: Goldman Sachs Global Investment Research

Exhibit 7: Adj. book value would be ~2% lower vs. before adjustment (2023E)



Source: Goldman Sachs Global Investment Research

II. Quantifying additional property losses and provisions

Banks have reported increasing property NPL ratio since 3Q21, and guide that sufficient provisions are in place against losses. Based on our Property Risk Monitor framework (see I, II, III and IV), we believe more losses should be recognized in bank loans as property bonds and shadow credits are mark-to-market and have taken losses. We believe the property NPL formation rate has not peaked out given deteriorating property sales volume and price. We estimate Rmb 90bn (USD 13bn) more NPL and Rmb 140bn (USD 20bn) more provisions required for covered banks, which could result in ROE/CET1 ratio decreasing by -78/-6bps, with adj. NPL coverage ratio on average decreasing to 274% from 281% prior. We note the adj. ROE of CMB would be 16.0% vs. 17.3% before adjustment.

To assess the property risk of individual bank, we consider three factors, namely 1) size, represented by % of total assets; 2) mix, the more non-loan assets, the higher risk; 3) pace of NPL recognition, the higher reported NPL ratio, the more likely close to the peak of NPL cycle. We summarize the statistics as:

- **PAB/CMB** have the largest property exposure (excluding mortgage), with Rmb 403/605bn (USD 57/86bn) or 8%/6% of total assets.
- **ABC/BOC** have the largest loan mix, with 90%/89% of total exposure, **CMB/Industrial Bank** have the lowest, suggesting riskier property credit portfolio as the non-loan asset like bonds and shadow credits could take more losses.
- **BOC/ICBC** presented the highest property NPL ratios of 7.2%/6.1%, which is close to our estimated 8.0% from our ECL (Expected Credit Loss) model.

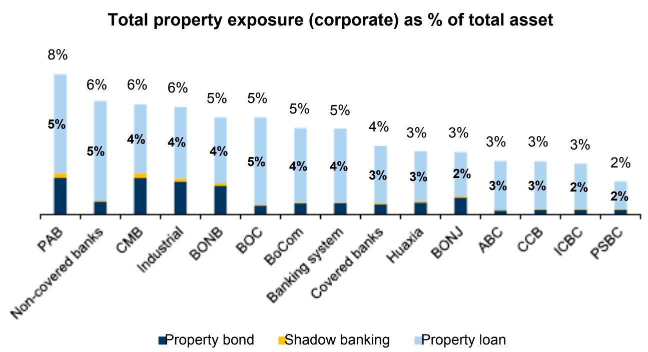
Given the further slowdown of property sales and guidance of banks to expect continued property risk, we expect property NPL formation rate has not peaked out yet, despite the record high printed in 4Q22. Thus, we expect the property NPL ratio of covered banks to continue to increase, which can drive widening divergence of banks, given their varying reported property NPL ratios. We expect large banks may face less pressure on smaller property exposure relative to their large balance sheets, which is 3% of total assets vs. 5% for smaller banks (Exhibit 8), and high reported property NPL ratio of 4.5% on average vs. 1.8% for smaller banks. Our analysis suggests **CMB** with large property exposure and low mix of property loans, and a reported property NPL ratio lower than that of large banks could recognize more property losses arising from its balance sheet.

We estimate that covered banks would recognize Rmb 90bn (USD 13bn) more property NPL, or 31% more of the total recognized NPL. With this setup, **PSBC/BONJ** may recognize more property NPL which takes 151%/132% of the reported, and **BOC/BONB** could be less pressured given smaller new property NPL to recognize. (Exhibit 12)

We also assess that Rmb 140bn (USD 20bn) more provisions would be required to cover the additional property NPL. We factor in bank guidance to set aside 2x of bank LLR (loan loss reserve) as the risk buffer against property loans, and expect banks to at least maintain the current provisioning level for both existing and newly recognized property NPL. The new provisions would result in a profit decrease of 7% for covered banks, and ROE, CET1 ratio and book value decrease of 78bps/6bps/-0.6%. Our analysis suggests **BoCom/PAB/BONJ/CMB** would recognize more provisions with ROE decreases of 178/147/133/125bps vs. 92bps average of peers. (Exhibit 12)

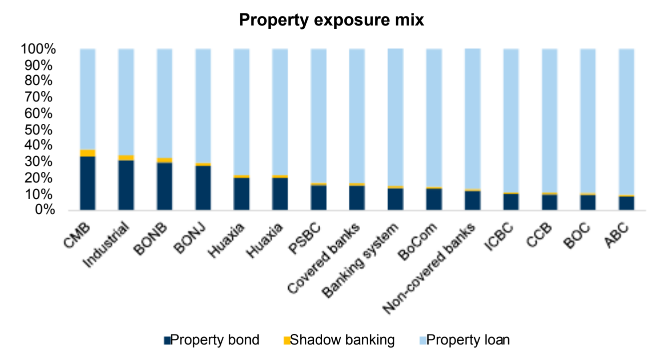
In summary, with inclusion of more NPL and provisions to recognize, the adj. ROE and NPL coverage ratio of covered banks on average could decrease to 11.9%/274% vs. 12.8%/281% prior. CMB’s adj. ROE and NPL coverage ratio would be 16.0%/400% vs. 17.3%/437% prior.

