FGI REPORT

Internet Finance and Regulation in China

Main Report

Liu Mingkang
August 2015
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FOREWORD

The rising popularity of peer-to-peer (P2P) and other types of online lending in China is to be welcomed. Internet finance fosters a more inclusive financial system where loans are more widely available to start-ups, small- and medium-sized enterprises and others who can put them to work. Aside from stimulating entrepreneurial activity and personal consumption, internet finance can also be a catalyst for broader financial innovation in China.

But there are hurdles to overcome. Due to their relatively brief track record of operation, China’s P2P lenders have yet to accumulate the depth of data and experience on which traditional lenders rely. Nor can they expect much guidance from regulators and supervisors when, around the world, regulatory regimes are still getting to grips with the risks and realities of internet finance. It is a shift not just in terms of digital technology but of generations and business cultures.

As online lending gathers momentum in China, nonperforming loans (NPLs) among P2P lenders are becoming more of an issue. Given that credit risk is, to date, largely unmapped in the emerging world of internet finance, some P2P lenders now resort to emulating traditional banks. They ask for collateral or guarantees, even though these may be neither necessary nor enforceable in the online environment. At best, this is misguided. At worst, it is a step backwards that could inhibit further progress towards inclusive financial innovation.

China is at a crossroads with Internet finance and, given the speed at which P2P lending is growing, should act promptly to place it on a sound footing. That is why, with the help of colleagues, I have produced this paper addressing P2P lending risk in China, and proposing practical solutions. It is intended for the benefit of regulators, supervisors and traditional banks as well as P2P lenders.

We have drawn upon exceptional access to proprietary data from five banks in China that make small loans to retail borrowers and small businesses. Through detailed statistical analysis we have identified which loan types are most likely to be nonperforming and why. Our correlations enable us to hold up a mirror to P2P platforms – which lend to very similar customers – showing evidenced-based ways to calculate their NPL risk. I firmly believe such an approach is more conducive to the healthy development of internet finance in China than simply replicating risk-control methods that exclude many would-be borrowers.

As a former banking regulator, I empathize greatly with whose job is to maintain financial stability. The challenge, always, is to prevent abuses without stifling innovation. I will be happy if the findings of this research contribute to the
design – in China and beyond – of regulatory frameworks that address P2P lending risk while allowing sufficient scope for the internet finance sector as a whole to grow and thrive.

Liu Mingkang

Hong Kong, August 2015
ACKNOWLEDGEMENTS

This paper is the culmination of almost a year’s work by researchers and analysts from multiple disciplines.

Sincere thanks must first be given to the banks and financial institutions in China that granted generous access to proprietary loan data, on condition of anonymity. Subsequent conversations and valued exchanges with individuals within these institutions helped to shape many of the perspectives presented here.

Cai Min, a postdoctoral fellow at Sun Yat-sen University in Guangzhou, was responsible for running the regressions and statistical analysis (in her spare time, no less) that gave this report its quantitative backbone.

At the Fung Global Institute in Hong Kong, analysts Galvin Chia, Jodie Hu, Warren Lu, and Wang Yao contributed analysis of the changing Chinese financial markets. They also worked hard to provide thorough translation and editorial duties.

Sarah Monks provided valuable editorial input to help make our paper on this important, but rather technical, subject more readable for non-specialist audiences. Patrick Low also provided useful suggestions on the paper’s direction, content, and methodology.

External reviewers Lawrence Lau, Andrew Sheng, William Overholt, and Michael Spence provided invaluable feedback on the content of the paper, while Fung Global Institute analysts Dominic Meagher and William Haines helped review the complex statistical matter.

