January 18, 2018

# China: Banks

Equity Research

# Retail lending – the next leg of growth for China banks

## Small, but the fastest growing segment

Despite c.40% yoy growth in 11M17, our analysis shows that China's retail lending market is still underpenetrated and we forecast:

- **A Rmb16tn market by 2020E** for non-mortgage consumer lending. In our view, major banks cannot afford to ignore the retail lending opportunity because while the market is currently small at just 5% of total lending, it is by far the fastest growing lending segment (31% CAGR to 2020E vs low-teens for total market) with market share poised to double over the next three years.
- **Profitability uplift**. Retail lending profitability is currently double the level of corporate lending, as high asset yields more than offset higher costs, albeit with better asset quality. We expect retail lending to uplift ROE by an average of 1.0ppt across our coverage over 2017E-20E.
- **Structural factors** (strong consumption/income growth and rising penetration), **adoption of technology** (more efficient customer acquisition and risk management), and **changed mindset** of millennials (more open to taking on debt) will be key drivers of retail lending growth.

## Overheating concerns overdone, but changes needed for long term

While cognizant of the risks associated with alleged misbehavior by some lenders, we see overheating risks as over-exaggerated given both consumer leverage stock and flow are still well below potential risky levels (based on our case studies of the US and Korea). Nevertheless, we do see the need to maintain proper lending standards and to develop a complete and accurate credit information sharing system, which the industry and regulators have started to address, as shown by: (i) the newly proposed 'Credit Union', co-owned by PBOC and private companies, which may help enable accurate credit data collection and sharing (but execution remains key); and (ii) recent regulatory tightening over licenses and products (e.g., a ban on cash loan products and high APRs), and requirements of proprietary risk management which appear timely and should help reduce overheating risk.

## Key beneficiaries of the retail lending transition: PAB and CMB

Our analysis shows PAB (Buy, on CL) and CMB (Buy) as best positioned to capture the significant growth from a shift toward retail lending, given their sector-highest retail lending exposure and high retail yields. We expect further development of their retail banking business to drive significant ROE expansion by 2020 (+4ppt/+2ppt vs 2016, ahead of the peer average +1ppt).

**WHAT'S INSIDE**



**RELATED RESEARCH**

*Ping An Bank Co. (000001.SZ): The Asia Stock Collection: Consumer Lending 3.0; up to Buy, add to Conviction List*, January 17, 2018.

*Asia Pacific: Banks: Banking on further NIM recovery; PAB and CCB-H our top picks*, January 17, 2018.

*LexinFintech Holdings (LX): Leading internet lender for students/young adults; initiate at Buy*, January 15, 2018.

*China Banks: Headwinds for online lenders likely to continue on further regulation,* November 27, 2017.

*Future of Finance: The Rise of China FinTech,* August 7, 2017.

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**Exhibit 1: China Banks – summary valuation table**

| | Ticker | Current price | 12-m TP | Rating | Target 19E P/PPOP | Upside/ downside (%) | Implied P/B | | P/B | | P/E | | P/PPOP | | ROE | | ROA | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H-share (HKD) | | | | | | | 2018E | 2019E | 2018E | 2019E | 2018E | 2019E | 2018E | 2019E | 2018E | 2019E | 2018E | 2019E |
| ICBC (H) | 1398.HK | 6.65 HK$ | 7.2 HK$ | Neutral | 3.5 | 8% | 0.95 | 0.85 | 0.87 | 0.78 | 6.2 | 5.5 | 3.6 | 3.2 | 14.8% | 15.1% | 1.19% | 1.24% |
| BOC (H) | 3988.HK | 4.10 HK$ | 4.5 HK$ | Neutral | 3.0 | 10% | 0.68 | 0.62 | 0.62 | 0.57 | 5.7 | 5.1 | 2.9 | 2.7 | 11.2% | 11.6% | 0.83% | 0.93% |
| CCB (H) | 0939.HK | 7.84 HK$ | 9.3 HK$ | Buy* | 3.5 | 19% | 1.03 | 0.92 | 0.87 | 0.78 | 6.2 | 5.3 | 3.3 | 3.0 | 14.8% | 15.2% | 1.15% | 1.22% |
| ABC (H) | 1288.HK | 4.04 HK$ | 4.5 HK$ | Buy | 3.0 | 11% | 0.83 | 0.75 | 0.75 | 0.67 | 5.4 | 4.8 | 3.0 | 2.7 | 14.6% | 14.8% | 0.90% | 0.95% |
| BoCom (H) | 3328.HK | 6.13 HK$ | 6.4 HK$ | Sell | 3.0 | 4% | 0.61 | 0.57 | 0.59 | 0.55 | 5.7 | 5.4 | 3.1 | 2.9 | 10.6% | 10.5% | 0.72% | 0.71% |
| CMB (H) | 3968.HK | 34.85 HK$ | 38.1 HK$ | Buy | 4.0 | 9% | 1.60 | 1.40 | 1.46 | 1.28 | 9.2 | 7.7 | 4.2 | 3.7 | 16.7% | 17.6% | 1.16% | 1.25% |
| CEB (H) | 6818.HK | 3.78 HK$ | 4.1 HK$ | Neutral | 2.5 | 8% | 0.60 | 0.55 | 0.56 | 0.51 | 4.8 | 4.5 | 2.4 | 2.3 | 12.2% | 11.8% | 0.71% | 0.70% |
| PSBC | 1658.HK | 4.52 HK$ | 5.2 HK$ | Buy | 3.5 | 15% | 0.85 | 0.76 | 0.74 | 0.66 | 6.8 | 5.9 | 3.7 | 3.0 | 13.2% | 14.2% | 0.57% | 0.62% |
| CQRCB | 3618.HK | 6.18 HK$ | 6.2 HK$ | Neutral | 2.5 | 0% | 0.75 | 0.63 | 0.74 | 0.63 | 4.9 | 4.2 | 2.8 | 2.5 | 15.6% | 16.0% | 1.06% | 1.12% |
| A-share (Rmb) | | | | | | | | | | | | | | | | | | |
| ICBC (A) | 601398.SS | 6.43 Rmb | 7.0 Rmb | Buy | 4.0 | 9% | 1.09 | 0.97 | 1.00 | 0.90 | 7.1 | 6.2 | 4.1 | 3.7 | 14.8% | 15.1% | 1.19% | 1.24% |
| BOC (A) | 601988.SS | 4.18 Rmb | 4.4 Rmb | Neutral | 3.5 | 5% | 0.78 | 0.72 | 0.74 | 0.68 | 6.9 | 6.1 | 3.5 | 3.3 | 11.2% | 11.6% | 0.83% | 0.93% |
| CCB (A) | 601939.SS | 8.07 Rmb | 9.0 Rmb | Buy | 4.0 | 12% | 1.18 | 1.05 | 1.06 | 0.94 | 7.5 | 6.5 | 4.0 | 3.6 | 14.8% | 15.2% | 1.15% | 1.22% |
| ABC (A) | 601288.SS | 4.12 Rmb | 4.4 Rmb | Neutral | 3.5 | 7% | 0.96 | 0.86 | 0.90 | 0.81 | 6.5 | 5.7 | 3.6 | 3.3 | 14.6% | 14.8% | 0.90% | 0.95% |
| BoCom (A) | 601328.SS | 6.48 Rmb | 6.3 Rmb | Sell | 3.5 | -3% | 0.71 | 0.66 | 0.73 | 0.68 | 7.2 | 6.7 | 3.9 | 3.6 | 10.6% | 10.5% | 0.72% | 0.71% |
| CMB (A) | 600036.SS | 31.94 Rmb | 36.3 Rmb | Buy | 4.5 | 14% | 1.80 | 1.57 | 1.58 | 1.39 | 10.0 | 8.4 | 4.5 | 4.0 | 16.7% | 17.6% | 1.16% | 1.25% |
| CEB (A) | 601818.SS | 4.21 Rmb | 4.2 Rmb | Sell | 3.0 | 0% | 0.73 | 0.66 | 0.73 | 0.67 | 6.2 | 5.9 | 3.2 | 3.0 | 12.2% | 11.8% | 0.71% | 0.70% |
| Industrial | 601166.SS | 18.00 Rmb | 19.4 Rmb | Neutral | 3.0 | 8% | 0.91 | 0.81 | 0.85 | 0.75 | 5.9 | 5.3 | 3.1 | 2.8 | 15.2% | 15.0% | 0.91% | 0.92% |
| PAB | 000001.SZ | 14.20 Rmb | 17.5 Rmb | Buy* | 3.0 | 23% | 1.22 | 1.08 | 0.99 | 0.88 | 9.1 | 7.3 | 2.8 | 2.4 | 11.4% | 12.8% | 0.77% | 0.86% |
| Hua Xia | 600015.SS | 9.40 Rmb | 9.5 Rmb | Neutral | 2.5 | 1% | 0.66 | 0.60 | 0.65 | 0.60 | 5.8 | 5.6 | 2.6 | 2.5 | 11.6% | 11.2% | 0.77% | 0.73% |
| BONB | 002142.SZ | 19.17 Rmb | 19.8 Rmb | Neutral | 4.5 | 3% | 1.54 | 1.32 | 1.49 | 1.28 | 8.9 | 7.3 | 5.2 | 4.4 | 17.9% | 18.8% | 1.01% | 1.07% |
| BONJ | 601009.SS | 8.44 Rmb | 9.2 Rmb | Neutral | 3.5 | 9% | 0.99 | 0.86 | 0.90 | 0.79 | 6.4 | 5.3 | 3.5 | 3.2 | 15.2% | 15.9% | 0.89% | 0.94% |

Notes: All close prices are as of January 15, 2018 unless otherwise indicated. *Denotes the stock is on our regional Conviction List.

*Source: Datastream, Goldman Sachs Global Investment Research.*

**Abbreviation & Acronym buster: ABC**: Agricultural Bank of China. **BOC:** Bank of China. **BoCom:** Bank of Communications. **BONJ:** Bank of Nanjing. **BONB:** Bank of Ningbo. **CCB:** China Construction Bank. **CEB:** China Everbright Bank. **CMB:** China Merchants Bank. **CQRCB:** Chongqing Rural Commercial Bank. **Hua Xia:** Hua Xia Bank. **Industrial:** Industrial Bank. **ICBC:** Industrial and Commercial Bank of China. **PAB:** Ping An Bank. **PSBC:** Postal Saving Bank of China. **AMP:** asset management product. **JSB:** joint stock bank. **MMF:** money market fund. **NCD:** negotiable certificate of deposit. **WMP:** wealth management product.

# Overview: Retail lending – the next leg of growth for China banks

## Marching into an underpenetrated consumer lending market…

**A Rmb16tn market for unsecured lending by 2020E (10% of overall lending in China, +5ppt from 2016)…**

We forecast total consumer loans in China excluding mortgages to grow from Rmb5.5tn in 2016 to Rmb16tn in 2020 (31% CAGR) with an acceleration of penetration into underserved cohorts. Over the same period, we forecast the revenue pool to grow by around 3X to Rmb1.03tn, as a higher credit premium is earned to compensate the credit risks of servicing cohorts of no/less credit history and/or lower credit worthiness.

## …to boost banks' ROE by 1.0ppt on average over 2017E-2020E

Based on our study of seven banks, we estimate that retail lending in 2016 generated (excl. retail WMP business) 18.2% ROE, or 24.4% excluding mortgages, vs 9.9% for corporate lending, thanks to: 1) higher net asset yield at 4.0% incl. fees on average vs 3.3% for corporate lending; and 2) lower credit cost at 0.52% which more than offset higher operating expenses for the retail business with 41% cost income ratio.

**…and PAB (Buy, on CL) looks best placed to benefit…**

Scale advantage and cost management will be key for retail profitability of these banks, likely enhanced with the help of technology, and we forecast an average ROE uplift of 1.0ppt over 2017E-2020E. In particular, we believe that the ability to acquire high yield assets while maintaining relatively low operating expenses is a key differentiation between banks. We expect the ROE uplift to be unevenly distributed across banks, with retail focused banks that are set to achieve economies of scale and apply new technologies, such as **PAB**, achieving as much as 4.2ppt ROE expansion. In a companion note, we upgrade PAB to Buy and add it to our Conviction List – please see *Ping An Bank Co. (000001.SZ): The Asia Stock Collection: Consumer Lending 3.0*, January 17, 2018, for details.

## Clear structural and technological drivers to boost the market

**…with traditional drivers, FinTech-based efficiencies, and changed millennial mindsets, all boosting retail loan books**

China's non-mortgage retail loan market looks underpenetrated at only 8% of GDP as of 1H17 vs 49% in Korea and 21% in the US, and we forecast this to increase to 15% by 2020, driven by consumption growth and a more open mindset towards borrowing in particular by young adults (main customers of unsecured credit). In addition, we believe FinTech helps address a particular pain point for banks' retail lending business – high customer acquisition/processing cost, especially when subscale – and enables banks to grow retail loan books faster than traditionally.

## Consumer debt risks not a major near term concern…

**Is the market overheated? Not yet in our view…**

Stock-wise, penetration is low with total consumer credit at 42% of GDP in 1H17 vs 83% in both the US and Korea. Flow-wise, at less than 3X GDP growth, does not appear excessive vs over 7X for the US/Korea just before the GFC/credit card crisis.

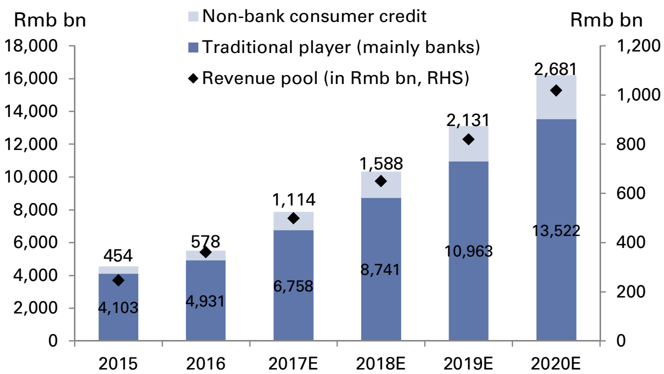
## …but vigilance needed to avoid overheating risk in the longer term

**…and there are positive signs on lending standards and information sharing**

Maintaining proper lending standards is key, and we view Chinese regulators' recent tightening policies on cash loan/micro loan licensed companies/platforms etc., as necessary and timely to help reinstate proper lending practices for all lenders/intermediaries (and avoid excessive cash advances/loans which is often a prologue to consumer debt crisis). The lack of a complete and accurate credit information sharing system in China may prevent further growth in consumer credit and lead to the risk of overheating. PBOC's latest initiative to establish a 'Credit Union' by allowing private ownership and demanding mutual data sharing by major independent credit data companies may prove to be an important milestone in the development of the industry, although execution risks and many practical issues remain unresolved (e.g., to incentivize data sharing, to make sure data collected is accurate, etc.).