Exhibit 8: Total property exposure (excl. mortgage) as % of total assets
As of 2022



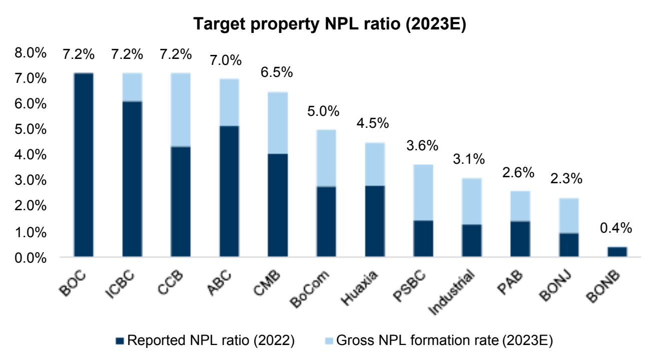
Source: Company data, Goldman Sachs Global Investment Research

Exhibit 9: Property exposure (excl. mortgage) mix
As of 2022



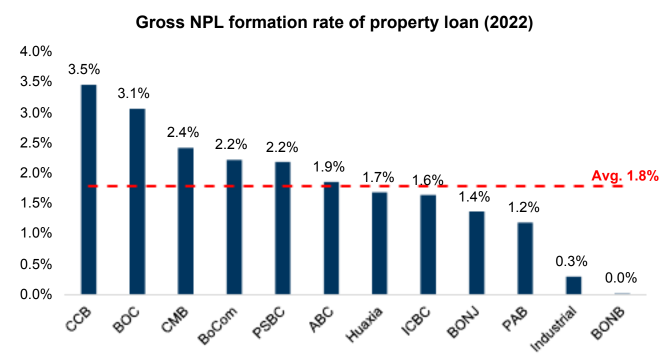
Source: Goldman Sachs Global Investment Research

Exhibit 10: Target property NPL ratio (2023E)



Source: Company data, Goldman Sachs Global Investment Research

Exhibit 11: Gross NPL formation rate of property loan (2022)



Source: Goldman Sachs Global Investment Research

Exhibit 12: Assessing additional NPL and provision of property risk

Rmb bn

	Large						Joint-stock				Regional	
Rmb bn	**ICBC**	**CCB**	**BOC**	**ABC**	**BoCom**	**PSBC**	**CMB**	**PAB**	**Industrial**	**Huaxia**	**BONJ**	**BONB**
Property loan (2022)	976	888	1,360	891	520	212	377	283	356	105	49	84
As % of total loan	4%	4%	8%	5%	7%	3%	6%	9%	7%	5%	5%	8%
As % of IEA	3%	3%	5%	3%	4%	2%	4%	5%	4%	3%	2%	4%
Reported NPL ratio (2022)	6.1%	4.4%	7.2%	5.2%	2.8%	1.5%	4.1%	1.4%	1.3%	2.8%	1.0%	0.4%
Gross property NPL formation rate (2023E)	1.1%	2.9%	0.0%	1.9%	2.2%	2.2%	2.4%	1.2%	1.8%	1.7%	1.4%	0.0%
Target NPL ratio	7.2%	7.2%	7.2%	7.0%	5.0%	3.6%	6.5%	2.6%	3.1%	4.5%	2.3%	0.4%
Additional NPL	**11**	**25**	**0**	**17**	**12**	**5**	**9**	**3**	**6**	**2**	**1**	**0**
LLR ratio of the bank	2.9%	3.3%	1.8%	4.0%	2.5%	3.0%	4.1%	2.9%	2.2%	2.9%	3.7%	0.2%
LLR ratio for property loan	5.7%	6.5%	3.6%	7.9%	4.9%	6.1%	8.2%	5.9%	4.3%	5.8%	7.5%	0.3%
Implied property NPL coverage ratio (based on reported NPL ratio)	93%	149%	49%	153%	175%	419%	201%	410%	332%	205%	779%	81%
Implied property NPL coverage ratio (based on target NPL ratio)	79%	90%	49%	113%	98%	167%	126%	224%	139%	129%	322%	79%
Target NPL coverage ratio for △property NPL (150% min.)	150%	150%	150%	150%	150%	167%	150%	224%	150%	150%	322%	150%
Additional provisions	**16**	**38**	**0**	**25**	**17**	**8**	**14**	**8**	**10**	**3**	**2**	**0**
Adj. NPL coverage ratio	**201%**	**222%**	**189%**	**289%**	**174%**	**357%**	**400%**	**259%**	**209%**	**147%**	**365%**	**476%**
NPL coverage ratio (2023E)	202%	228%	189%	296%	176%	371%	437%	262%	215%	147%	368%	476%
vs. before adj. (ppts)	-1	-5	0	-8	-2	-13	-36	-3	-7	0	-3	0
Driven by NPL increase (ppts)	-6	-16	0	-15	-16	-24	-55	-20	-22	-5	-21	-1
Driven by provision increase (ppts)	4	11	0	8	14	11	19	17	16	5	19	0
Impact (2023E):												
△NPAT (Rmb bn)	-14	-31	0	-21	-16	-7	-12	-6	-8	-2	-1.8	0.0
As % of NPAT	-4%	-9%	0%	-8%	-17%	-8%	-8%	-12%	-9%	-8%	-9%	0%
Adj. NPAT	356	301	238	247	80	86	139	45	85	24	18	26
Adj. book value	**3,392**	**2,924**	**2,236**	**2,388**	**903**	**745**	**912**	**405**	**721**	**279**	**138**	**175**
vs. before	-0.3%	-0.7%	0.0%	-0.6%	-1.2%	-0.7%	-0.9%	-1.3%	-0.8%	-0.5%	-0.9%	0.0%
Adj. ROE	**10.9%**	**10.7%**	**11.1%**	**10.7%**	**9.1%**	**12.0%**	**16.0%**	**11.8%**	**12.3%**	**8.8%**	**13.7%**	**16.0%**
Before adj.	11.3%	11.7%	11.1%	11.6%	10.9%	13.0%	17.3%	13.3%	13.4%	9.6%	15.0%	16.0%
diff. (bps)	-40	-107	0	-87	-178	-97	-125	-147	-115	-72	-133	-1
Adj. CET-1 ratio	**13.6%**	**13.3%**	**11.6%**	**10.6%**	**9.9%**	**9.2%**	**13.4%**	**8.4%**	**9.8%**	**9.3%**	**9.6%**	**9.4%**
Before adj.	13.6%	13.4%	11.6%	10.7%	10.0%	9.2%	13.5%	8.5%	9.9%	9.3%	9.7%	9.4%
diff. (bps)	-4	-10	0	-7	-13	-6	-12	-11	-8	-5	-9	0

Source: Company data, Goldman Sachs Global Investment Research

III. Quantifying potential further losses and provisions for assets under stage 3

We estimate Rmb 247bn (USD 35bn) more NPL and Rmb 289bn (USD 41bn) more provisions in total would be required for assets under stage 3, with ROE and CET1 ratio decreasing by -167bps/-11bps. We calculate the implied loss ratio of debt investments (excluding gov. bond) is 6% on average, and 25% for CMB, while corporate bonds and non-standard credit assets (NSCA) are 9% of debt investments for CMB, compared with 16% for covered banks on average. This suggests to us that CMB is unlikely to benefit easily going forward from reduced provisions on non-loan assets that boosted earnings in the past quarters.