Finally, thanks must go to FGI Chairman Victor K Fung, President William Overholt and the rest of FGI’s team for their encouragement and belief in the paper, as well as for their comments and unwavering support throughout.
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KEY CONCLUSIONS

- Through detailed analysis of small loan data from five traditional banks in China, we identified key factors that determined the size of NPLs in consumer and commercial loans. These determinants are:
  1. Beyond a certain amount, the larger the loan, the larger the NPL size
  2. Loans with collateral and guarantees are more likely to result in larger NPL sizes
  3. Loans with higher levels of borrower leverage are likely to result in larger NPL sizes
  4. Lending to small companies, as opposed to the owners of those companies, is also likely to result in larger NPL sizes
  5. Greater geographical distance between borrowers and lenders is likely to result in larger NPL sizes

- P2P lending platforms, whose customer base corresponds closely to that of the banks in our study, can better assess and manage their own risk by referring to these determinants.

- To encourage financial innovation and maximize growth opportunities in the P2P lending market, regulators and lenders should simplify risk management and reduce credit costs. China should also move without delay to build a nationwide credit bureau and credit reporting system.

- The existing legal framework for financial regulation in China should be revised so that it extends to P2P lending and other forms of internet finance.

- One way to regulate online P2P lending without stifling innovation is by introducing a flexible three-tiered licensing system. Under such a system, there would be different regulatory thresholds depending on the specific nature of online business being transacted.

- There is a need globally for effective regulation and oversight of P2P lending, with coordination to set standards for internet finance on matters such as reporting, public disclosure and cyber-security.
# List of Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBRC</td>
<td>China Banking Regulatory Commission</td>
</tr>
<tr>
<td>CIRC</td>
<td>China Insurance Regulatory Commission</td>
</tr>
<tr>
<td>CSRC</td>
<td>China Securities Regulatory Commission</td>
</tr>
<tr>
<td>FCA</td>
<td>Financial Conduct Authority (UK)</td>
</tr>
<tr>
<td>IOSCO</td>
<td>International Organization of Securities Commissions</td>
</tr>
<tr>
<td>NPL</td>
<td>Nonperforming loan</td>
</tr>
<tr>
<td>P2P</td>
<td>Peer-to-peer</td>
</tr>
<tr>
<td>PBoC</td>
<td>People’s Bank of China</td>
</tr>
<tr>
<td>SAIC</td>
<td>State Administration for Industry and Commerce</td>
</tr>
<tr>
<td>SEC</td>
<td>Securities and Exchange Commission (US)</td>
</tr>
<tr>
<td>SME</td>
<td>Small- and medium-sized enterprise</td>
</tr>
<tr>
<td>SOE</td>
<td>State-owned enterprise</td>
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</table>
INTRODUCTION

With more than 680 mn internet users, China not only has the world’s largest online population but is also the fastest-growing market for internet finance. Since 2012, total online loans in China, though still only a small percentage of the total, have been growing at a compound rate of 245 per cent annually.

Peer-to-peer lending is defined as the practice of lending money to individuals or companies using the internet, without using traditional intermediaries such as banks.

In tandem, there has been a sharp rise in the number of problematic online lending platforms, especially those involved in P2P activities. This highlights fundamental issues over credit appraisal and risk management. Moreover, ambiguities and inconsistencies in China’s financial regulatory system illustrate the bigger challenge of encouraging financial innovation, while also streamlining and strengthening compliance.

China has compelling reasons to find solutions to this dilemma sooner rather than later. Online lending can go a long way to easing the ongoing credit crunch for private sector entrepreneurs in China, particularly smaller businesses, and thus stimulate economic growth. Secondly, failure to develop China’s rapidly-expanding internet finance sector in an orderly way could have negative repercussions on the financial system as a whole – especially if traditional and online finance are eventually allowed to converge. We should start laying the foundations now for the gradual harmonization of risk management and regulatory reporting across both traditional and online finance.

The answer at this time cannot be heavy-handed regulation of online lending. Rather, it lies in achieving a balance between the opportunities presented by internet finance, and the inherent downside risks. The goal is to reap the full benefit of having diverse and sustainable pathways to financial market development and growth.

In pursuit of this goal, we believe that regulatory agencies should learn from the successes and failures of existing internet finance platforms, rather than curb or prohibit such activities pending establishment of a reasonable regulatory regime.