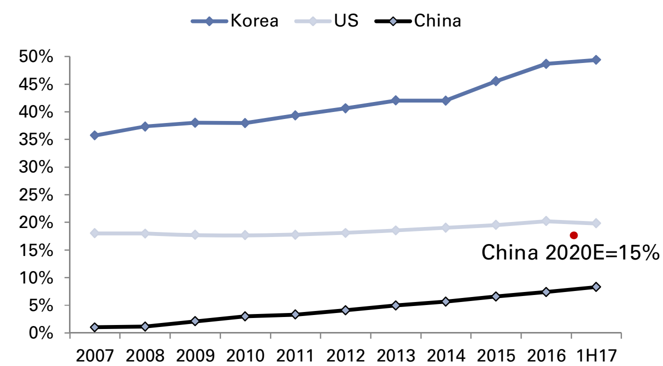
# Our thesis in six charts

### Exhibit 2: We expect unsecured consumer lending in China to reach Rmb16tn by 2020E...



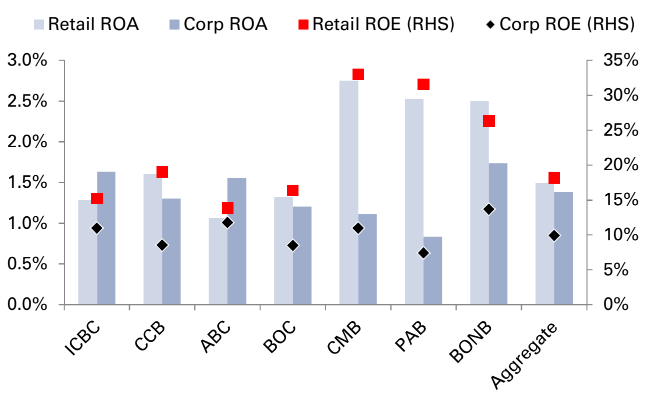

*Source: People's Bank of China (PBOC), Goldman Sachs Global Investment Research*

### Exhibit 3: ...as household credit penetration doubles to 15% from 8% in 1H17




*Source: Bank for International Settlements (BIS), Goldman Sachs Global Investment Research*

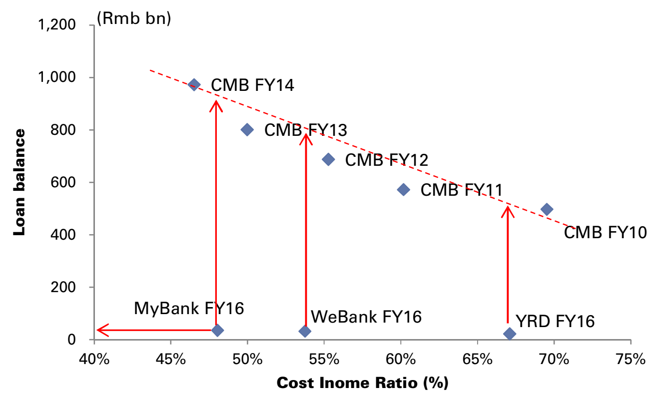
### Exhibit 4: Retail business generally has higher ROA and ROE vs corporate, thanks to better asset quality...




Note: Data as of FY16.

*Source: Company data, Goldman Sachs Global Investment Research*

### Exhibit 5: ...and improving efficiency as scale effects play out




*Source: Company data*

### Exhibit 6: In particular, credit card and non-mortgage retail loans have higher ROA and ROE vs mortgage loans

Average of seven banks, as of FY16

| | Retail loan | Mortgage | Credit card | Other retail loan |
|---|---|---|---|---|
| **ROE, CAR 13.4%** | **19.6%** | **15.5%** | **31.4%** | **28.7%** |
| Leverage | 13.6 | 15.4 | 10.3 | 10.3 |
| **ROA** | **1.4%** | **1.0%** | **3.1%** | **2.8%** |
| Interest yield | 4.6% | 4.3% | 8.9% | 7.9% |
| Funding cost | -1.7% | -1.7% | -1.7% | -1.7% |
| **NIM** | **2.8%** | **2.6%** | **7.2%** | **6.2%** |
| Net non-II income | 1.4% | - | 1.2% | 1.9% |
| **Op revenue** | **4.2%** | **2.6%** | **8.3%** | **8.1%** |
| Opex | -1.8% | -1.1% | -3.6% | -3.5% |
| **PPOP** | **2.4%** | **1.5%** | **4.7%** | **4.6%** |
| Credit cost | -0.6% | -0.2% | -0.9% | -1.1% |
| EBT | 1.8% | 1.3% | 3.9% | 3.5% |
| Tax | -0.4% | -0.3% | -0.8% | -0.7% |
| Risk weighting | 57% | 50% | 75% | 75% |

Notes: Seven banks include: ICBC, CCB, ABC, BOC, CMB, PAB and BONB. Key assumptions include: funding cost equivalent for all products, credit card yield based on CMB reported levels (the only bank that reported).

*Source: Company data, Goldman Sachs Global Investment Research.*

### Exhibit 7: We expect aggregate 1.3ppt ROE expansion into 2020E for banks with relatively large retail exposure under our coverage (+1.0ppt driven by retail transition)

| ROE | 2017E | 2018E | 2019E | 2020E | Uplift 17E-20E | Retail contribution |
|---|---|---|---|---|---|---|
| ICBC | 14.4% | 14.8% | 15.1% | 15.3% | 0.9% | 0.7% |
| CCB | 14.8% | 14.8% | 15.2% | 15.9% | 1.1% | 0.9% |
| BOC | 10.8% | 11.2% | 11.6% | 12.2% | 1.4% | 0.9% |
| ABC | 14.6% | 14.6% | 14.8% | 15.4% | 0.9% | 0.6% |
| CMB | 16.2% | 16.7% | 17.6% | 18.4% | 2.2% | 1.9% |
| PAB | 10.8% | 11.4% | 12.8% | 14.7% | 3.9% | 4.2% |
| BONB | 17.1% | 17.9% | 18.8% | 19.4% | 2.3% | 1.4% |
| **Aggregate** | 13.6% | 13.9% | 14.3% | 14.9% | 1.3% | 1.0% |
| **Big 4 average** | 13.6% | 13.8% | 14.2% | 14.7% | 1.1% | 0.8% |
| **Other bank average** | 14.7% | 15.4% | 16.4% | 17.5% | 2.8% | 2.5% |

*Source: Goldman Sachs Global Investment Research.*

# Consumer lending (1): A Rmb16tn opportunity by 2020E

## Consumer credit taking off – strong growth for all four types of institutions/platforms offering consumer credit

In the past year, consumer credit has seen a sharp increase across all four channels that give out/intermediate consumer loans. Stronger growth by non-banks lenders has been well noted by the media and in the market, including:

- Total registered capital of **consumer finance companies** increased by 51% in 2017.
- Outstanding loan balance on **P2P platforms** (some with micro lending licenses) grew by 50% yoy as of YE17.

We highlight, however, that banks have been able to grow consumer lending at a similar rate:

- **Banks**' short term retail loans in 2017 increased by **41% yoy** off a high base (relative to other lenders) and still account for over 85% of all short term consumer credit.
- Recent tightening by regulators related to **micro loan licensed/P2P companies** is likely to contain excessive growth by:
  - Including credit assets transferred out/securitized into a company's leverage calculation and subjecting them to the leverage cap set by local finance offices (micro finance related ABS increased by 301% yoy).
  - Banning cash loans without scenario/designated purposes. Introducing a grace period for clearing up the cash loan businesses. Strengthening maximum APR, KYC, data security, and risk management requirements.

**Exhibit 8: There are four main types of institutions extending consumer credit in China**

| Lenders | Growth | | | Funding sources | Regulator | Capital/leverage requirements |
|---|---|---|---|---|---|---|
| Commercial banks | **Rmb6.75tn** S-T consumption loan balance (11M17) | vs | **Rmb4.93tn** S-T consumption loan balance (FY16) | Deposit, wholesale funding, credit card/ loan ABS | PBOC, CBRC | 7.5%/8.5%/11.5% for CT1/T1/Total CAR (1% higher for SIBs) |
| Consumer finance companies | **25** approved consumer finance licenses as of 8M17 | vs | **15** approved consumer finance licenses as of 2015 | Bank loan, equity, wholesale funding, ABS, bond | CBRC | 10x leverage |
| | **Rmb27.5bn** registered capital for all consumer finance companies as of 2017 | vs | **Rmb10.5bn** registered capital for all consumer finance companies as of 2015 | | | |
| Companies utilizing micro finance license (traditional & online) | **Rmb256bn** micro loan ABS issuance as of 10M17 | vs | **Rmb81bn** micro loan ABS issuance as of 2016 | Equity, bank loan, ABS, equity | Local finance bureau | Up to 3x leverage, min Rmb50mn registered capital, determined by local regulators |
| P2P companies (intermediaries) | **Rmb1,225bn** P2P loan balance as of 2017 | vs | **Rmb816bn** P2P loan balance as of 2016 | Individual investors, institutional investors, ABS, equity | Still unclear, currently under local internet finance risk management office | No restriction |

**Significant overlap**

*Source: Wind, Wang Dai Zhi Jia (WDZJ), Company data*

## A Rmb16tn opportunity by 2020E

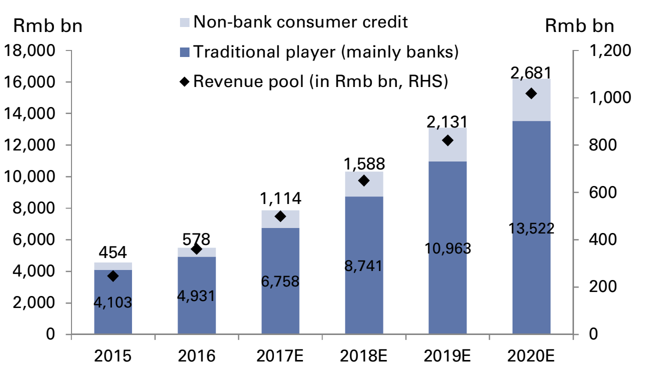
We forecast total non-mortgage consumer loans in China to grow to **Rmb16tn in 2020E** from Rmb5.5tn in 2016 (31% CAGR), driven by strong disposable income and consumption growth, higher consumer leverage penetration, changed mindsets about borrowing (particularly younger generations), and new technologies that lower intermediary costs – for a full discussion about each of these drivers please refer to pages 13-17. Over the same period, we also forecast banks' revenue pool to grow by c.3X to c.Rmb1.03tn on higher credit premium, lower cost-income ratio (CIR) and improved operating efficiency helped by FinTech.

Although banks traditionally limit the scope of their unsecured loan products to customers with credit records/strong employment (often government, central SOE and global top 500 companies only), we see: 1) the acceleration of credit offerings by non-banks as likely to help more customers obtain credit records and hence become eligible customers of banks (see pages 24-26 for discussion of the credit information sharing system in China); and 2) certain banks have already started carefully entering into higher quality non-prime cohorts, either by themselves or helped by third party platforms (asset loan model).

We note some recent market concerns around:

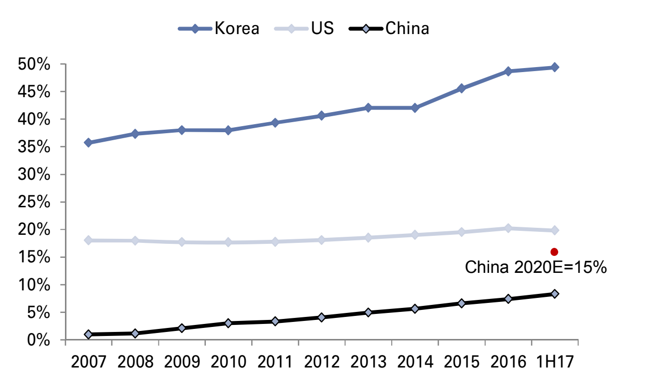
- **Consumer credit may have flowed into the property sector**: We estimate this amount to be c.Rmb450-500bn as of 9M17 and believe that the risks are well contained based on the divergence between M/L-T consumer loans and mortgages (see *Box 1: Lending practices in China* on page 22 for further details).
- **Appropriateness and legitimacy of cash loans/online micro lenders/P2Ps**: We have already seen regulators take an active stance by issuing multiple regulations/guidelines recently (see *China Banks: Headwinds for online lenders likely to continue on further regulation,* November 27, 2017, for details).