As assets under stage 3 are risky assets with high probability to incur losses, which should be recognized as NPL. This in our view means that the NPL should be at least equal to assets under stage 3, otherwise, the reported NPL would be understated. Like NPL, assets under stage 3 should be well provisioned with appropriate risk buffers. As such, we set the highest provisioning level of covered banks as the benchmark to assess the provision required for loans, and apply 100% provisioning level to debt investments (excluding gov. bonds) to assess the provision required. So we could have:

- In the loan book, Rmb 87bn (USD 12bn) more NPL to recognize, and Rmb 260bn (USD 37bn) more provisions required. (Exhibit 16)
- In the debt investment, Rmb 160bn (USD 23bn) more NPL to recognize, and Rmb 30bn (USD 4.3bn) more provisions required. (Exhibit 19)

To better assess the credit risk of debt investments, we exclude bonds from debt investments to have shadow credit, which is also called non-standard credit assets (NSCA), and add it back with corporate bonds to assess the implied loss of debt investment as we assume gov. bond remains risk free. Thus, we can calculate the implied loss ratio of the debt investment book, which could be 6% on average for covered banks with 25% for **CMB.**

In summary, combining the assessment of loss and provisions for both the loan and debt investment book (Exhibit 13):

- Most new loss is from debt investment book, which takes 65% of total loss we estimate. **CMB, Industrial, Huaxia** could recognize further losses of Rmb 34/40/20bn (USD 4.9/5.7/2.9bn) from debt investment, or 59%/73%/50% of the reported.
- Most new provisions are from bank loans, which take 90% of the total required provision. **ABC** would potentially require Rmb 76bn (USD 11bn) more provisions, or 9% of the reported loan provision, against the additional loss of Rmb 19bn (USD 2.7bn) in its loan book.

So there could be Rmb 247bn (USD 35bn) total losses to recognize and Rmb 289bn (USD 41bn) more risk buffer required for covered banks in aggregate, with profits/CET1 ratio down -14%/-11bps.

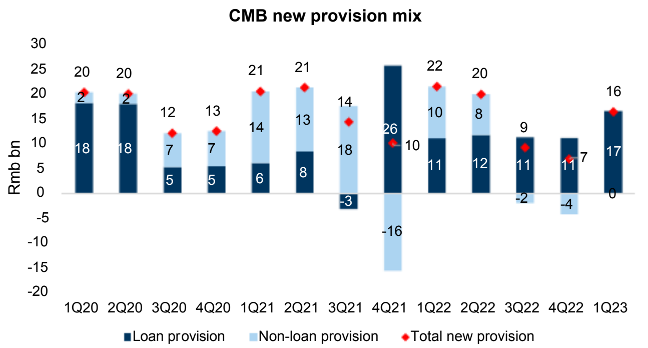
Moreover, we conclude that **CMB** is unlikely to be able to further reduce provisions easily on debt investment (non-loan assets) to drive profit growth, as it did in the previous quarters, and the adj. ROE and NPL coverage ratio could be 17.0%/312% vs. 17.3%/437% before adjustment.

Exhibit 13: Aggregate impact of additional NPL and provisions in loan and debt investments
Rmb bn

	Large						Joint-stock				Regional	
Rmb bn	ICBC	CCB	BOC	ABC	BoCom	PSBC	CMB	PAB	Industrial	Huaxia	BONJ	BONB
Aggregate												
Total additional NPL	**19**	**35**	**3**	**20**	**6**	**25**	**40**	**21**	**53**	**23**	**0.2**	**1**
-Loans	16	15	0.1	19	4	5	6	4	14	3	-0.2	1
-Debt investments	3	20	2	1	2	20	34	17	40	20	0.4	0.3
Total additional provision	**33**	**74**	**35**	**76**	**26**	**0.0**	**3**	**14**	**15**	**13**	**0.4**	**0.4**
-Loans	32	71	32	76	25	0.0	1	7	8	6	0.4	0.4
-Debt investments	0.4	3	2	0.01	0.8	0.0	1.7	7.2	7.3	7.3	0.04	0.01
Adj. NPL coverage ratio	**209%**	**237%**	**205%**	**308%**	**191%**	**299%**	**312%**	**223%**	**166%**	**142%**	**394%**	**452%**
vs. before adj. (ppts)	7	9	16	12	15	-72	-125	-38	-49	-5	26	-25
Driven by NPL increase (ppts)	-10	-22	-2	-18	-9	-103	-170	-87	-105	-49	-7	-50
Driven by provision increase (ppts)	17	31	18	30	24	31	45	49	56	43	33	25
Impact (2023E):												
△NPAT (Rmb bn)	-28	-60	-29	-64	-24	0	-2	-11	-13	-10	-0.4	-0.3
As % of NPAT	-8%	-18%	-12%	-24%	-25%	0%	-2%	-22%	-14%	-39%	-2%	-1%
Adj. NPAT	342	272	209	204	72	93	148	40	80	16	19	26
Adj. book value	3,382	2,904	2,216	2,358	897	750	920	400	718	273	139	175
vs. before	**-0.6%**	**-1.4%**	**-0.9%**	**-1.9%**	**-1.9%**	**0.0%**	**-0.2%**	**-2.4%**	**-1.3%**	**-2.7%**	**-0.2%**	**-0.2%**
Adj. ROE	10.5%	9.7%	9.8%	8.9%	8.2%	13.0%	17.0%	10.5%	11.6%	5.9%	14.8%	15.8%
Before adj.	11.3%	11.7%	11.1%	11.6%	10.9%	13.0%	17.3%	13.3%	13.4%	9.6%	15.0%	16.0%
diff. (bps)	-86	-213	-135	-277	-276	0	-29	-292	-191	-373	-27	-20
Adj. CET-1 ratio	13.5%	13.2%	11.5%	10.5%	9.8%	9.2%	13.5%	8.3%	9.7%	9.1%	9.6%	9.4%
Before adj.	13.6%	13.4%	11.6%	10.7%	10.0%	9.2%	13.5%	8.5%	9.9%	9.3%	9.7%	9.4%
diff. (bps)	-7	-16	-9	-17	-18	0	-2	-17	-11	-19	-1	-1