Our research for this paper engages three key questions:

- What risk factors in traditional banking determine the size of NPLs across small loans to retail customers and small businesses?
- What can online P2P lenders learn and apply from the experience and lessons of traditional banking?
What do future regulators and supervisors most need to understand when evaluating the risks of online P2P lending vis-à-vis its positive function as an inclusive form of finance?

In Part I, we:

- Provide a backdrop to the increasing popularity of online P2P finance in China (Section 1)
- Explain the validity of comparing small loans by traditional banks with online P2P loans targeting similar customers (Section 2)
- Comment in detail on the implications of our findings for traditional banks and online lenders, and for policy makers and experts designing regulatory frameworks (Section 3)
- Recommend a differentiated regulatory approach to internet finance in China (Section 4)

We provide details of the statistical material and methodologies underpinning our findings in the Statistical and Supplementary Matter document.

We recognize that this paper is by no means comprehensive, despite the care taken in selecting and analyzing relevant data. The very fact that we must rely on traditional bank loan data as a substitute for online P2P lending data is limiting. So, too, is the current lack of data surrounding more complex forms of online P2P lending. However, we do feel that our research thus far enables us to shed more light on basic P2P lending and its risks. As internet financing develops, it will become increasingly possible to capture historical data and combine it with data analytics to deliver better forms of risk management.

With such caveats in mind, it is our hope that this paper will stimulate further research so that a new generation of internet financiers can build a concise data set with key indicators on: (a) how to evaluate credit risk and opportunities, and (b) how to simplify credit approvals.

It is also our hope that this paper will prove useful to P2P lenders, insightful to traditional banks keen to embrace internet lending, and enlightening to China’s financial regulators and supervisors.

Put simply, our ultimate objective is to help both the traditional and online financial sectors respond more effectively to new customers, new regulations, and mounting pressure to safeguard the investments of a new breed of lenders.
1. INTERNET FINANCE IN CHINA

1.1 OVERVIEW

Internet finance uses digital technology to innovate with financial services, making these new applications widely available. Creative use of financial technology in China, mainly through the interaction between e-commerce and internet finance platforms, has greatly changed the business models of financial institutions and enterprises, as well as the lives of individuals.

China's internet economy is growing rapidly. In 2010, its contribution, measured as a share of total GDP, was 3.3 per cent, lagging that of most advanced economies. By 2013, however, China's internet economy contributed 4.4 per cent to GDP, moving China into the ranks of global leaders.¹

A general shortage of credit in the Chinese banking system, combined with a preference of banks to lend to larger firms and SOEs, is driving SMEs towards online lenders. Indeed, there is heated discussion in China over the extent to which internet finance will disrupt the banking and financial sector as we presently know it, or even render “brick-and-mortar” banking obsolete over time.²

Prior to 2012, 50 financing platforms loaned out RMB3.1 bn to 28,000 borrowers. With only 8,000 investors, these platforms raised a total of RMB 4.4 bn for lending. In just over two years, these figures have grown exponentially. In 2014, a total of 1,575 platforms loaned out RMB 252.8 bn to some 630,000 borrowers. These loans were sourced from 1.16 mn investors, who put up a total of RMB 356.4 bn to lend out.

Since 2012, platforms have seen a compound annual growth rate of 180 per cent, with total loans growing at 245 per cent annually.³ Attracted by this growth and business potential, new entrants are flocking into the market with innovative loan offerings. That being said, at the end of 2014 the amount of money loaned

² We present a discussion of this question with regards to China in Appendix II of the Statistical and Supplementary Matter document.
by internet platforms in China was equivalent to just 1.5 per cent of the RMB 15.1 trn in outstanding consumer loans made by traditional Chinese banks.\footnote{Outstanding consumer loans figure from Orlik, Tom, and Fielding Chen. “Financing the Next Stage of China’s Development with Consumer Credit.” Paulson Policy Memorandum January 2015, The Paulson Institute.}