**Exhibit 9: We forecast total non-mortgage consumer loans to grow from Rmb5.5tn in 2016 to Rmb16tn in 2020E…**



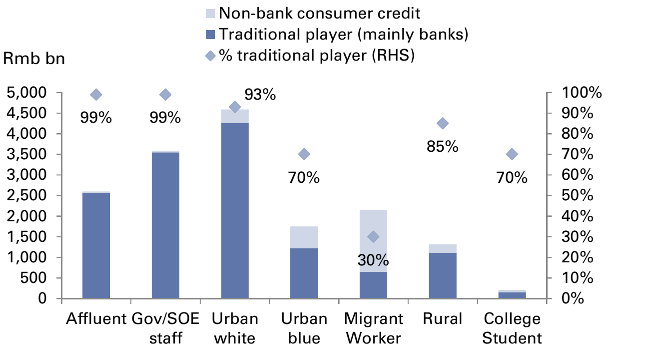

*Source: PBOC, Goldman Sachs Global Investment Research*

**Exhibit 10: … representing c.15% of GDP in 2020E, vs 21% in the US and c.49% in Korea currently**



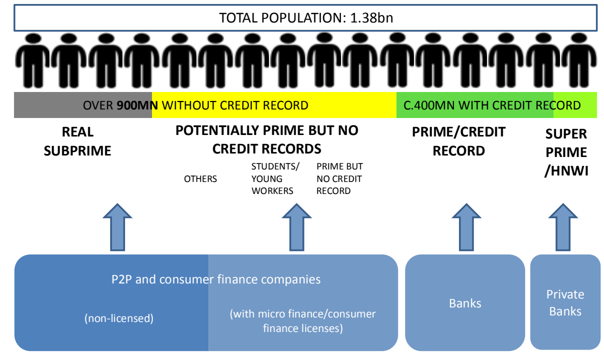

*Source: BIS, Goldman Sachs Global Investment Research*

**Exhibit 11: Banks continue to dominate 'prime cohorts' in 2020E**



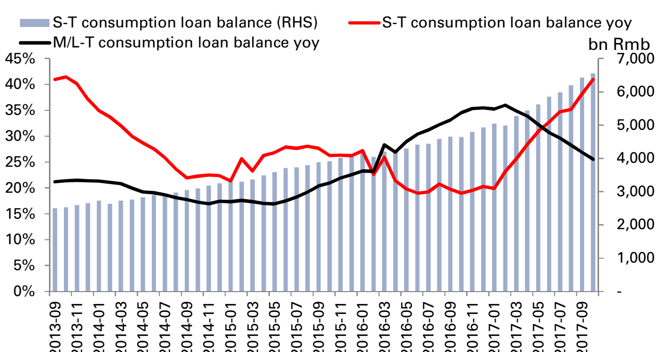

*Source: Goldman Sachs Global Investment Research.*

**Exhibit 12: China banking services overview as of 2017**



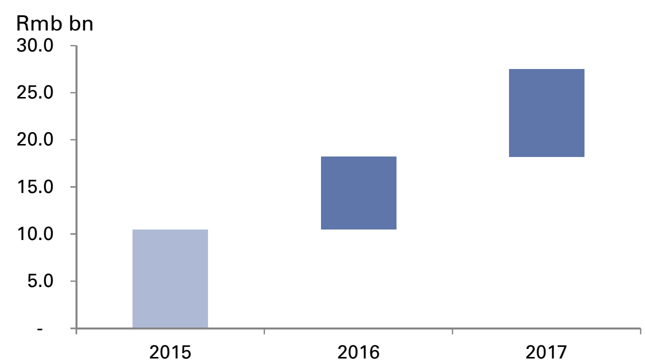

*Source: Goldman Sachs Global Investment Research.*

**Exhibit 13: Banks' short-term consumption loans increased by 41% yoy in 11M2017**



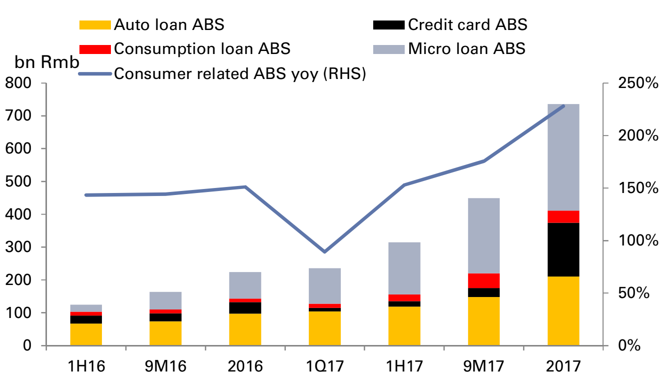

*Source: PBOC*

**Exhibit 14: For consumer finance companies, the total registered capital increased by 51% in 2017**



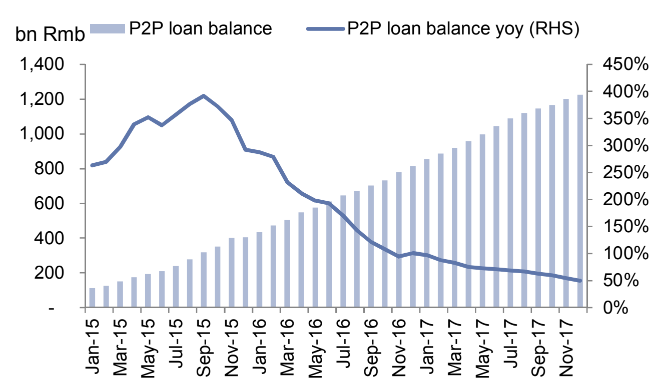

*Source: Company data*

**Exhibit 15: The consumption related ABS also significantly increased, by 228% yoy**




*Source: Wind*

**Exhibit 16: Total outstanding balance of P2P platforms grew by 50% yoy in 2017**




*Source: WDZJ*

# Consumer lending (2): ROE accretion opportunity +3ppt by 2020E

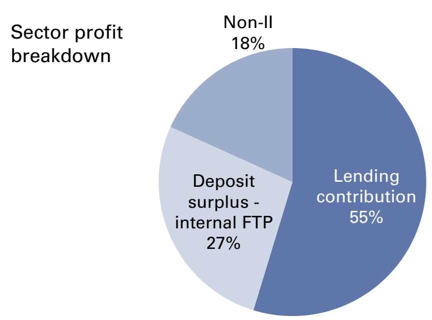
Based on our study of seven banks, we estimate that retail lending (ex-mortgages) in 2016 generated +8ppt higher ROE than corporate lending. We expect an aggregate average 1.3ppt ROE lift by 2020E, of which 1.0ppt is driven by banks higher exposure to retail business. Mid-sized retail-focused banks are likely to benefit the most with PAB and CMB seeing the highest retail ROE uplift of 4.2ppt and 1.9ppt respectively.

## Banks' retail revenue largely driven by retail lending, where we see profitability expanding on scale/technology

We estimate that retail lending, at 55% as of FY16, is the largest contributor to retail business' total revenue line. This is followed by deposit surplus (27% of retail revenue – incl. lending related fees – into lending contribution), whereas non-II accounts for the rest (18% of retail revenue). Specifically, banks with stronger retail deposit franchises, such as the big 4, generate a greater proportion of revenue from deposit surplus, while insufficient retail deposit is a revenue drag for other banks.

Overall for the seven banks, we see total credit premium (credit cost plus profit) expanding from 38% in 2016 to 43% by 2020E, as operating expenses fall on scale and technology.

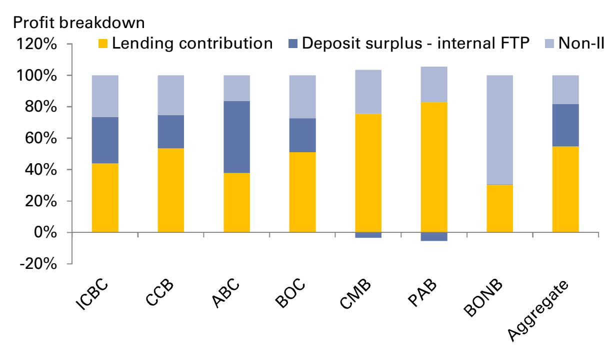
**Exhibit 17: Lending, at 55%, is the largest contributor to retail business' total revenue line**
As of FY16




Notes: Data shown is for the seven banks in aggregate and also assumes 3.2% internal funds transfer pricing (based on CMB reported data).

*Source: Company data, Goldman Sachs Global Investment Research.*

**Exhibit 18: The big 4 generate a large part of revenue from deposit surplus, while insufficient retail deposit is a revenue drag for other banks**
As of FY16

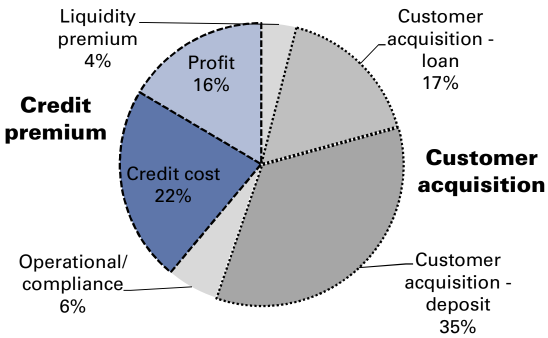



Note: Data assumes 3.2% internal funds transfer pricing.

*Source: Company data, Goldman Sachs Global Investment Research.*

**Exhibit 19: Credit premium as a % of retail lending revenue was 38% in 2016…**

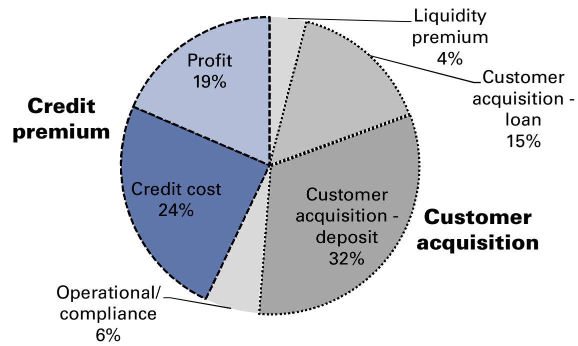
Non-mortgage consumer lending revenue pool breakdown, based on all covered China banks (FY16)




*Source: Company data, Goldman Sachs Global Investment Research.*

**Exhibit 20: …and we expect this to grow to 43% by 2020E**

Non-mortgage consumer lending revenue pool breakdown




*Source: Goldman Sachs Global Investment Research.*

## The retail lending advantage: +8ppt ROE vs corporate banks

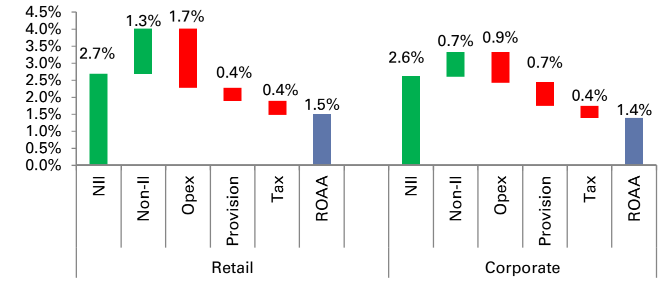
Retail business generates higher ROA and ROE versus corporate business. Based on our sample study of seven banks, retail lending business achieved an average of **1.5%/18.2% ROA/ROE** in 2016, which compares to 1.4%/9.9% for corporate lending business, contributed by:

1. **Higher net asset yield**: 4.0%/3.3% for retail lending/corporate business respectively (exclude FTP).
2. **Lower provision charges due to better asset quality**: Through-cycle credit cost remained low at 0.52% for retail on the back of a 1.0% NPL ratio (vs. 0.80%/2.2% for corporate loans) in 2016. We note that banks may experience slightly higher credit cost on their retail loan book as they expand into less prime customers.
3. **Lower capital requirement resulting in higher leverage and ROE**: We calculate retail leverage at 12.2x in 2016 on the back of lower risk-weighted retail assets, vs. 7.2x for corporate lending.

The above three advantages **more than offset the higher operating expenses** in retail business. Going forward, we believe scale advantage and cost management will be key for retail profitability, which is likely to take place with the help of technology.

Specifically, we see CMB and PAB as having the highest retail ROE in 2016, mainly due to their higher retail yield, which we believe will outweigh higher operating expense and provisions and also the lower corporate NIM.

### Exhibit 21: Aggregate ROA/ROE was at 1.5%/18.2% for retail lending vs. 1.4%/9.9% for corporate lending in 2016




*Source: Company data*

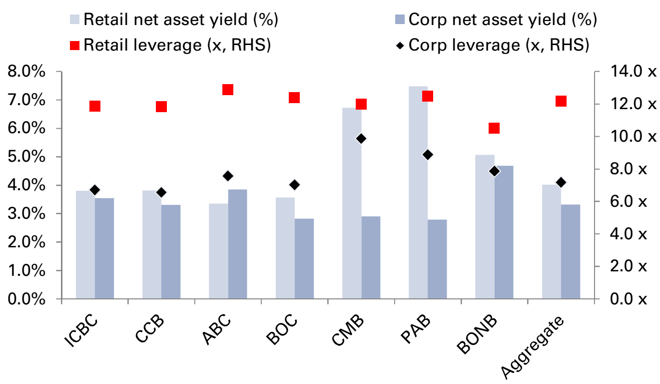
### Exhibit 22: We expect a shift into retail business to be the primary boost to ROE (+1.3ppt by 2020E) with mid-sized retail-focused banks seeing the highest ROE uplift

| ROE | 2017E | 2018E | 2019E | 2020E | Uplift 17E-20E | Retail contribution |
|---|---|---|---|---|---|---|
| ICBC | 14.4% | 14.8% | 15.1% | 15.3% | 0.9% | 0.7% |
| CCB | 14.8% | 14.8% | 15.2% | 15.9% | 1.1% | 0.9% |
| BOC | 10.8% | 11.2% | 11.6% | 12.2% | 1.4% | 0.9% |
| ABC | 14.6% | 14.6% | 14.8% | 15.4% | 0.9% | 0.6% |
| CMB | 16.2% | 16.7% | 17.6% | 18.4% | 2.2% | 1.9% |
| PAB | 10.8% | 11.4% | 12.8% | 14.7% | 3.9% | 4.2% |
| BONB | 17.1% | 17.9% | 18.8% | 19.4% | 2.3% | 1.4% |
| **Aggregate** | 13.6% | 13.9% | 14.3% | 14.9% | 1.3% | 1.0% |
| **Big 4 average** | 13.6% | 13.8% | 14.2% | 14.7% | 1.1% | 0.8% |
| **Other bank average** | 14.7% | 15.4% | 16.4% | 17.5% | 2.8% | 2.5% |

*Source: Goldman Sachs Global Investment Research.*

### Exhibit 23: Retail net asset yield (NII and non-II) was at 4.0% for retail lending vs. 3.3% for corporate business

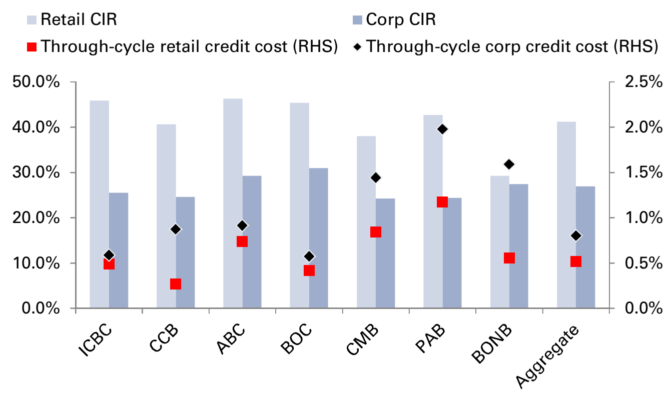
As of FY16




*Source: Company data*

### Exhibit 24: Through-cycle credit cost is at 0.52% for retail vs. 0.80% for corporate…

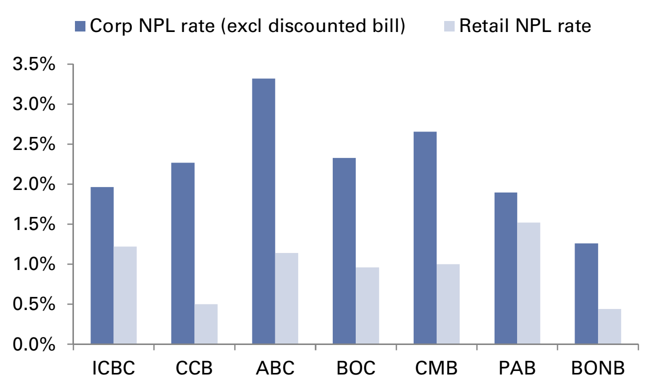
As of FY16




*Source: Company data*

### Exhibit 25: … as retail loans have lower NPL rate at 1.0% in 2016 vs. 2.2% for corporate

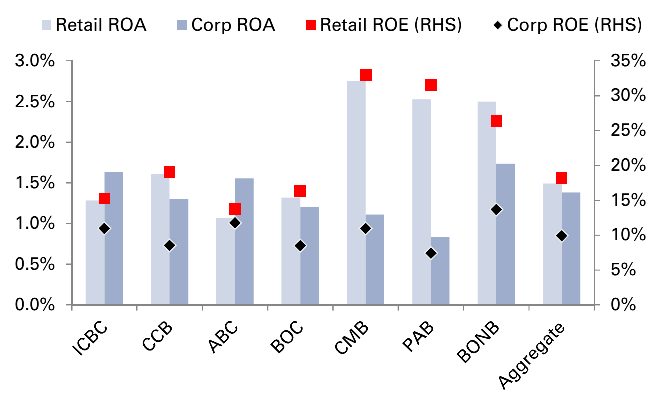
As of FY16




*Source: Company data*

### Exhibit 26: Specifically, we see CMB and PAB as having the highest retail ROE…

As of FY16




*Source: Company data*

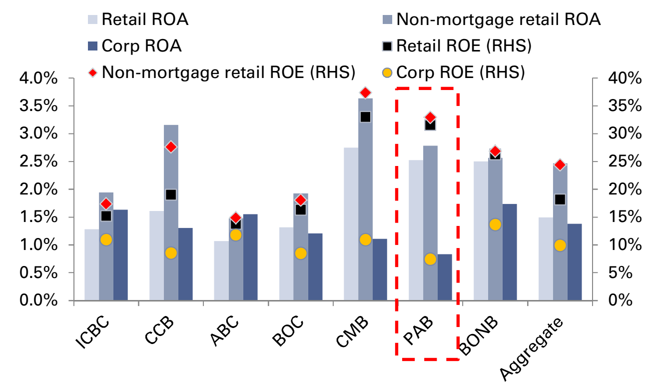
## Unsecured consumer credit: Most profitable segment with 24% ROE

We see non-mortgage retail loans as the most attractive segment for banks given higher net asset yield (including related fee income), which is more than enough to offset the higher operating expenses and credit costs compared to mortgages. Across the seven banks in our study, aggregate non-mortgage retail ROA/ROE was at 2.5%/24.4% in 2016 vs. 1.5%/18.2% for overall retail loans.