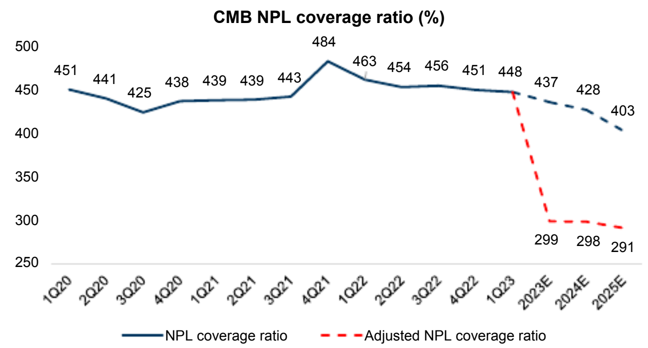
Source: Company data, Goldman Sachs Global Investment Research

Exhibit 14: CMB new provision mix



Source: Company data

Exhibit 15: CMB NPL coverage ratio



Source: Company data

Exhibit 16: In the loan book, Rmb 87bn more NPL to recognize, and Rmb 260bn more provisions required

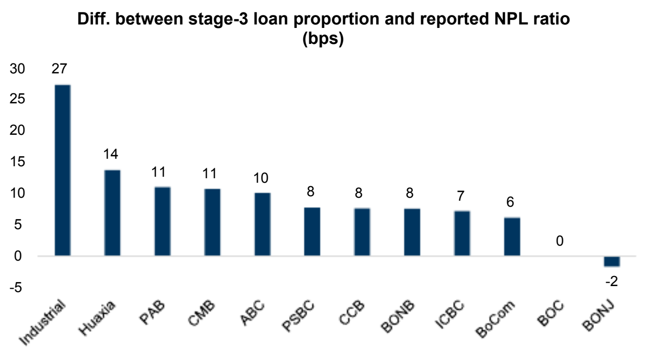
Rmb bn

	Large						Joint-stock				Regional	
Rmb bn	**ICBC**	**CCB**	**BOC**	**ABC**	**BoCom**	**PSBC**	**CMB**	**PAB**	**Industrial**	**Huaxia**	**BONJ**	**BONB**
Loans												
Loans in stage 3 as % of total	1.45%	1.46%	1.32%	1.47%	1.41%	0.92%	1.07%	1.16%	1.36%	1.89%	0.88%	0.83%
Reported NPL ratio	1.38%	1.38%	1.32%	1.37%	1.35%	0.84%	0.96%	1.05%	1.09%	1.75%	0.90%	0.75%
Diff. (bps)	7	8	0	10	6	8	11	11	27	14	-2	8
Additional NPL	**16**	**15**	**0**	**19**	**4**	**5**	**6**	**4**	**14**	**3**	**0**	**1**
Stage-3 loan coverage ratio	78%	64%	75%	61%	63%	89%	86%	70%	77%	74%	84%	85%
Target coverage ratio (sample max)	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%
Diff (ppts)	-10	-24	-14	-28	-26	0.0	-2	-18	-12	-15	-5	-4
Additional provision	**32**	**71**	**32**	**76**	**25**	**0.0**	**1**	**7**	**8**	**6**	**0.4**	**0.4**

Source: Company data, Goldman Sachs Global Investment Research

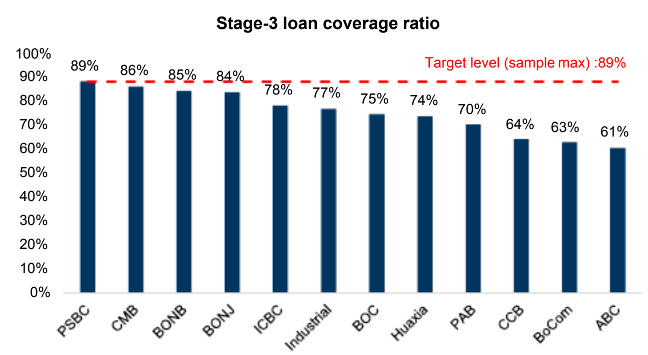
Exhibit 17: Diff between stage-3 loan proportion and reported NPL ratio as of 2022

bps



Source: Company data

Exhibit 18: Stage-3 loan coverage ratio as of 2022



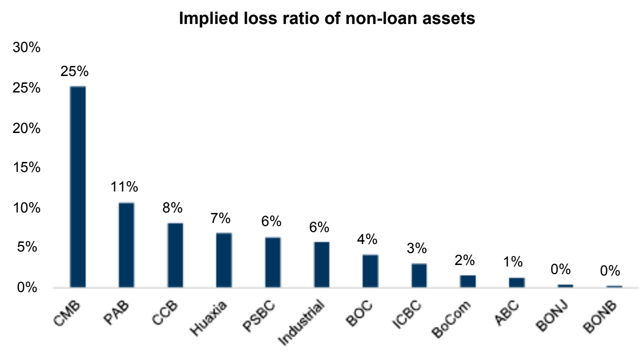
Source: Company data

Exhibit 19: In the debt investment, Rmb 160bn more NPL to recognize, and Rmb 30bn more provisions required
Rmb bn