Online lenders almost always target small clients, and on a smaller scale, than traditional banks. For instance, Alibaba Group’s Ant Financial issues loans that range from RMB 100 to RMB 1 mn, with the average being RMB 40,000.\footnote{As an interesting point of comparison, average loan sizes for the Lending Club and Prosper Marketplace the two largest P2P platforms in the US, are around USD 12,000 and USD 7,000 respectively. Minimum and average figures for Ant Financial from COO Zhao Weixing. Min Wenwen and Luo Xiaoqing. 2015. “The Securitization of Small Loans: Expect Big Things from Small Questions (小贷资产证券化 期待“小”题“大”做),” Modern Bankers, 16 March. \url{http://www.modernbankers.com/jri/html/2015/jirjxwc_0316/297.html}. Maximum figure from Ant Financial. Ant Group. 2015. “Ant Financial (蚂蚁金服)” \url{http://www.antgroup.com/page/xiaodai.htm}.}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure1}
\caption{Growth in Chinese Online Lending}
\end{figure}

Source: Wangdaizhijia
1.2 Distinct Categories

The business models of internet finance services in China currently comprise mainly of third-party payment platforms, big data-based internet lending, online P2P lending, crowdfunding, and sales of financial products over the internet.

Third-party payment platforms

These have evolved from the growth of e-commerce and online shopping. Major third-party payment platforms, such as Alipay and Tenpay, also provide lending and credit rating services, using big data to analyze, in real time, a borrower’s creditworthiness. As a result, NPL ratios are much lower than in P2P lending.

Online P2P lending

P2P lending via the internet is presently the dominant form of online lending. In essence, it is private lending using internet platforms to match borrowers and lenders.

With competition intensifying among P2P platforms in China, defined industry segments have emerged. Currently, there are four: consumer lending, small business lending, auto loans and real estate lending.

While some P2P platforms provide only a matching service, others help match third-party guarantees to borrowers. Few P2P platforms provide pure credit loans, because without having guarantees or close relationships with banks, risks rise to a level where it becomes difficult for most online lenders to expand their businesses safely.

Some bank-related platforms use affiliated commercial banks as fund custodians. For example, gkkxd.com (开鑫贷) is affiliated with China Development Bank, and Xiaoma Bank (小马 Bank) is affiliated with Baoshang Bank. Other P2P platforms use third-party payment platforms as their fund custodians. Even so, around 60 per cent of P2P platforms presently do not have third-party fund custodians.  

An interesting recent development is the emergence in China of P2P platforms formed with capital – including from overseas – from venture capital companies,

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6 For more details about other types of internet finance categories in China, see Appendix I of the Statistical and Supplementary Matter document.

private equity firms, banks, enterprises and government-related institutions (see Table 1 below).

### Table 1 | Major Chinese P2P Platforms with Capital Investors

<table>
<thead>
<tr>
<th>P2P Platforms</th>
<th>VC, PE and Other Investment Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>CreditEase</td>
<td>IDG, JP Morgan</td>
</tr>
<tr>
<td>Renrendai (人人贷)</td>
<td>Tencent</td>
</tr>
<tr>
<td>ppdai.com (拍拍贷)</td>
<td>Sequoia Capital</td>
</tr>
<tr>
<td>Yooli.com (有利网)</td>
<td>Softbank China Venture Capital, Morningside Group</td>
</tr>
<tr>
<td>jimubox.com (积木盒子)</td>
<td>Xiaomi, Temasek, Matrix Partners, Vентеh Capital, Magic Stone Investment</td>
</tr>
<tr>
<td>gkkxd.com (开鑫贷)</td>
<td>China Development Bank</td>
</tr>
<tr>
<td>kingkaid.com (金开贷)</td>
<td>Assets Supervision and Administration Commission of Shaanxi</td>
</tr>
<tr>
<td>Lufax</td>
<td>Pingan Group</td>
</tr>
<tr>
<td>e.cmbchina.com (小企业 e 家)</td>
<td>China Merchants Bank</td>
</tr>
<tr>
<td>msydai.com (民生 e 贷)</td>
<td>China Minsheng Bank</td>
</tr>
<tr>
<td>rongyixin.com (融 e 信)</td>
<td>Bank of Jiangsu</td>
</tr>
<tr>
<td>Penging.com (鹏金所)</td>
<td>Shenzhen Hi-tech Investment Group</td>
</tr>
</tbody>
</table>

A related class of online finance is crowdfunding, where information about projects seeking funds, and about the fund-raising process, is placed on internet platforms.