We note that the big 4 are relatively more conservative in retail lending and mainly target prime group with lower interest rates vs. CMB and PAB. Specifically, CMB and PAB have the highest non-mortgage yield (9.3% and 8.6%, respectively, vs the big 4 average of 6.3% as of 2016), although partially offset by higher provision charges and operating expenses.

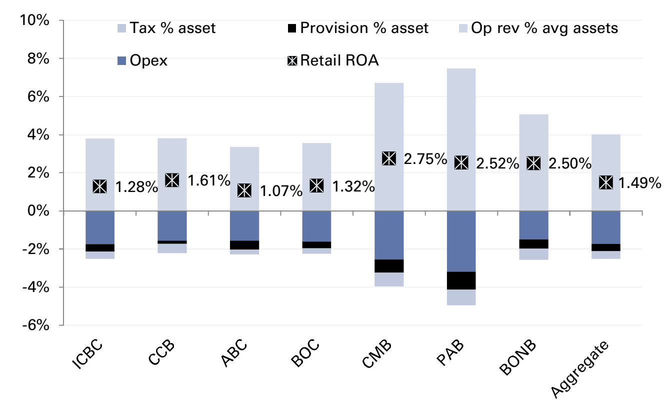
That said, we still see the need for banks to offer mortgage products in order to retain customer relationships and to potentially grow related deposit businesses.

**Exhibit 27: Aggregate non-mortgage retail ROA/ROE was at 2.5%/24.4% in 2016 vs. 1.5%/18.2% for overall retail loans…**
As of FY16



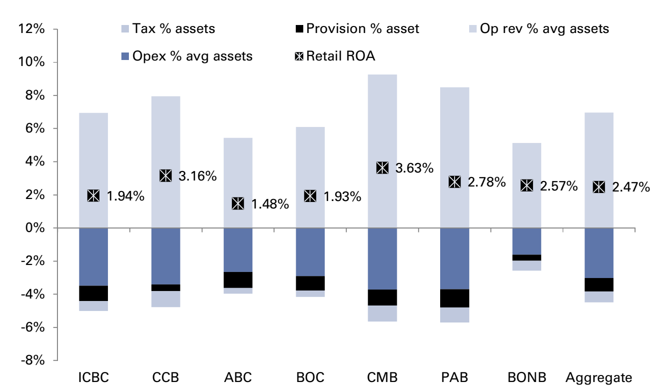

*Source: Company data*

**Exhibit 28: ...as the higher overall yield of non-mortgage loans...**
Retail loan DuPont breakdown, as of FY16



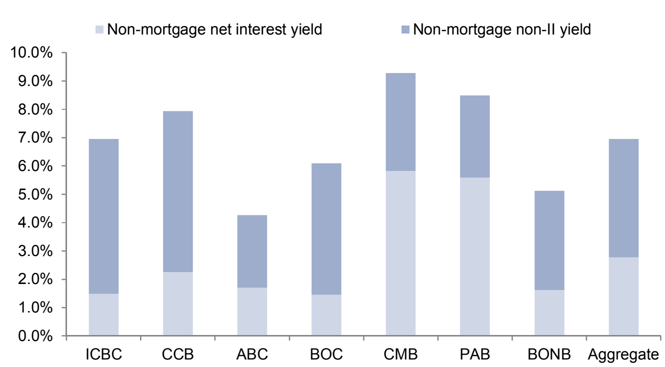

*Source: Company data*

**Exhibit 29: …more than offset higher operating expense and provision**
Non-mortgage retail loan DuPont breakdown, as of FY16



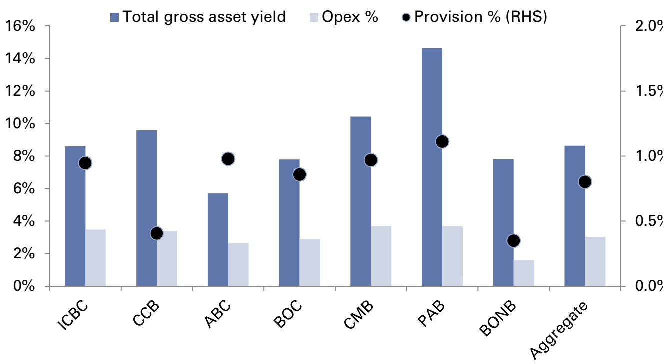

*Source: Company data*

**Exhibit 30: The big 4 are relatively more conservative and target more prime customers and have lower interest pricing vs banks such as CMB and PAB**
As of FY16



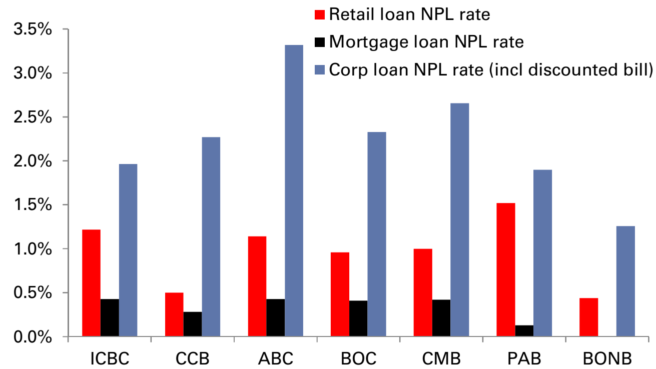

*Source: Company data*

**Exhibit 31: Non-mortgage retail gross asset yield among our sampled banks, partly offset by higher opex and provision…**
Non-mortgage gross asset yield vs. opex and provision, as of FY16



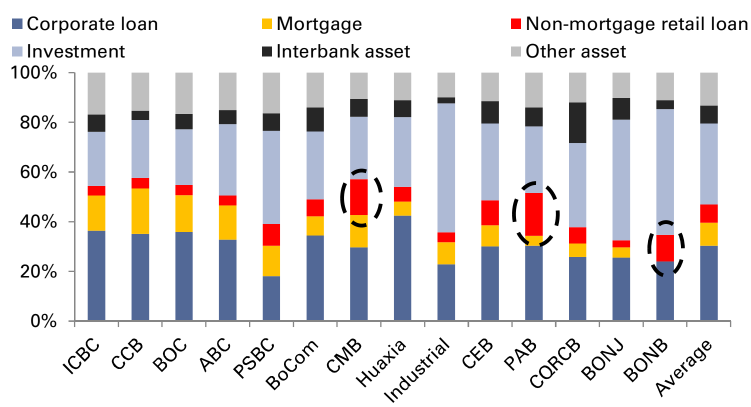

*Source: Company data*

**Exhibit 32: …due to relatively higher retail NPL rate**
As of FY16




*Source: Company data*

**Exhibit 33: PAB, CMB, and BONB have the highest exposure to retail lending**
Asset breakdown, 1H17




*Source: Company data.*

# The structural drivers: Underpenetrated market with 8% ex-mortgage consumer credit as a percentage of GDP

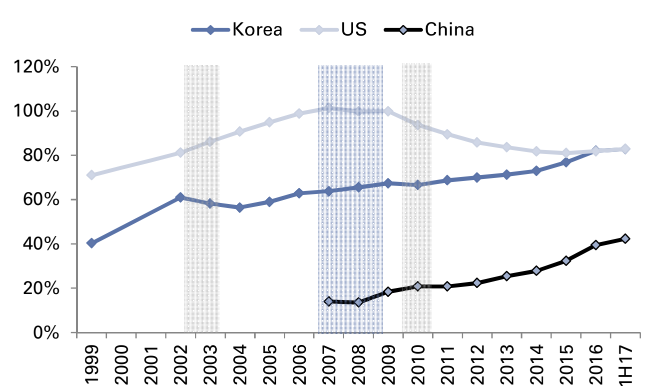
## China's consumption loan market looks underpenetrated vs peers

Household debt in China as a % of GDP stood at 42% as of 1H17, vs 83% in both Korea and the US, while ex-mortgage consumer credit accounted for 8% of GDP vs 49%/21% in Korea/US.

In addition to this lower penetration rate, we believe unsecured consumer credit has significant potential for future growth and is ready to take off on the back of the following:

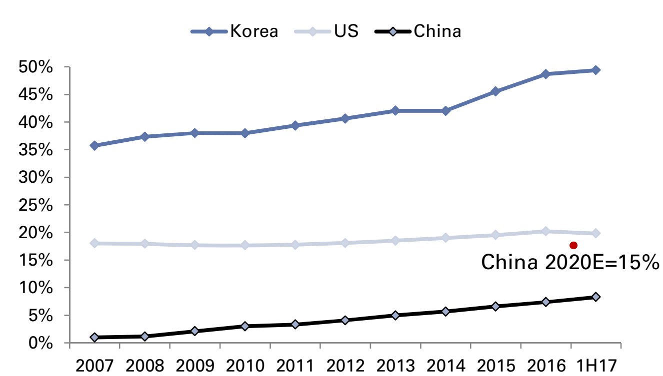
1. **High household savings rate** of 23% in China as of 2016, which could support higher consumption spending and household debt. Historically, Korea was at a similar level of saving rate before the credit card business started booming in 1999.
2. **Still low level but increasing consumption spending.** Private consumption as % of GDP is at a relatively lower level (39% in 2016) vs other countries (68% for the US, 49% for Korea) but has improved since 2010, indicating stronger demand and thus potentially more consumption loans.
3. **Willingness to borrow and easier access to credit**, especially amongst millennials. A consumer finance 2017 iResearch survey showed that over 40% of 18-40 year olds have used installment loans before, with another 40% willing to have a try.
4. **Availability of alternative funding sources (e.g., ABS) that enables non-bank institutions to lend.** Consumer-related ABS (ex-mortgage) now accounts for 25% of total ABS, enabling lending companies to access capital and increase funding.

**Exhibit 34: China's consumption loan market looks underpenetrated with household debt as a % GDP at 43% (as of 1H17) vs 83% for both Korea and the US…**
Household leverage



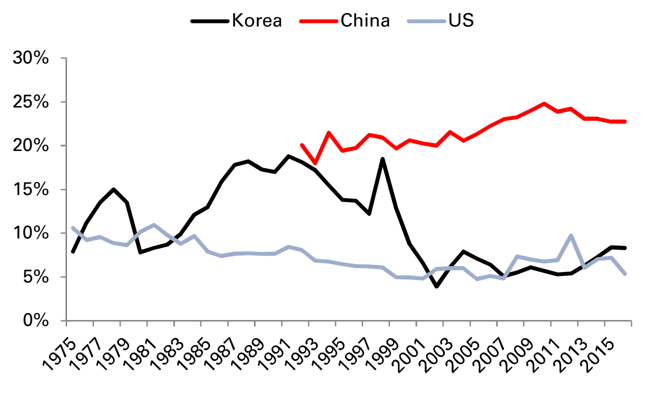

*Source: CEIC, Federal Reserve*

**Exhibit 35: … while ex-mortgage consumption loans as a % GDP stood at 8% vs 49% for Korea and 20% for the US**
Ex-mortgage household leverage



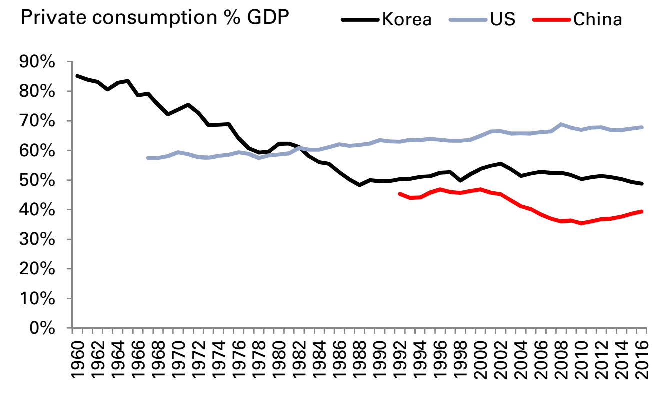

*Source: BIS, Goldman Sachs Global Investment Research*

**Exhibit 36: China's savings rate remains high (and vs other countries), supportive of household leverage**
Household savings as % GDP



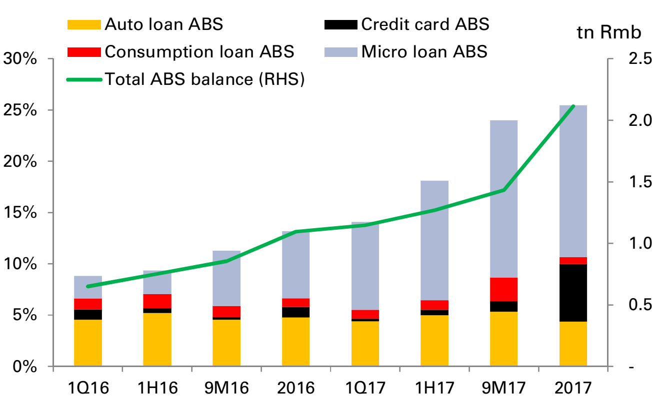

*Source: World Bank*

**Exhibit 37: Unsatisfied demand resulting from increasing yet lower-level consumption spending indicates potential consumption loan need**
Private consumption as % GDP



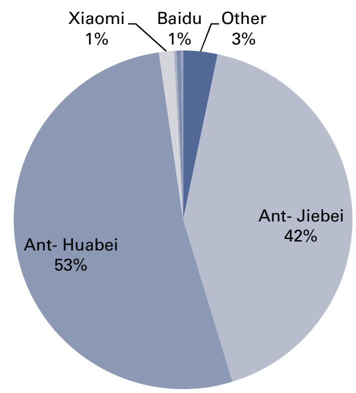

*Source: CEIC*

**Exhibit 38: More consumer-related ABS have been issued to fund lending, especially the ABS whose underlying assets are consumption loans (25% in 2017, excl. underlying asset in mortgage)**




*Source: Wind*

**Exhibit 39: Breakdown of consumer-related ABS by initiating institutions**
As of 2017



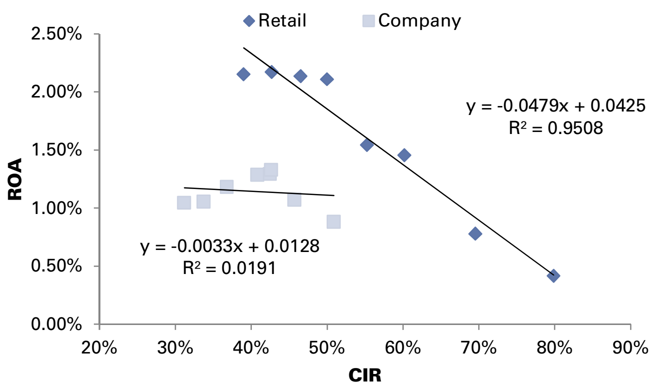

*Source: Wind*

# The technology drivers: To help client acquisition and risk management

## Economy of scale to improve retail banking CIR

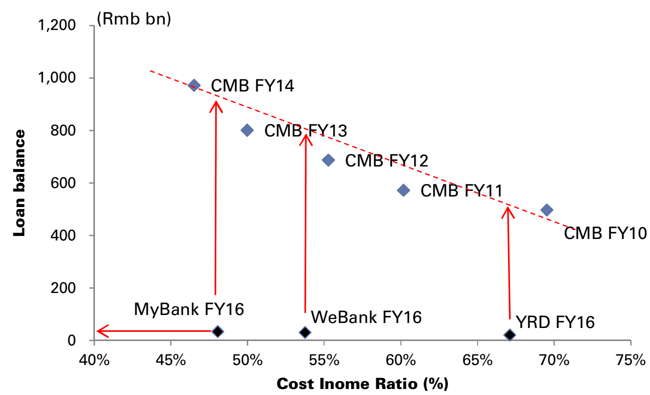
High operating cost has historically been a major pain point for banks' retail expansion. Compared with corporate banking, retail banking businesses typically have higher cost-income ratios (CIR) due to smaller ticket sizes and higher initial investment for a comprehensive branch network. However, evidence suggests that banks could improve retail CIRs when branch networks mature and the scale effects play out. Anecdotally, CMB managed to lower its retail CIR to 38% in FY16 from 70% in FY10, as its retail loan balance doubled during the same period.