	Large						Joint-stock				Regional	
Rmb bn	**ICBC**	**CCB**	**BOC**	**ABC**	**BoCom**	**PSBC**	**CMB**	**PAB**	**Industrial**	**Huaxia**	**BONJ**	**BONB**
Debt investments												
Additional NPL	**3**	**20**	**2**	**1**	**2**	**20**	**34**	**17**	**40**	**20**	**0.4**	**0.3**
Existing debt provision	**33**	**41**	**10**	**20**	**3**	**28**	**43**	**16**	**45**	**17**	**3**	**2**
Stage-3 debt investment coverage ratio	86%	87%	90%	99%	54%	100%	95%	58%	81%	64%	90%	95%
Target coverage ratio (sample max)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Diff (ppts)	-14	-13	-9	-1	-45	0.0	-5	-42	-18	-36	-10	-5
Additional provision	**0.4**	**2.6**	**2.4**	**0.01**	**0.8**	**0.0**	**1.7**	**7.2**	**7.3**	**7.3**	**0.04**	**0.01**

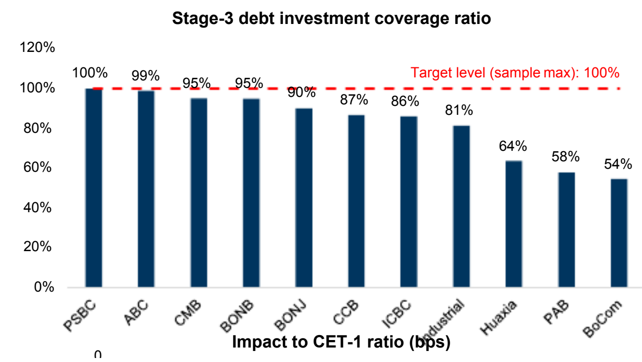
Source: Company data, Goldman Sachs Global Investment Research

Exhibit 20: Risky non-loan assets including corp. bonds and shadow credit can be captured in debt investments, which allows us to calculate the implied loss ratio for covered banks averaging 6%
As of 2022



Source: Company data, Goldman Sachs Global Investment Research

Exhibit 21: Stage-3 debt investment coverage ratio as of 2022



Source: Company data

Appendix: What our top-down asset quality model implies

Given the importance of property developers to China's economy, we assess the spillover risk to bank loan portfolios given the potential for property credit default. After incorporating 1Q23 earnings results for ~3,000 listed companies, our implied NPL data shows that systemwide implied PD decreased in 1Q23 to 12.8% from 13.5% in 4Q22.

1. Total implied PD of our listco sample decreased to 12.8% in 1Q23, -1.0/-0.7ppts vs. 1Q22/4Q22, primarily driven by falling aggregate EIC (6.18x in 1Q23 vs. 6.34x in 4Q22). We decompose changes in Earnings Interest Coverage (EIC) into three moving parts: total debt, interest rates and cash flow.

Total debt increased by 5% in 1Q23 vs. 4Q22 driven by strong credit growth. (Exhibit 26)

Interest rate of corporate loans fell by 7bps in 1Q23 vs. 4Q22, driven by LPR cut and liquidity loosening such as the cut to RRR. (Exhibit 27)

Cash flow deteriorated with 1Q23 EBIT falling 1.5% vs. 4Q22. (Exhibit 25)

All in, the decline in interest rates (a 0.1x improvement in EIC) is not enough to offset the impact of increasing debt and decreasing EBIT (cash flow), which combined result in a 0.16x deterioration in total EIC. (Exhibit 24)

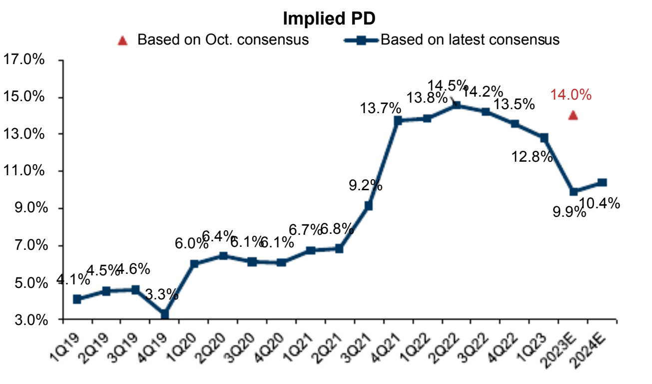
2. What are consensus earnings estimates telling us? Based on the latest 2023E/2024E Wind consensus estimates, 2023E implied PD is expected to drop to 9.9%, lower than the peak of 2Q22, but rise to 10.4% in 2024E on macro challenges and cuts to consensus earnings.

Banking sector margin of safety: Rmb 10.6tn (USD 1.5tn) in buffers vs. Rmb 8.4tn (USD 1.2tn) NPLs

We set our stress test at an 7% NPL ratio on the total loan book, factoring in the asset quality risk implied from A-share quasi-cash flow (as noted above: 12.8% PD, 55% LGD). This implies total systemwide losses of Rmb 8.4tn (USD 1.2tn) vs. total risk buffers of Rmb 10.6tn (USD 1.5tn) (above the minimum CET1 ratio). Overall, our covered banks appear well placed to absorb losses with Rmb 7.6tn (USD 1.1tn) of risk buffers vs. Rmb 4.9tn (USD 0.7tn) in NPLs.