Some P2P platforms in China operate under the model of cash pooling, in which funds are collected into a pool before being lent out to others. This is risky and can become a breeding ground for fraud. As a result, we noticed that some regulators have declared their concerns with P2P cash pooling. However, in the absence of specific regulations that spell these out, some platforms remain active.

### 1.3 DATA DIFFERENCES

Approaches in China to gathering and analyzing information to assess the creditworthiness of prospective borrowers differ markedly between traditional banks and online lenders. This difference is reflected in the types of loan requests that each entertains.

Banks prefer handling larger loans, in part to mitigate the cost of labor-intensive internal processing. This includes securing collateral and guarantees, on which they rely heavily to offset risk. Online platforms tend to offer smaller loans that are otherwise not readily available to individuals and SMEs in China's credit-
squeezed traditional banking system. Presently, most online lenders do not ask for collateral or guarantees, which is why information about the loan market as a whole is of greater importance to them.

Online lenders that have evolved from e-commerce platforms are often able obtain borrower information in real time. With sufficient data from e-commerce transactions, these platforms can use statistical models to evaluate the creditworthiness of individual borrowers. Such borrowers typically seek small amounts, and are likely to be independent of each other. This diversity, which reduces idiosyncratic risks, is fundamental to the validity of their risk models. Although these models cannot evaluate individual borrowers with perfect accuracy, with enough transaction data they are able to predict overall default rates accurately. Online lending firms linked to e-commerce platforms are thus able to build up sufficient buffers to cover the defaults that do occur.

In the case of online P2P lending, accessing credit and loan information is, for the most part, difficult. Moreover, P2P platforms rarely have the time or resources to collect borrower information in the same meticulous way that banks do. As a result, P2P platforms in China too often lack natural diversification of risk, not to mention adequate risk management.

1.4 FAILURE AND FRAUD

This is reflected in high and increasing default rates. According to P2P lending database Wangdaizhijia, between 2011 and 2014 almost one quarter of China’s 1575 registered P2P platforms reported serious problems. Of these, 178 are still operating, though investors have difficulties in redeeming funds, 26 have shut down because of mismanagement, and in 141 cases, platform operators have absconded. In addition, 2 platforms have been confirmed as fraudulent, and five are being investigated (see Figure 2 below).
1.5 THE NEED FOR RISK MANAGEMENT

While China’s traditional banking system operates under a comprehensive regulatory regime, the development of a regulatory regime for internet finance is still under discussion. As most internet finance platforms are still developing and improving their pricing or risk management models, and as most credit made available over the internet is unsecured, addressing risk management for internet finance is quite often complicated.

In internet finance, it is necessary to examine and analyze credit both offline and online. However, offline credit checks are difficult because of increasing lending volumes and the dispersed geographical locations of borrowers, amongst other reasons.

Big data and cloud technologies can offer solutions to online credit management. However, most lending platforms do not yet make use of these directly. Instead, some have started using professional companies that do so.¹

¹ For example, the services of California-based FICO Analytic Cloud include credit analysis and scoring, anti-fraud solutions and compliance. A Chinese company, 3Golden (金电联行), provides credit ratings on small and micro enterprises based on Big Data.

Note: "Absconded" platforms do not include confirmed fraud cases.

Technological risks

Because internet finance is by nature conducted virtually, problems such as fraud and fake trading are more difficult to detect. A controversial issue is online identity verification. Although technological developments such as electronic signatures, facial recognition and fingerprint verification may offer solutions in the longer term, lingering worries about the security of these methods precludes their full acceptance by existing regulations and laws.