**Exhibit 40: The profitability of CMB's retail business has a stronger (inverse) relationship vs cost income ratio**
As of 2009-2016




*Source: Company data, Goldman Sachs Global Investment Research.*

**Exhibit 41: FinTech companies managed to maintain lower CIR than banks even at much lower level of loan balance**
Cost income ratio comparison for CMB (blue) vs FinTech companies (black)




*Source: Company data, Goldman Sachs Global Investment Research.*

## Digitization to save cost and bring in new revenue stream

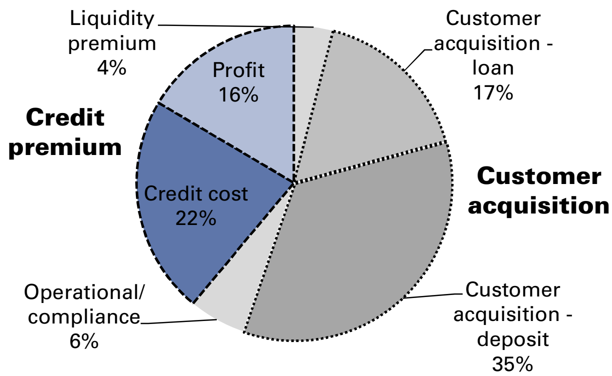
**Online consumer finance company Lexin has a low acquisition cost of Rmb105 per active customer, a fraction of banks (for details see "*LexinFintech Holdings (LX): Leading internet lender for students/young adults; initiate at Buy*", January 15, 2018)**

In an effort to optimize efficiency, banks have increasingly enhanced their online platforms to facilitate self-services. ICBC has upgraded 90% of its branches to Smart branches in the past two years, whereby the traditional counters have been replaced by self-service stations, and bank staff now proactively talk to clients to solicit business vs passively waiting behind the counters in the past.

We believe banks could leverage their online capacity to acquire new customers as it:

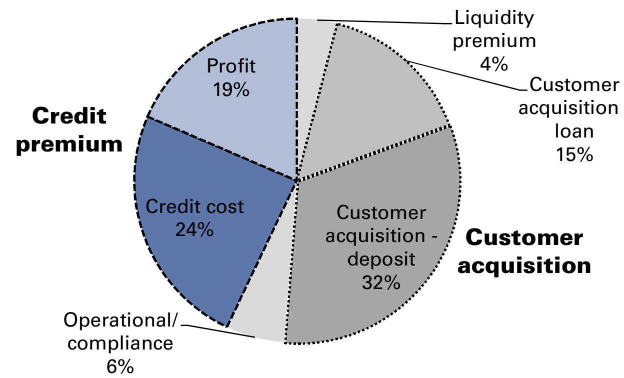
- **Improves customer experience**, especially for the digital savvy generation who often prefer mobile/internet-based applications for easier monitoring of balances/repayments, and also saves time from waiting in lines.
- **Attracts customers through online channels**, which has become increasingly important as social media proliferates.
- **Can lead to a lower CIR**. Two internet banks, MyBank and WeBank, already achieved a CIR of 54% and 47%, respectively, in 2016 at a much smaller scale than traditional banks. CMB, the most efficient bank in our China coverage as shown by the lowest retail CIR, only achieved similar levels by 2013. We expect total customer acquisition cost as a percentage of consumer lending revenue for the industry to lower 5ppt by 2020E to 47%.

**Exhibit 42: Customer acquisition cost as % of retail lending revenue was ~52% in 2016…**
Non-mortgage consumer lending revenue pool breakdown, aggregate of our covered banks




*Source: Company data, Goldman Sachs Global Investment Research.*

**Exhibit 43: …which we expect to lower to 47% by 2020E**
2020E non-mortgage consumer lending revenue pool breakdown




*Source: Goldman Sachs Global Investment Research.*

**Read more about regulations and risk management of FinTech companies in *"Future of Finance: The Rise of China FinTech"*, August 7, 2017**

## Big data to help improve risk management

**Fraud detection – fraud** (**willingness to pay**) is one of the most important risk areas in retail lending, especially for credit card business. FinTech proposes to use new technologies and models to detect fraud risks including:

- Social data – clustering analysis to help identify fraud.
- Biological tools – facial recognition, sound waves, etc.
- Machine learning and cluster analysis of contact groups.

**Credit risk management (capacity to pay**) – China banks have traditionally mostly relied on static risk management models utilizing own data and data from the PBOC Credit Bureau, which includes credit history and financial positions of individuals. While we agree that such data are powerful tools in credit risk management, we also believe new technologies (FinTech) allow banks to further improve traditional credit risk management models by:

- **Encompassing non-financial data** (e.g., social and behavioral traits) into credit risk assessment to supplement the traditional model. For example, one individual who has a record of unauthorized locking of shared bikes for their own personal use is arguably of higher default risk.
- **Adding a forward looking/predictive feature** to credit risk assessment. For example, a graduating student with employment offers (which are verifiable) should arguably be granted a credit line even if he/she has no income yet.

## Banks' FinTech strategies

We see three main ways in which banks employ their FinTech strategies: in-house investment, collaboration and acquisition, of which we have seen the first two as more popular options amongst banks.

**BBVA, Credit Suisse, and JP Morgan directly invested in Prosper's funding, while Silicon Valley Bank and Norwest Venture Partners have invested in Lending Club (*"The State of P2P Lending"*, Techcrunch, January 2016)**

1. Invest in in-house FinTech technology, e.g. the number of CCB employees in technology increased by **52%** since 2010 (37k) to 56k in 2016, vs only a 15% increase in its total headcount, whereas CMB announced it was to invest 1% of EBIT in technology from 2017 onwards.
2. Collaborations with tech companies, either by purchasing assets/loan portfolios from FinTech lenders, or using services from FinTech companies to acquire customers and/or enhance risk management. We note that all of the big 4 banks have announced strategic partnerships with BATJ (Baidu, Alibaba, Tencent, and JD.com).
3. Acquisitions of FinTech startups, so as to acquire the technology, and sometimes customers as well.

**Exhibit 44: Examples of banks collaborating with Tech/FinTech companies**

**ICBC-XiaoBai:** ICBC and JD Finance have collaborated to launch a digital bank. It can be embedded into various online services without installing an APP.

**ABC Financial Brain and AB Loan:** ABC and Baidu have agreed to build an AI product called ABC Financial Brain. They also launched an unsecured cash loan product - AB Loan - based on Baidu's analytical capability and ABC's client base.

Signed memo to collaborate on credit card (online card application), mobile payment (enabling QR code sharing), and retail credit system, etc.

Funded BOC-Tencent FinTech Lab to collaborate on various technologies, including cloud computing, big data, blockchain, and AI.

Tencent agreed to provide comprehensive support to CITIC Bank. Relocating CITIC's internet service on to Tencent Cloud, building a financial data platform, fraud detect and solution, safety framework are among the most important parts of this collaboration. The two parties also proposed setting up a JV bank

*Source: Company data, compiled by Goldman Sachs Global Investment Research.*

# No near term bubble yet: Need to be vigilant of overheating risk and develop a credit rating system

## We believe consumer debt is not yet a major concern…

- Penetration is low, in particular we believe that much of China's near-prime and subprime cohorts are underserved. Banks in China mainly lend to people with a credit history at PBOC's Credit Bureau, which amounts to c.400mn or just 30% of the total population.
- We see near/sub-prime consumer lending as an attractive business from a risk-return perspective, if properly done. For example, Capital One, a near/sub-prime lender in the US, has been profitable throughout the economic and credit cycles over the past 10 years.
- In addition, we believe the relatively fast economic and income growth (real GDP/household income CAGR of +6.5%/+7.7% over 2017E-19E) are likely to allow China' young population to migrate upward from near/sub-prime to prime. According to a 2017 job survey for higher education graduates survey by MyCOS Research, a specialist in higher education management data analytics, the average salary of first year university graduates reached Rmb4,376 in 2016, +30% vs Rmb3,366 in 2012.

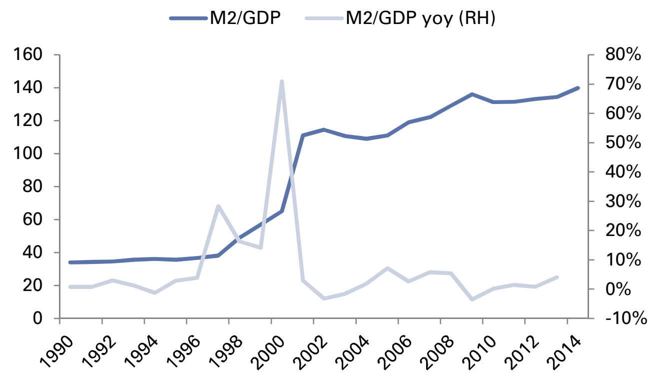
## …but are wary of potential overheating risks in the longer term

**Case Study (1): South Korea's credit card 'boom and bust'**
Korea's credit card industry expanded rapidly during 1999 and 2002. Over this short period, aggregate card issuance almost tripled to over 100 million, total credit card transaction volume grew more than 6X, and the outstanding balance to disposable income ratio rose by 5X. All of these eventually brought South Korea into a painful credit card crisis in 2003, resulting in 34% total impaired assets, and 2.3mn delinquent card borrowers by November 2003, according to an IMF survey.

We look at the major causes of South Korea's credit crunch, including weaker lending standards, and a lack of prudent and in-time regulation.

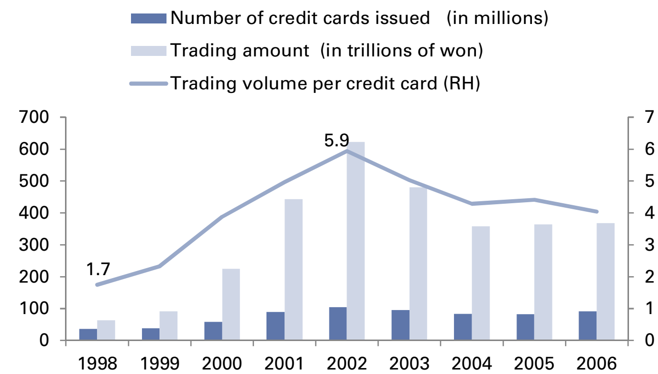
- **Lower lending standards,** in particular driven by: 1) an influx of entrants into the credit card market, and 2) the pursuit of economies of scale (as the marginal cost of adding new accounts is relatively low).
- **Cash advances**, generally regarded as a more risky type of credit drawdown, became the primary driver of credit card debt growth (cash advances accounted for 57% of total credit card transactions in the beginning of 2003).
- **Absence of a comprehensive credit system,** which allowed consumers to acquire multiple cards and refinance debts with loans from other banks. In 1999, Korea's credit rating system required only limited items to be collected, such as lender name, debtor name and types of loans.
- **Lack of prudential regulatory actions**. Not until November 2002, when the total NPL ratio had reached 11.2%, did the authorities began to tighten lending standards. They forced credit card companies to reduce credit lines and manage impaired assets, which significantly reduced a borrower's ability to finance existing debts with new loans, further deteriorating the portfolios' asset quality. At the peak of the crisis, the total NPL ratio approached 34.2%.

**Exhibit 45: Korea's M2/GDP was elevated during the period of 1999 to 2002**



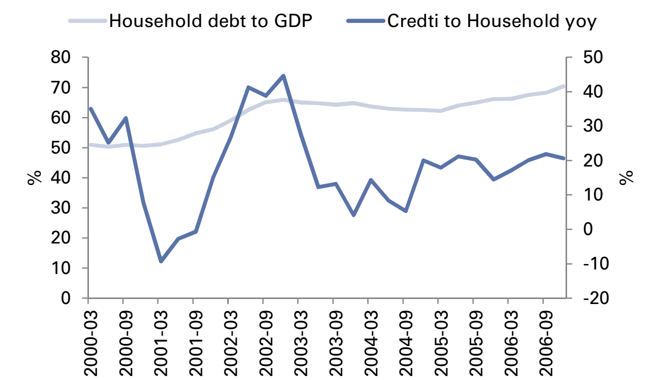

Source: Bank of Korea; Financial Supervisory Service of Korea

**Exhibit 46: Credit card issuance tripled from 39mn in 1999 to 105mn in 2002, while total transaction volume grew more than 6X in the same period**



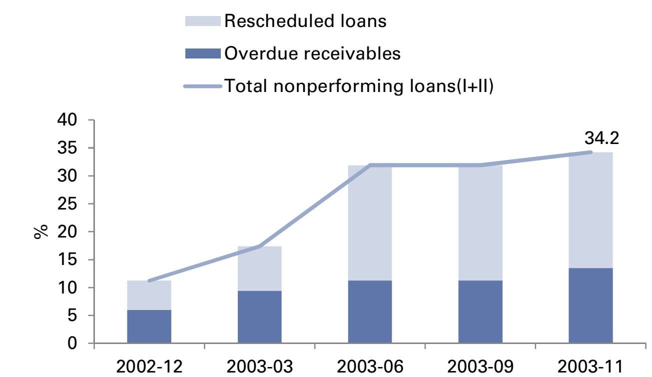

Source: Bank of Korea; Financial Supervisory Service of Korea

**Exhibit 47: Tighter credit further pushed up delinquencies, especially among overleveraged card borrowers, resulting in credit contraction…**




Source: Bank of Korea

**Exhibit 48: …and the total NPL ratio reached 34.2% at the peak**

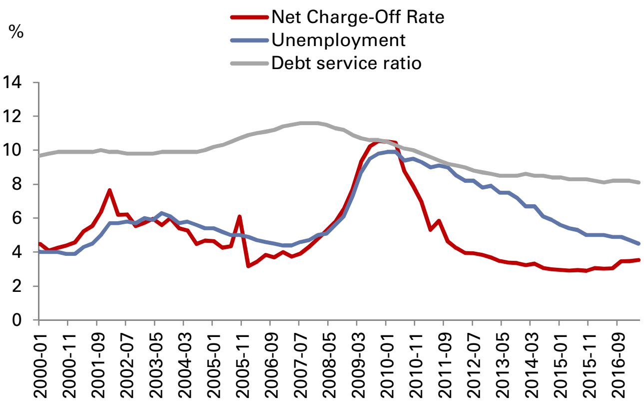



Source: Bank of Korea

## Case Study (2): US near/subprime lending suggests unsecured consumer lending can be profitable through cycles when properly managed

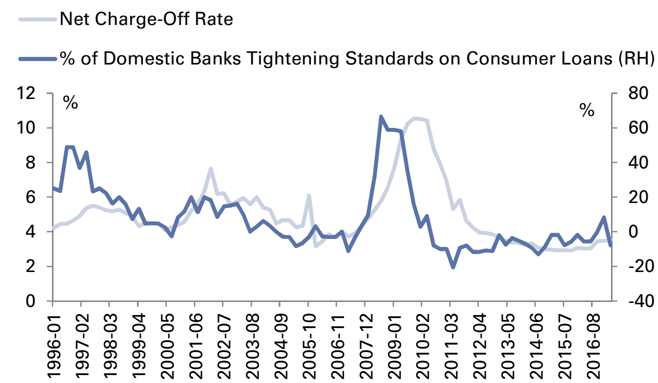
The 2008 GFC was triggered by home price declines in the United States, and the subsequent defaults of subprime mortgage loans. Besides **unemployment and consumer indebtedness**, lending standards is another key driver for the profitability of credit card business. We think cycles happen, but even so we believe unsecured consumer lending can be profitable when properly managed, in particular if **lending standards** are properly managed through cycles. Capital One (COF, CL-Buy, covered by Ryan Nash, US$104.42 as of January 16, 2018), a near prime and subprime lender in the US, for example, has been able to maintain a positive pre-tax ROA even during the GFC. We identify two mini-lending cycles post GFC, where the company managed to maintain positive pre-tax ROA through time. It appears that COF dynamically adjusted its lending standards – credit card issuance picked up in 2011/12 as the asset quality issues from the GFC gradually subsided, before slowing in 2013 (likely via tightening of lending standards) when charge offs started to rise again. Once charge offs moderated in 2014, COF's credit card issuance picked up again.