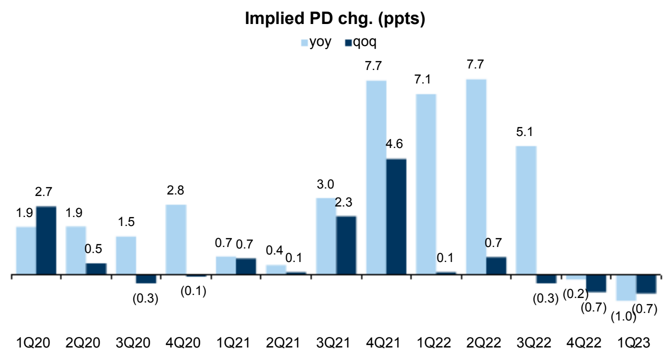
We could see widening divergence in banks' balance sheet strength. Incorporating our estimated loss of Rmb ~8.4tn (USD 1.2tn) we adjust the banks' book value, and compare them with our estimated book value. Our analysis suggests that most banks show limited further markdowns, such as 0%/3%/3% for **CMB/PSBC/PAB**, while **Huaxia/BoCom** could face more challenges if further property credit losses are recognized.

Exhibit 22: Total implied PD of our listco sample decreased to 12.8% in 1Q23...



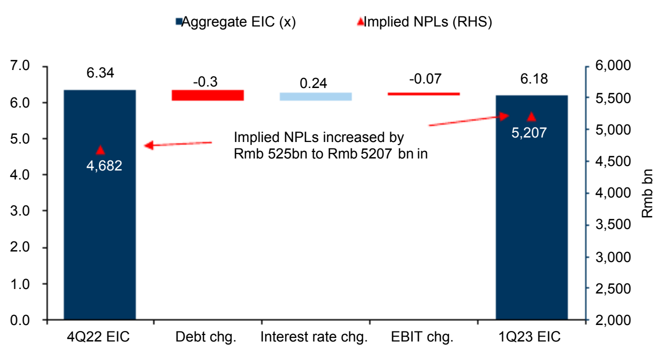
Source: Goldman Sachs Global Investment Research

Exhibit 23: ...-1.0/-0.7ppts vs. 1Q22/4Q22



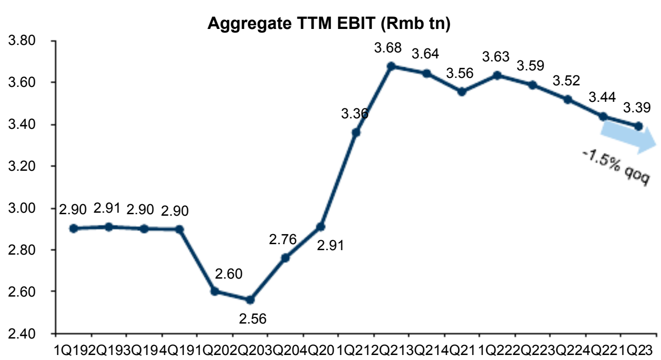
Source: Goldman Sachs Global Investment Research

Exhibit 24: The decline in interest rates (a 0.1x improvement in EIC) is not enough to offset the impact of increasing debt and decreasing EBIT (cash flow), which combined result in a 0.16x deterioration in total EIC



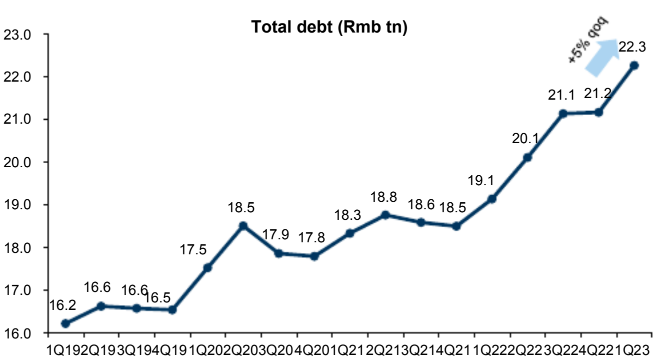
Source: Goldman Sachs Global Investment Research

Exhibit 25: Cash flow deteriorated with 1Q23 EBIT falling 1.5% vs. 4Q22



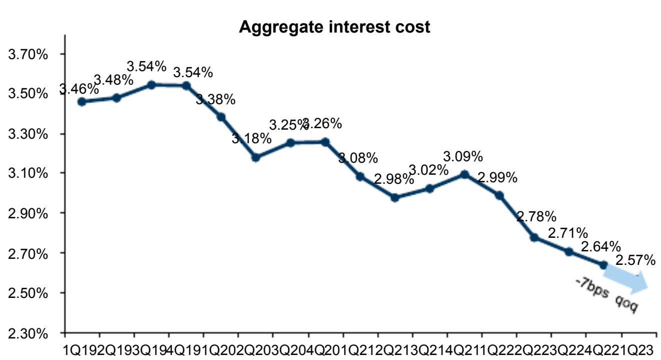
Source: Wind, Goldman Sachs Global Investment Research

Exhibit 26: Total debt increased by 5% in 1Q23 vs. 4Q22, driven by strong credit growth