**Exhibit 49: Unemployment rates and consumer indebtedness in the US positively correlate to the health of credit card assets**



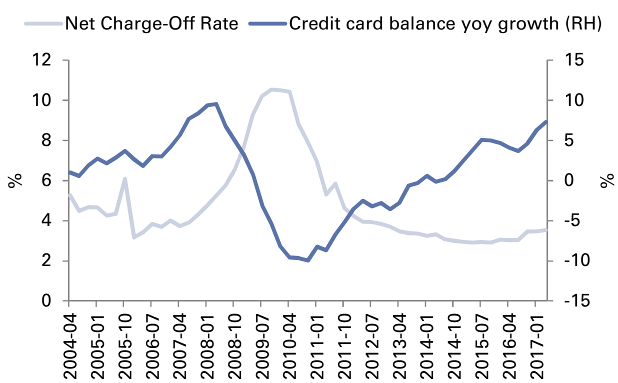

*Source: Federal Reserve Bank of St. Louis*

**Exhibit 50: Lending standards is another key driver for the profitability of credit card business for US banks**




*Source: Federal Reserve Bank of St. Louis*

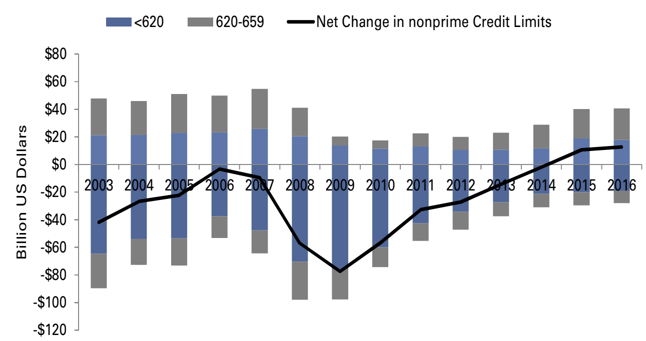
**Exhibit 51: Managing lending standards may lead to an increase or decrease in credit card lending in the US…**




*Source: Federal Reserve Bank of St. Louis*

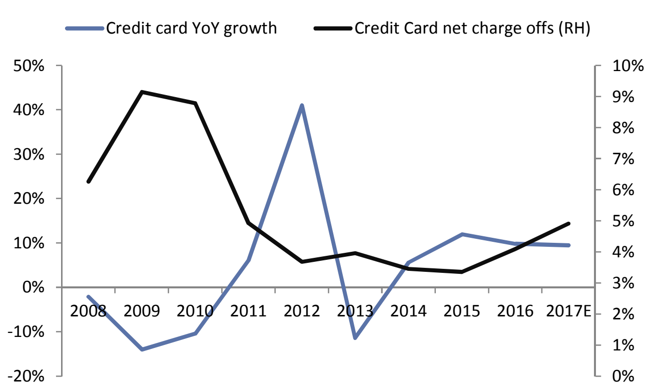
**Exhibit 52: …and also net extensions to nonprime borrowers (with scores below 660) have increased in the US recently after a few years of declines since the GFC**

Bars refer to credit provisions to borrowers under different scores bands, and line refers to net change in credit limit



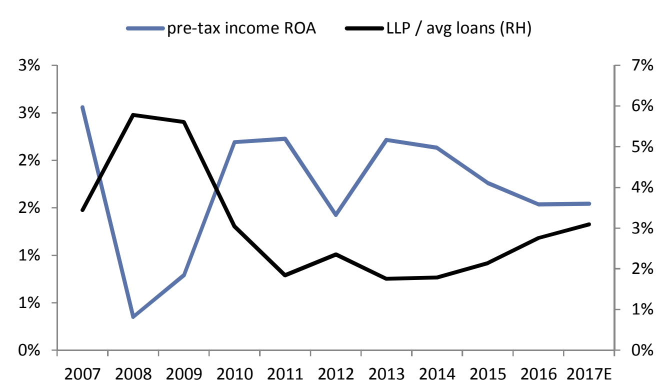

*Source: Federal Reserve Bank of St. Louis*

**Exhibit 53: COF's two lending cycles post GFC, as it manages lending standards over time**




*Source: Company data, Goldman Sachs Global Investment Research.*

**Exhibit 54: In each cycle, COF maintained positive pre-tax ROA**



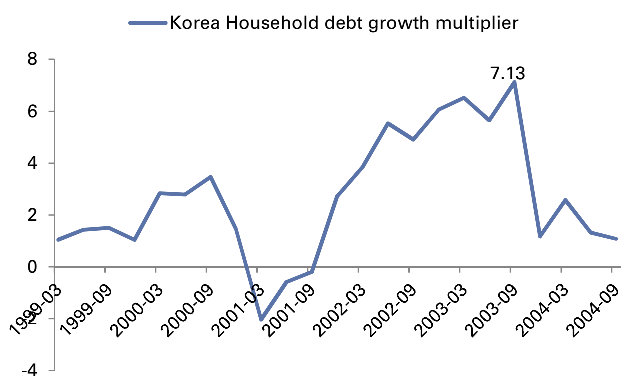

*Source: Company data, Goldman Sachs Global Investment Research.*

## What can China learn?

From the Korea and US experience, we summarize two important lessons for China: 1) maintain proper **lending standards** to avoid overheating, and 2) create a **fair and wide** personal credit information system.

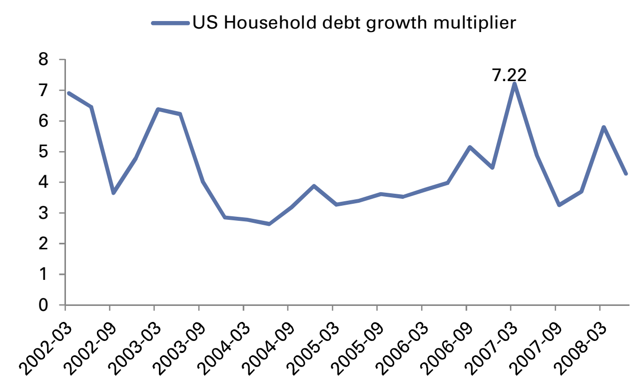
1. **Excessive lending** tends to be driven by loosened underwriting standards, which in turn is likely to result in overheating and eventually credit losses. While we have already argued that current penetration of consumer debt in China remains low, we also note that from a flow perspective, China's total household debt growth multiplier does not suggest overheating at 2.8X (as of 3Q17), well below the 7X seen in South Korea and the US just before the credit card crisis/GFC. Likewise, if we believe the 7X empirical rule, China's total household debt growth should not exceed c.35% annual growth going forward (assuming a sustainable GDP growth rate of 6.5% for China).

**Exhibit 55: Korea household debt growth multiplier peaked at 7.13X in the credit card crisis**



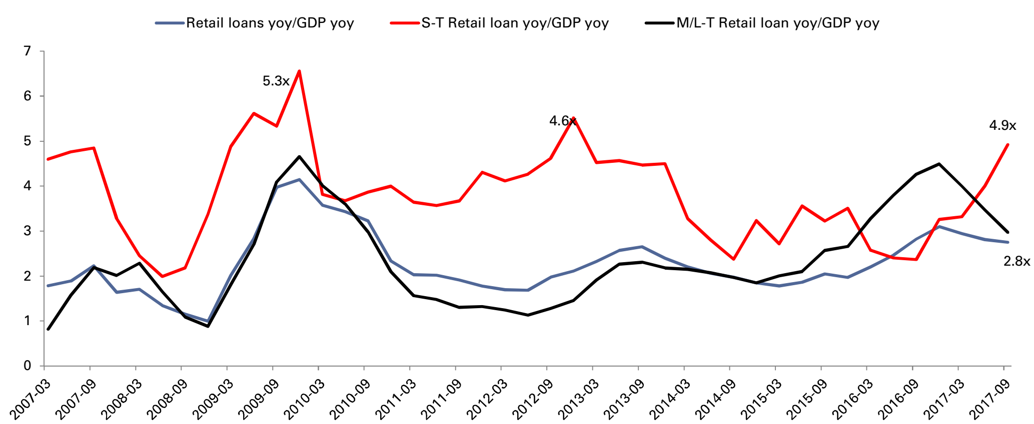

*Source: Datastream*

**Exhibit 56: US household debt growth multiplier peaked at 7.22X in the GFC**




*Source: Datastream*

**Exhibit 57: China's retail debt growth multiplier (retail loan yoy/GDP yoy) reached 2.8X at the end of 2017Q3, which does not suggest overheating**




*Source: PBOC*

## Box 1: Lending practices in China

### Banks appear to have generally prudent practices for mortgages

Based on our December 2017 channel checks with mortgage officers, we find that mortgage lending standards in China can be similar to, or sometimes stricter than, peer countries and regions in terms of leverage requirements. Many of the Chinese banks now check detailed cash flow history to assess borrower ability to repay debts, instead of requesting only salary slips in the past.

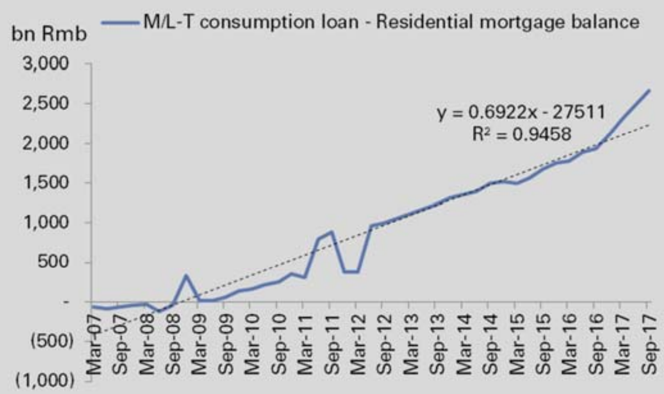
**Exhibit 58: Mortgage assessment criteria (as of December 2017)**

| Mortgage Assessments | China Mainland | Hong Kong | Singapore |
|---|---|---|---|
| **Loan to value ratio** | 70% | 40-50% | 80% |
| **Debt service Cap** | 50% | 50% | 60% |

*Source: Company data, compiled by Goldman Sachs Global Investment Research*

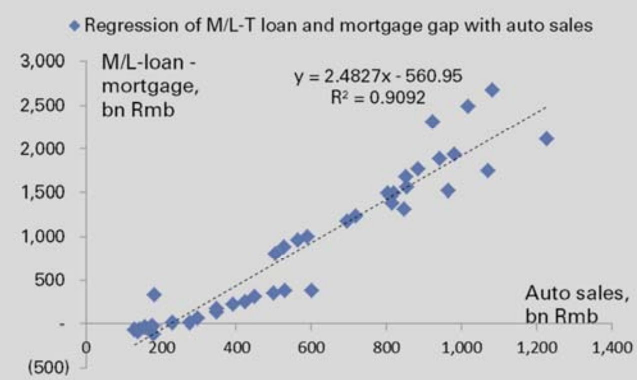
We note some recent media reports (21jingji, 01caijing, etc.) on potential risks of excessive mortgage loans disguised as consumer credits since the property market tightening in late 2016. Using the divergence between total M/L-T consumer loan and residential mortgages as an indicative measure of this implies there could be c.Rmb450bn of such misrepresented mortgage loans as of 9M17 (vs mortgages c.Rmb2tn).

**Exhibit 59: The gap between M/L-T consumer loan and mortgage loans could be an indication of some retail loans flowing into the property market**




*Source: PBOC, Goldman Sachs Global Investment Research*

**Exhibit 60: After adjusting for auto loans, we estimate c.Rmb450bn-Rmb500bn to be property related as of 9M17**




*Source: PBOC, Goldman Sachs Global Investment Research*

With both central and local governments having tightened supervision on loan provisioning towards the property sectors since September 2017, we believe such a risk is still under control, and our channel checks also generally indicate strengthened risk management procedures on consumer loans in recent months.

**Exhibit 61: Both the central and local governments have tightened supervision on loan provisioning towards the property sectors**

| Regulators | Source | Time | Measures |
|---|---|---|---|
| Local branches of PBOC and CBRC | Sina, Oct 1, 2017 | Sep | Local branches of PBOC and CBRC asked banks to investigate S-T consumption loans, especially potential flow into property market. This results in banks asking for consumption proof and setting a cap for loan amount. |
| CBRC | CBRC conference, STCN, Sep 29, 2017 | 29-Sep | CBRC pointed out important lessons from the US subprime crisis and cautioned against growing household leverage too fast. |
| Chongqing CBRC | Guideline on Further Strengthening Credit Card Risk Prevention | 14-Nov | Banks should not solely use card issuance number as the incentive measurement. Banks should not blindly increase business via credit card issuance, and that it may be inappropriate to expand credit card issuance for the sole purpose of boosting fee income. |

*Source: PBOC, CBRC, Sina*

**Platforms often have less prudent risk management; borrowers may share strategies to obtain multiple loans from different platforms**

Lending practices of the c.2,000 online platforms is arguably less standardized overall vs banks. While some platforms use external data sources (PBOC's Credit Bureau, Alibaba's Sesame Score, etc.) to make lending decisions, others use only proprietary databases. As discussed earlier, technology can help with detecting fraud and monitoring credit risk, but it is difficult to gauge the effectiveness of such systems without actually going through a credit cycle. In particular, there could be a risk that online platforms do not report/share credit data to the PBOC Credit Bureau, which could lead some borrowers to exchange strategies/experience to successfully obtain multiple loans from different platforms (refinance with new debt).

**Tighter regulatory scrutiny**

Regulators recently announced a series of tightening measures targeting online lenders (summarized below), which we see as necessary to help prevent potential overheating risks at an early stage.

**Exhibit 62: Recent regulations targeted at online lenders**

**Online Lending Information Intermediary Service Agency**

**Jul 2015: Guidelines on promoting the Healthy Development of Internet Finance (PBOC/CBRC/MIIT)**
- Call for active government support of internet finance industry
- Specify that the CBRC will have primary regulatory responsibility for online P2P lending services

**Apr 2016: Implementation Plan of Specific Rectification for Risks in Internet Finance and Implementation Plans (State Council)**
Emphasize requirements for the rectification of P2P lending industry.