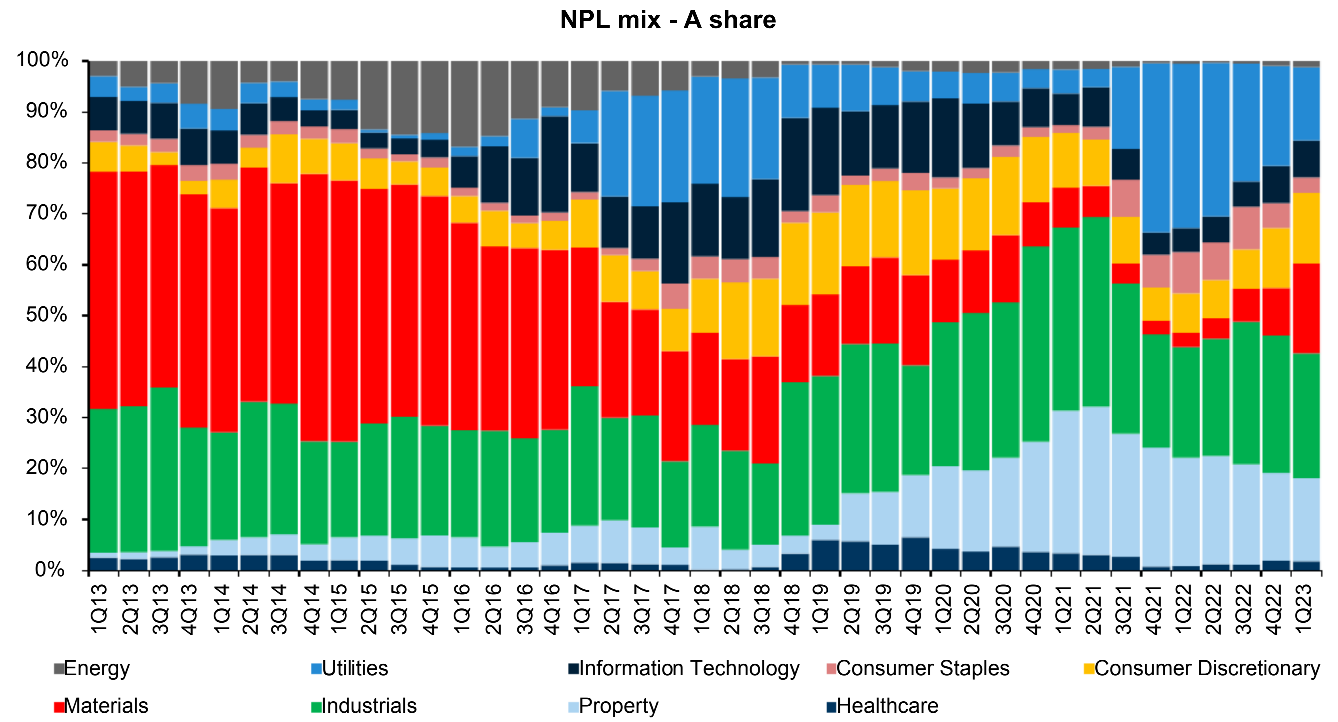
Source: Wind, Goldman Sachs Global Investment Research

Exhibit 27: Interest rate of corporate loans fell by 7bps in 1Q23 vs. 4Q22



Source: Wind, Goldman Sachs Global Investment Research

Exhibit 28: Implied NPL mix of A share listed companies



Source: Wind, Goldman Sachs Global Investment Research

Exhibit 29: We estimate Rmb 10.6tn in systemwide risk buffers, comprising Rmb 7.6tn from covered (large cap) banks and Rmb 2.9tn from non-covered (small) banks

Rmb bn, as of 2023E

Rmb bn, as of 2023E	1st layer: Additional LLR				2nd layer: PPOP excl. provision			3rd layer: Additional CET-1 excl. new R/E					Total risk buffer
	LLR	NPL	Min. LLR ratio	Additional LLR	PPOP	Provision	PPOP excl. provision	CET-1	CET-1 ratio	Min. CET-1 ratio	New Retained earnings	Additional CET-1 excl. new R/E	
ICBC	745	368	70%	**487**	631	196	**435**	3,381	13.6%	9.0%	260	**884**	**1,807**
CCB	768	337	70%	**532**	555	148	**407**	2,941	13.4%	9.0%	241	**729**	**1,668**
BOC	465	246	70%	**293**	408	110	**299**	2,169	11.6%	9.0%	174	**316**	**908**
ABC	892	301	70%	**681**	461	145	**316**	2,402	10.7%	8.5%	187	**307**	**1,304**
PSBC	244	66	70%	**198**	135	35	**100**	745	9.2%	8.0%	65	**34**	**332**
BoCom	198	113	70%	**119**	166	64	**102**	907	10.0%	8.3%	67	**92**	**314**
CMB	275	63	70%	**231**	233	53	**180**	895	13.5%	8.3%	104	**243**	**654**
PAB	108	41	70%	**79**	135	70	**65**	389	8.5%	7.8%	45	**0**	**144**
Huaxia	69	47	70%	**36**	64	29	**35**	283	9.3%	7.8%	20	**28**	**99**
Industrial	120	56	70%	**81**	157	49	**108**	731	9.9%	8.3%	69	**50**	**239**
BONB	43	9	70%	**37**	40	11	**29**	174	9.4%	7.8%	23	**8**	**74**
BONJ	41	11	70%	**33**	33	10	**23**	140	9.7%	7.5%	14	**17**	**74**
Banking system	6,664	3,503	70%	**4,212**			**2,885**	23,198	10.7%	8.2%	1,970	**3,458**	**10,554**
Covered banks	3,967	1,658	70%	**2,807**	3,018	919	**2,099**	15,157	11.7%	8.6%	1,268	**2,710**	**7,616**
Non-covered banks	2,697	1,845	70%	**1,405**			**786**	8,042	9.2%	7.5%	702	**747**	**2,938**

Source: Goldman Sachs Global Investment Research

Exhibit 30: We forecast systemwide NPLs of Rmb 8.4tn, with possibility that non-covered small banks could exhaust their risk buffer