**Aug 2016: Interim Measures (CBRC/MIIT/MPS/ Cyberspace Administration)**
- Prohibit 13 activites by an online lending intermediary, include financing for themselves, accepting the funds of lenders, providing guarantee etc
- Further requirements:
 a) Separate own capital from funds received from lenders
 b) Select a qualified bank as custodian institution
 c) Ceiling on online lending: Rmb200k for one online lending intermediary, Rmb1mn from all platforms

**Apr 2017: Notice on Cash Loan (Online Lending Rectification Office)**
- Requires the local branches of the Online Lending Rectification office to conduct a comprehensive review of the cash loan business
- Focuses on preventing malicious fradulent activities, loans that are offered at excessive rates, and violence uin the loan collection process

**Dec 2017: Notice on Regulating and Rectifying "Cash Loan", aka Circular 141 (Internet Finance Rectification Office/ Online Lending Rectification Office)**
- Cash loan business: KYC, lending credentials, aggregate borrowing cost etc
- Microcredit companies: no campus loans; reduce the volume of existing business
- Banking institutes: no joint provision of loans and outsourcing of KYC procedures

**Lending Between Individuals**

**Sep 2015: Private Lending Judicial Interpretations (Supreme Court)**
- Determined interest rates < 24% as enforceable, and rates >36% as invalid

**Campus Online Lending**

**Apr 2016: The Education and Guidance Work Notice (MOE/CBRC)**
Call for plans for rectification of non-compliant campus online lending

**Oct 2016: Rectification of Campus Online Lending Notice (MOE/CBRC)**
- Lenders to conduct borrower qualification exam
- No lending to college students under age 18; no advertising at physical location

**May 2017: Circular 26 (CBRC/MOE)**
Enabled banks and only banks to provide campus lending

**Microcredit (national rules only)**

**May 2008: Guidance on the Pilot Establishment of microcredit Companies (CBRC/PBOC)**

Allows provincial governments to establish microcredit companies on a test basis.

**Nov 2017: Notice on the Immediate Suspension of Approvals for the Establishment of Network Microcredit Companies (Internet Finance Rectification Office)**
Immediate effect

**Dec 2017: Rectification Plans of Network Microcredit Companies (Online Lending Rectification Office)**
- Full compliance with Circular 141
- Timeline: inspection by Jan 2018, rectification by Mar 2018

*Source: PBOC, CBRC.*

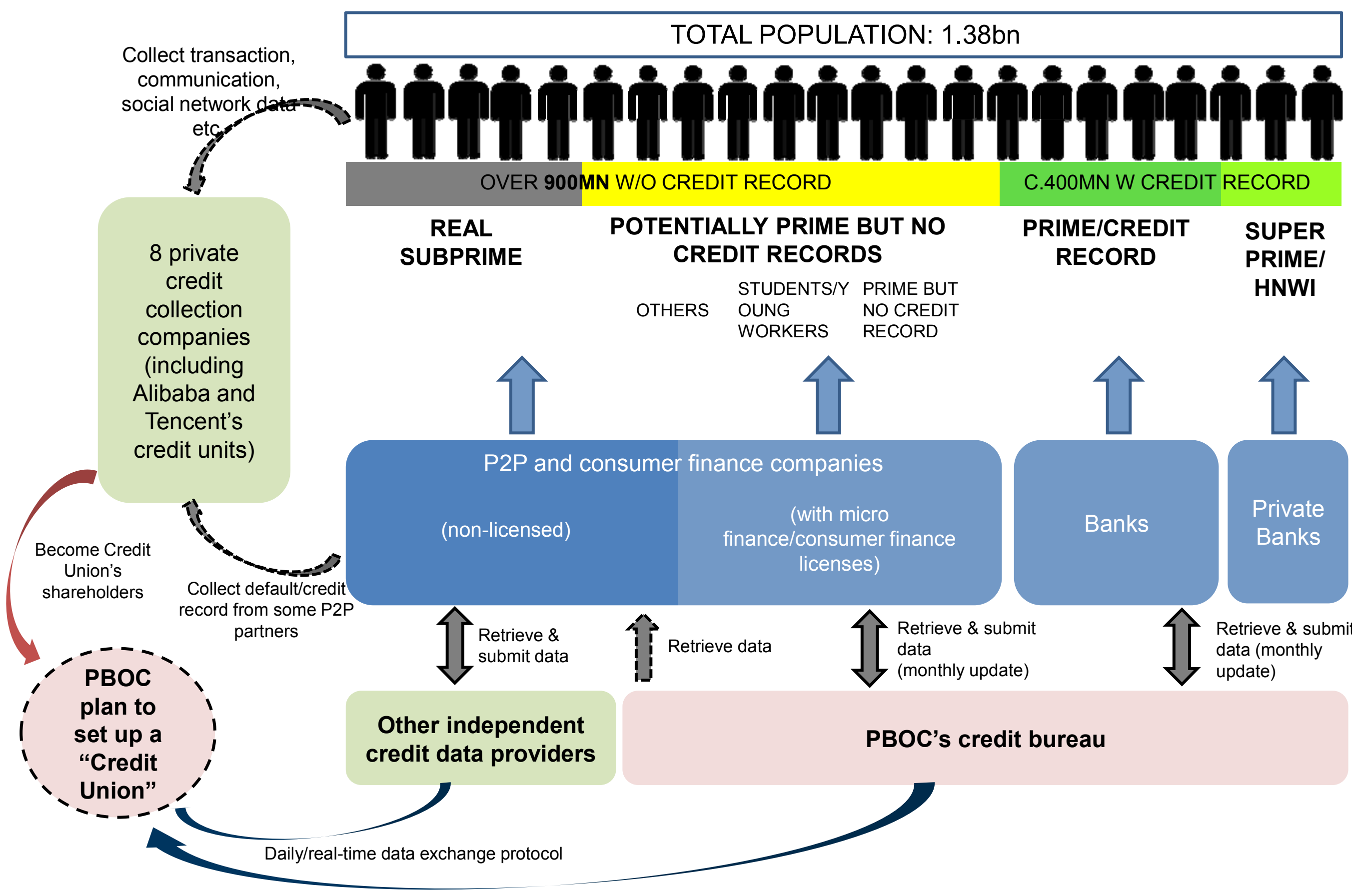
2. **A clean, accurate and complete credit information sharing system** is essential to the further development of China's unsecured consumer lending business, in our view.

   Despite the absence of a universal standard, regulators and market players are working together to build a comprehensive personal credit system in China.

   - PBOC's personal credit data bureau covers about 400mn people with a banking history (as of 2017).
   - Independent credit data providers, mainly using new dimensions data (location, contact list, etc.), cover a broader group.
   - Latest efforts include the proposed establishment of a **credit union**. On November 24, 2017, PBOC announced it is to set up a personal credit information platform together with eight independent credit data providers, and hence potentially create a reliable personal credit data system (read more in *Box 2: Credit Union – a big step forward for Individual Credit System in China* on page 25). Caixin reported that the new company (Baihang Credit Scoring) already filed application to PBOC on January 4, 2018.

**Exhibit 63: Successfully establishing the 'Credit Union' would complement the existing PBOC credit bureau in personal credit data analysis in China**

Illustration of potential future credit system in China




Note: Population data as of 2017.

Source: Goldman Sachs Global Investment Research.

## Box 2: Credit Union – a big step forward for Individual Credit System in China

### Current credit data bureau – PBOC's limited coverage failing to meet the growing consumer credit demand

PBOC is currently the biggest official credit data bureau in China. However, it is unable to meet the growing credit demand due to:

- **Limited coverage of c.400mn accounts** with bank loan/credit card history, but it lacks data from many of the newly emerged lenders such as online consumer lending platforms.
- **Monthly data update**, while unsecured consumer lending calls for a more comprehensive and timely system.

In early 2015, PBOC gave a temporary approval for individual credit scoring licenses to eight companies, including Zhima Credit (Alibaba), Tencent, PingAn Qianhai, amongst others. However, none of these companies managed to pass the assessment due to:

- **Lack of completeness** – limited customer credit data coverage for each individual credit company.
- **Lack of uniform reporting standard,** e.g. inclusion of interest rates on loans.
- **Potential conflict of interest,** as some credit data companies already had a lending business, and personal credit data is a key factor for their risk pricing.
- **Legal uncertainties,** as individual data exchanges between commercial agencies is still a grey area.

### Credit Union to turn the page – centralized platform with more participants, implementation is key

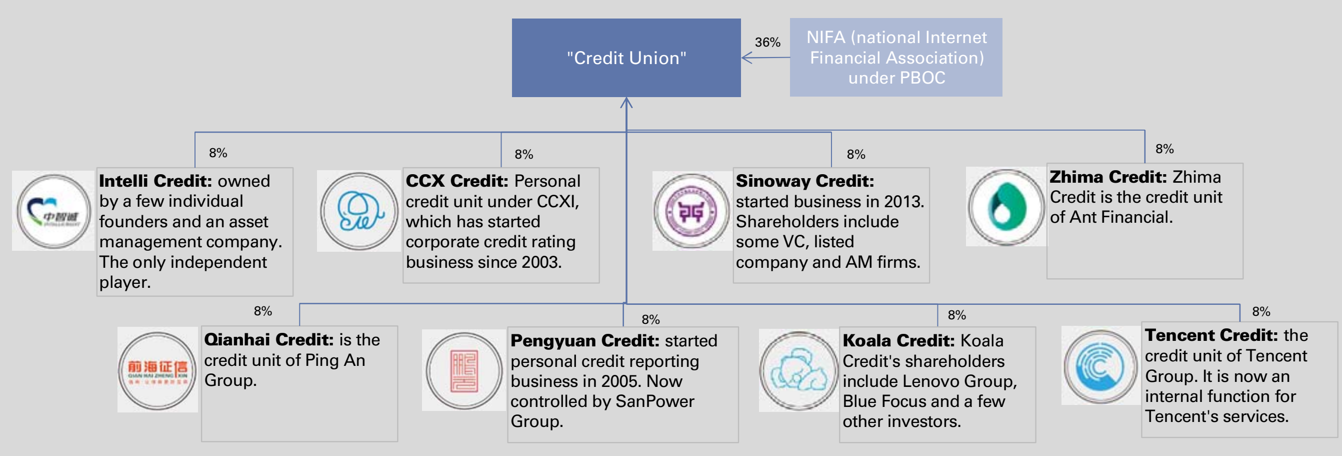
In November 2017, the National Internet Financial Association (NIFA) announced a plan to launch the *Credit Union* with the eight aforementioned credit companies, to govern the individual data exchange with a daily data update, which may eventually upgrade to real time. NIFA stated it will take an up 36% stake in the new platform, while each of the eight players would claim 8%. We believe that could be a big step forward to solving some of the current credit data issues:

- **Multiple lendings:** A centralized platform to monitor the borrower's total leverage, and detect borrowing from multiple platforms would mitigate credit risk.
- **Fraud:** Credit Union would help enforce penalties on loan default, reducing potential fraud.

However, implementation of the Credit Union is key and potential obstacles include:

- Unwillingness from credit data companies that have **already invested substantial resources** in data collection and have aspirations to build/maintain own proprietary credit data.
- P2P companies are not **regulated as financial companies**, which makes it difficult to enforce data collection.
- Many borrowers choose to borrow from P2P platform that don't report data to the official credit data bureau, and enforcing data collection may **lower credit demand** from such a client group.

**Exhibit 64: Potential shareholding structure of Credit Union**




*Source: PBOC, Company data*

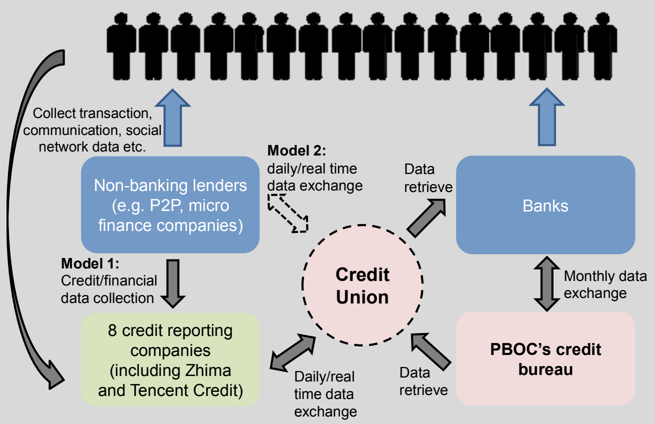
**Lessons from the US: Multiple players to benefit the market, data analytical capability a long-term asset**

In the US, the Consumer Data Industry Association (CDIA) establishes uniform reporting standards, and governs three major for-profit, private credit bureaus (Equifax/Experian/TransUnion) that operate independently. We see three features of the US credit scoring system that might lend experience to Credit Union in China:

- Absence of a data exchange protocol, but all credit companies operate under a common scoring framework.
- Collection of alternative information, e.g. rental payments to generate more predictive reports.
- Working with data analytical companies, e.g. FICO to enhance predictive features.

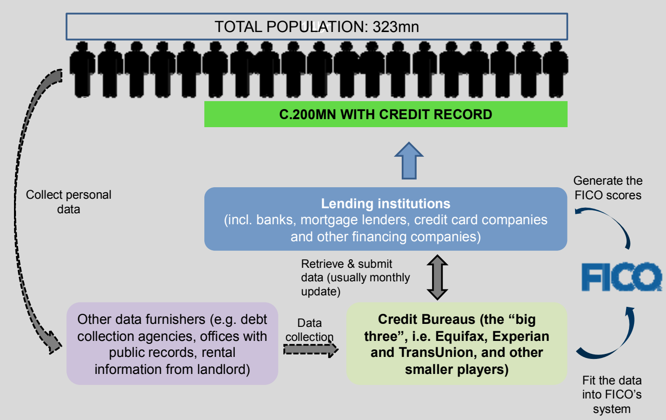
Specially, we see data analytical capability as a key asset to own and polish for the credit companies in the long run. We believe companies with strong analytical capabilities such as Ant Financials and Ping An Group could play an important role, even outside of the proposed Credit Union, by offering services to other companies.