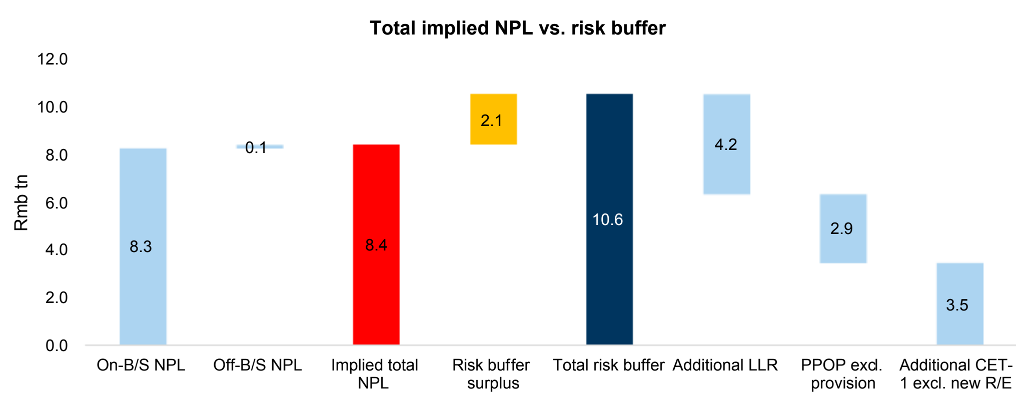
Rmb bn

	Exposure			Loss rate			Implied NPL			Risk buffer (2023E)				NPL absorption				NPL ratio when…	
	On-B/S: Corporate loan	Off-B/S: Shadow banking	Total exposure	PD	LGD	NPL ratio	Implied on-B/S NPL	Implied off-B/S NPL	Implied total NPL	Additional LLR	PPOP excl. provision	Additional CET-1 excl. new R/E	Total	Additional LLR	PPOP excl. provision	Additional CET-1 excl. new R/E	Gap (as % of total buffer)	No dividend	Recap required
Rmb bn	2022	2022	2022							2023E	2023E	2023E	2023E						
ICBC	14,202	180	14,382	12.8%	55%	7.0%	1,001	13	1,013	487	435	884	1,807	100%	100%	10%	0%	13%	19%
CCB	12,164	169	12,333	12.8%	55%	7.0%	857	12	869	532	407	729	1,668	100%	83%	0%	0%	14%	21%
BOC	11,099	148	11,247	12.8%	55%	7.0%	782	10	793	293	299	316	908	100%	100%	64%	0%	8%	15%
ABC	12,159	162	12,321	12.8%	55%	7.0%	857	11	868	681	316	307	1,304	100%	59%	0%	0%	11%	17%
PSBC	3,164	70	3,234	12.8%	55%	7.0%	223	5	228	198	100	34	332	100%	30%	0%	0%	10%	18%
BoCom	4,930	101	5,031	12.8%	55%	7.0%	347	7	355	119	102	92	314	100%	100%	100%	13%	6%	12%
CMB	2,890	264	3,153	12.8%	55%	7.0%	204	19	222	231	180	243	654	96%	0%	0%	0%	21%	28%
PAB	1,282	74	1,356	12.8%	55%	7.0%	90	5	96	79	65	0	144	100%	25%	0%	0%	11%	20%
Huaxia	1,566	43	1,609	12.8%	55%	7.0%	110	3	113	36	35	28	99	100%	100%	100%	14%	6%	11%
Industrial	3,009	176	3,185	12.8%	55%	7.0%	212	12	224	81	108	50	239	100%	100%	70%	0%	8%	15%
BONB	655	33	688	12.8%	55%	7.0%	46	2	48	37	29	8	74	100%	40%	0%	0%	11%	18%
BONJ	675	25	700	12.8%	55%	7.0%	48	2	49	33	23	17	74	100%	71%	0%	0%	10%	16%
Banking system	117,459	1,940	119,399	12.8%	55%	7.0%	8,277	137	8,414	4,212	2,885	3,458	10,554	100%	100%	38%	0%	9%	15%
Covered banks	67,793	1,446	69,239	12.8%	55%	7.0%	4,777	102	4,879	2,807	2,099	2,710	7,616	100%	99%	0%	0%	11%	18%
Non-covered banks	49,666	494	50,160	12.8%	55%	7.0%	3,500	35	3,535	1,405	786	747	2,938	100%	100%	100%	20%	6%	10%

Source: Company data, Goldman Sachs Global Investment Research

Exhibit 31: Systemwide, risk buffer is sufficient to cover implied total NPL, with surplus of Rmb 2.1tn

Rmb tn



Source: Goldman Sachs Global Investment Research

Exhibit 32: Adj. book value after absorbing implied NPL

Rmb bn	Book value (GSe)	Due to PPOP erosion	Due to CET-1 erosion (excl. gap)	Due to CET-1 erosion (gap)	Adj. BV	Diff. with GSe
	A, 2023E	B	C	D	E=A+B+C+D	F=E/A-1
ICBC	3,402	-260	-91	0	3,050	-10%
CCB	2,946	-200	0	0	2,746	-7%
BOC	2,236	-174	-201	0	1,860	-17%
ABC	2,403	-111	0	0	2,292	-5%
PSBC	750	-20	0	0	730	-3%
BoCom	914	-67	-92	-41	714	-22%
CMB	920	0	0	0	920	0%
PAB	410	-11	0	0	399	-3%
Huaxia	281	-20	-28	-14	218	-22%
Industrial	727	-69	-35	0	623	-14%
BONB	175	-9	0	0	166	-5%
BONJ	139	-10	0	0	129	-7%

Source: Goldman Sachs Global Investment Research

Disclosure Appendix

Reg AC

I, Shuo Yang, Ph.D., hereby certify that all of the views expressed in this report accurately reflect my personal views about the subject company or companies and its or their securities. I also certify that no part of my compensation was, is or will be, directly or indirectly, related to the specific recommendations or views expressed in this report.

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Growth is based on a stock's forward-looking sales growth, EBITDA growth and EPS growth (for financial stocks, only EPS and sales growth), with a higher percentile indicating a higher growth company. **Financial Returns** is based on a stock's forward-looking ROE, ROCE and CROCI (for financial stocks, only ROE), with a higher percentile indicating a company with higher financial returns. **Multiple** is based on a stock's forward-looking P/E, P/B, price/dividend (P/D), EV/EBITDA, EV/FCF and EV/Debt Adjusted Cash Flow (DACF) (for financial stocks, only P/E, P/B and P/D), with a higher percentile indicating a stock trading at a higher multiple. The **Integrated** percentile is calculated as the average of the Growth percentile, Financial Returns percentile and (100% - Multiple percentile).

Financial Returns and Multiple use the Goldman Sachs analyst forecasts at the fiscal year-end at least three quarters in the future. Growth uses inputs for the fiscal year at least seven quarters in the future compared with the year at least three quarters in the future (on a per-share basis for all metrics).

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	Buy	Hold	Sell	Buy	Hold	Sell
Global	48%	36%	16%	63%	56%	47%

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