**Exhibit 65: Two potential operating models for the proposed Credit Union**




*Source: Caixin, compiled by Goldman Sachs Global Investment Research.*

**Exhibit 66: FICO system in the US**




*Source: FICO, compiled by Goldman Sachs Global Investment Research.*

# Appendix 1: DuPont Tables

**Exhibit 67: Retail business (2016)**

| Retail Dupont | ICBC | CCB | ABC | BOC | CMB | PAB | BONB | Aggregate |
|---|---|---|---|---|---|---|---|---|
| **ROAE** | **15.2%** | **19.0%** | **13.8%** | **16.3%** | **33.0%** | **31.5%** | **26.3%** | **18.2%** |
| x leverage | 11.9 | 11.8 | 12.9 | 12.4 | 12.0 | 12.5 | 10.5 | 12.2 |
| **ROAA** | **1.3%** | **1.6%** | **1.1%** | **1.3%** | **2.7%** | **2.5%** | **2.5%** | **1.5%** |
| NII % avg. assets | 2.4% | 2.6% | 2.5% | 2.3% | 4.8% | 5.0% | 1.6% | 2.7% |
| Non-II % avg. assets | 1.4% | 1.2% | 0.9% | 1.3% | 2.0% | 2.4% | 3.5% | 1.3% |
| Op rev % avg. assets | 3.8% | 3.8% | 3.4% | 3.6% | 6.7% | 7.5% | 5.1% | 4.0% |
| Op ex % avg. assets | -1.7% | -1.6% | -1.6% | -1.6% | -2.6% | -3.2% | -1.5% | -1.7% |
| **PPOP % avg. assets** | **2.1%** | **2.3%** | **1.8%** | **1.9%** | **4.2%** | **4.3%** | **3.6%** | **2.3%** |
| Provision % avg. assets | -0.4% | -0.2% | -0.5% | -0.4% | -0.7% | -0.9% | -0.5% | -0.4% |
| EBT % avg. assets | 1.7% | 2.1% | 1.3% | 1.6% | 3.5% | 3.3% | 3.1% | 1.9% |
| Tax % avg. asset | -0.4% | -0.5% | -0.2% | -0.3% | -0.7% | -0.8% | -0.6% | -0.4% |
| CIR | 45.9% | 40.6% | 46.3% | 45.4% | 38.0% | 42.7% | 29.2% | 43.3% |

*Source: Company data*

**Exhibit 68: Corporate business (2016)**

| Corporate Dupont | ICBC | CCB | ABC | BOC | CMB | PAB | BONB | Aggregate |
|---|---|---|---|---|---|---|---|---|
| **ROAE** | **11.0%** | **8.5%** | **11.8%** | **8.5%** | **11.0%** | **7.4%** | **13.7%** | **9.9%** |
| x leverage | 6.7 | 6.6 | 7.6 | 7.0 | 9.9 | 8.9 | 7.9 | 7.2 |
| **ROAA** | **1.6%** | **1.3%** | **1.6%** | **1.2%** | **1.1%** | **0.8%** | **1.7%** | **1.4%** |
| NII % avg. assets | 2.6% | 3.0% | 3.0% | 2.3% | 1.8% | 1.6% | 3.3% | 2.6% |
| Non-II % avg. assets | 0.9% | 0.3% | 0.8% | 0.5% | 1.1% | 1.2% | 1.4% | 0.7% |
| Op rev % avg. assets | 3.5% | 3.3% | 3.8% | 2.8% | 2.9% | 2.8% | 4.7% | 3.3% |
| Op ex % avg. assets | -0.9% | -0.8% | -1.1% | -0.9% | -0.7% | -0.7% | -1.3% | -0.9% |
| **PPOP % avg. assets** | **2.6%** | **2.5%** | **2.7%** | **2.0%** | **2.2%** | **2.1%** | **3.4%** | **2.4%** |
| Provision % avg. assets | -0.5% | -0.8% | -0.8% | -0.5% | -0.8% | -1.0% | -1.3% | -0.7% |
| EBT % avg. assets | 2.1% | 1.7% | 1.9% | 1.5% | 1.4% | 1.1% | 2.1% | 1.8% |
| Tax % avg. asset | -0.5% | -0.4% | -0.4% | -0.3% | -0.3% | -0.3% | -0.4% | -0.4% |
| CIR | 25.5% | 24.6% | 29.2% | 31.0% | 24.3% | 24.4% | 27.4% | 27.0% |

*Source: Company data*

**Exhibit 69: Non-mortgage retail loan DuPont analysis (2016)**

| Non-mortgage retail Dupont | ICBC | CCB | ABC | BOC | CMB | PAB | BONB | Aggregate |
|---|---|---|---|---|---|---|---|---|
| **ROAE** | **17.4%** | **27.6%** | **14.9%** | **18.1%** | **37.4%** | **32.9%** | **26.9%** | **24.4%** |
| x leverage | 8.9 | 8.7 | 10.1 | 9.4 | 10.3 | 11.8 | 10.5 | 9.9 |
| **ROAA** | **1.9%** | **3.2%** | **1.5%** | **1.9%** | **3.6%** | **2.8%** | **2.6%** | **2.5%** |
| NII % avg. assets | 1.5% | 2.3% | 2.9% | 1.5% | 5.8% | 5.6% | 1.6% | 2.8% |
| Non-II % avg. assets | 5.5% | 5.7% | 2.6% | 4.6% | 3.5% | 2.9% | 3.5% | 4.2% |
| Op rev % avg. assets | 7.0% | 7.9% | 5.4% | 6.1% | 9.3% | 8.5% | 5.1% | 7.0% |
| Op ex % avg. assets | -3.5% | -3.4% | -2.6% | -2.9% | -3.7% | -3.7% | -1.6% | -3.0% |
| **PPOP % avg. assets** | **3.5%** | **4.5%** | **2.8%** | **3.2%** | **5.6%** | **4.8%** | **3.5%** | **3.9%** |
| Provision % avg. assets | -0.9% | -0.4% | -1.0% | -0.9% | -1.0% | -1.1% | -0.3% | -0.8% |
| EBT % avg. assets | 2.5% | 4.1% | 1.8% | 2.3% | 4.6% | 3.7% | 3.2% | 3.1% |
| Tax % avg. asset | -0.6% | -1.0% | -0.3% | -0.4% | -1.0% | -0.9% | -0.6% | -0.7% |
| CIR | 50.0% | 42.9% | 48.6% | 47.7% | 40.0% | 43.5% | 31.6% | 43.5% |

*Source: Company data*

# Appendix 2: Summary Valuation and Risks

### Exhibit 70: China Banks – summary of ratings, 12-m TPs, valuation methodology and risks

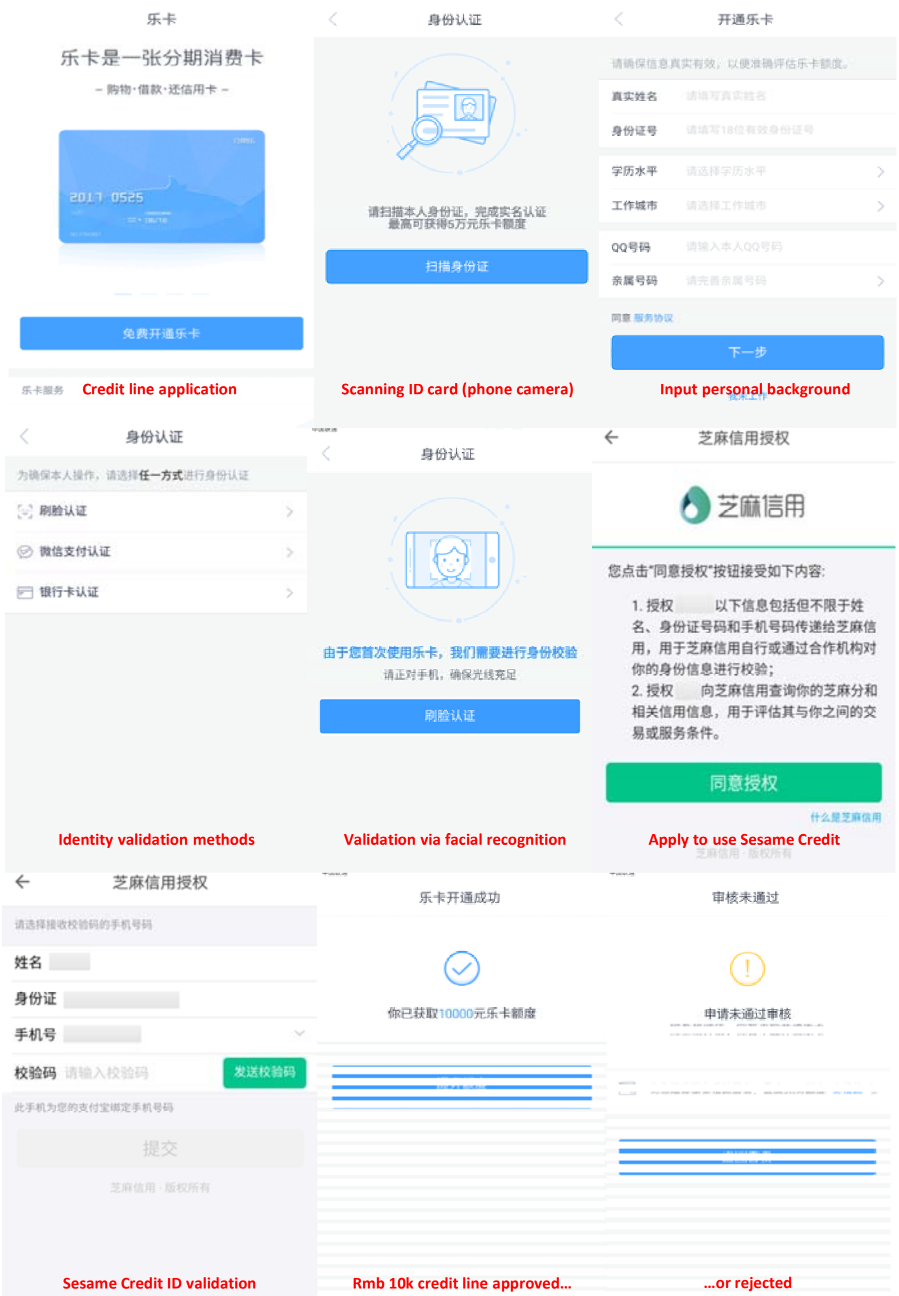
| Ticker | Bank | PCY | Close Price | 12-m TP | Rating | TP methodology | Risk |
|---|---|---|---|---|---|---|---|
| **H-share banks** | | | | | | | |
| 1398.HK | ICBC (H) | HK$ | 6.65 | 7.2 | Neutral | 19E P/PPOP | Upside: better-than-expected net interest margin and asset quality. Higher-than-expected provision charges to meet regulatory guidance on NPL coverage ratio. Downside: worse-than-expected NPLs, slower-than expect NIM expansion. |
| 3988.HK | BOC (H) | HK$ | 4.10 | 4.5 | Neutral | 19E P/PPOP | Upside: operation cost reduction and efficiency improvement. Downside: worse-than-expected NPLs, significant downturn in the overseas market. |
| 0939.HK | CCB (H) | HK$ | 7.84 | 9.3 | Buy* | 19E P/PPOP | 1) Policy tightening and economic slowdown. 2) Weaker-than-expected asset quality and thus higher-than-expected credit costs. |
| 1288.HK | ABC (H) | HK$ | 4.04 | 4.5 | Buy | 19E P/PPOP | 1) Increased competition from county areas. 2) Better/worse-than-expected asset quality and NIM outlook. |
| 3328.HK | BoCom (H) | HK$ | 6.13 | 6.4 | Sell | 19E P/PPOP | 1) Lower-than-expected funding cost. 2) Better-than-expected asset quality. 3) Higher operating efficiency with lower CIR. |
| 3968.HK | CMB (H) | HK$ | 34.85 | 38.1 | Buy | 19E P/PPOP | 1) With one of the highest off-B/S WMP as a percentage of deposits in our China Banks coverage, CMB could be susceptible to over tightening on any WMP issuance. 2) Weaker-than-expected asset quality and thus higher-than-expected credit costs. |
| 6818.HK | CEB (H) | HK$ | 3.78 | 4.1 | Neutral | 19E P/PPOP | Upside: better-than expected net interest margin and faster deposit growth; stronger capital position. Downside: worse-than-expected asset quality and slower fee income growth. |
| 1658.HK | PSBC | HK$ | 4.52 | 5.2 | Buy | 19E P/PPOP | 1) Worse-than-expected asset quality and operating efficiency. 2) Interest rate decline. 3) Sticky deposit cost. |
| 3618.HK | CQRCB | HK$ | 6.18 | 6.2 | Neutral | 19E P/PPOP | Upside: better-than expected net interest margin and asset quality. Downside: worse-than-expected NPLs; surprise slowdown of Chongqing economy. |
| **A-share banks** | | | | | | | |
| 601398.SS | ICBC (A) | Rmb | 6.43 | 7.0 | Buy | 19E P/PPOP | 1) Worse-than-expected NPLs. 2) Slower-than expect NIM expansion. |
| 601988.SS | BOC (A) | Rmb | 4.18 | 4.4 | Neutral | 19E P/PPOP | Upside: operation cost reduction and efficiency improvement. Downside: worse-than-expected NPLs, significant downturn in the overseas market. |
| 601939.SS | CCB (A) | Rmb | 8.07 | 9.0 | Buy | 19E P/PPOP | 1) Policy tightening and economic slowdown. 2) Weaker-than-expected asset quality and thus higher-than-expected credit costs. |
| 601288.SS | ABC (A) | Rmb | 4.12 | 4.4 | Neutral | 19E P/PPOP | Upside: better-than expected net interest margin and asset quality. Downside: worse-than-expected NPLs; increased competition from county areas. |
| 601328.SS | BoCom (A) | Rmb | 6.48 | 6.3 | Sell | 19E P/PPOP | 1) Lower-than-expected funding cost. 2) Better-than-expected asset quality. 3) Higher operating efficiency with lower CIR. |
| 600036.SS | CMB (A) | Rmb | 31.94 | 36.3 | Buy | 19E P/PPOP | 1) With one of the highest off-B/S WMP as a percentage of deposits in our China Banks coverage, CMB could be susceptible to over tightening on any WMP issuance. 2) Weaker-than-expected asset quality and thus higher-than-expected credit costs. |
| 601818.SS | CEB (A) | Rmb | 4.21 | 4.2 | Sell | 19E P/PPOP | 1) Better-than expected net interest margin and faster deposit growth. 2) Stronger capital position. |
| 601166.SS | Industrial | Rmb | 18.00 | 19.4 | Neutral | 19E P/PPOP | Upside: better-than expected net interest margin and asset quality, faster funding mix adjustment. Downside: Slower deposit increase resulting in high funding cost, worse-than-expected NPL. |
| 000001.SZ | PAB | Rmb | 14.20 | 17.5 | Buy* | 19E P/PPOP | 1) Slower-than-expected loan growth. 2) Worse-than-expected asset quality. 3) Funding cost hike on higher deposit rates. |
| 600015.SS | Hua Xia | Rmb | 9.40 | 9.5 | Neutral | 19E P/PPOP | Upside: Better-than-expected asset growth, asset quality and franchise improvement Downside: Macro slowdown, further deterioration in asset quality. |
| 002142.SZ | BONB | Rmb | 19.17 | 19.8 | Neutral | 19E P/PPOP | Upside: Capital replenishment; Downside: macro slowdown in Ningbo area, worse-than-expected asset quality. |
| 601009.SS | BONJ | Rmb | 8.44 | 9.2 | Neutral | 19E P/PPOP | Upside: Capital replenishment, faster-than-expected NIM expansion; Downside: macro slowdown in Nanjing area, worse-than-expected asset quality. |

Notes: *Denotes stock is on our regional Conviction List. Target prices are all on a 12-month basis, with the P/PPOP target multiples set based on our CAMELOT framework (for full discussion please see *Asia Pacific: Banks: Banking on further NIM recovery; PAB and CCB-H our top picks*, January 17, 2018). Pricing is as of January 15, 2018.

*Source: Datastream, Goldman Sachs Global Investment Research.*

# Appendix 3: Steps to borrow money from a mobile APP

**Exhibit 71: Applying for a credit line on Fenqile, a popular personal loan platform by Lexin**




Source: Lexin

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|---|---|---|---|---|---|---|
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| Global | 33% | 54% | 13% | 63% | 57% | 52% |

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