User identification aside, issues such as the threat of a cyber attack or hardware failure also remain, posing additional technological threats to the internet finance industry.

Legal risks

Last but not least, the absence of a proper regulatory regime and supervisory system, and the paucity of credit information systems for P2P platforms in China also entail higher risk. Currently, many internet lending platforms straddle the grey area between what is considered legal or illegal – and some may have already have crossed the line.

1.6 REGULATORY REGIMES

In a report last year on the state of the global P2P market and its regulations, IOSCO placed regulatory regimes into five categories:

<table>
<thead>
<tr>
<th>Regulatory Regime</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exempt market/unregulated through lack of definition</td>
<td>In these jurisdictions either the regulation has classified peer-to-peer lending as an exempt market or there is a lack of definition in legislation.</td>
</tr>
<tr>
<td>Intermediary regulation</td>
<td>This regulates peer-to-peer lending platforms as an intermediary. This usually requires registration as an intermediary, and other regulatory requirements depending on the jurisdiction.</td>
</tr>
<tr>
<td>Banking regulation</td>
<td>This regulates peer-to-peer lending platforms as banks.</td>
</tr>
<tr>
<td>US model</td>
<td>This is a two-tier system. This requires the registration of peer-to-peer lending platforms with the SEC, as well as applying for a license to conduct business on a state-by-state basis.</td>
</tr>
</tbody>
</table>
Both peer-to-peer lending and equity crowdfunding are banned under legislation.

Source: IOSCO 2014

A coordinated approach at the multilateral level towards internet P2P lending does not yet exist. Although it may seem as if regulators are behind the curve on this issue, it reflects the fact that P2P lending still constitutes only a small portion of total lending in the world’s financial markets. However, with the sector’s rapid growth globally, it is likely to be only a matter of time before a conversation about multilateral rules begins.

The US, China and the UK are presently among the world’s largest internet finance markets, which make the regulatory approaches – or lack of – by each jurisdiction a relevant starting point.

The US: High Entry Costs

The regulatory regime in the US is relatively complex, requiring registration at both the federal level with the Securities and Exchange Commission, and with local state regulators. This applies to all forms of consumer credit, including P2P lending.9 These requirements translate into significant costs for platforms, whilst SEC regulation means that only accredited investors (as opposed to ordinary individuals) are allowed to invest in P2P platforms.

The UK: Regulation with a Light Touch

Analysis by accounting and consultancy firm Grant Thornton sees UK regulation as being “much lighter as [the industry there is] considered to be lower risk”.10 Regulation has recently been unified under the Financial Conduct Authority, with a focus on consumer protection measures. These include prudential requirements, disclosure requirements and dispute resolution rules. In addition, P2P platforms must seek the FCA’s approval to operate.


China: Gaps and Grey Areas

Regulators in China are still carefully examining the potential threats and opportunities presented by internet finance. With many online lenders trading across multiple products, it is unclear how existing regulatory bodies can coordinate their oversight activities. Many existing rules and laws require modification to keep up with the rapid changes of the internet finance sector. This helps to explain why barriers for lending platforms entering the market are low.

P2P platforms in China are able to register as "information services companies" at their local SAIC office, while also registering their websites with the Communications Administration. Because these platforms actually function as financial service providers, neither oversight body has jurisdiction over them.

For its part, the CBRC, which oversees lending activities in the market, has yet to release any formal documents or concrete set of rules and regulations on internet finance. While the design of P2P internet lending regulation lies with the CBRC, regulation of private placements lies with the CSRC, and regulation of online insurance products with the CIRC. Online sales of funds, and wealth management and insurance products are already covered by other regulatory frameworks.

Furthermore, most online platforms are unable to access the PBoC’s credit reporting system. As a result, they need to develop their own internal credit systems. Though larger firms such as Ant Financial can access the databases of e-commerce partners to evaluate borrower risk, other online lenders adopt a variety of ad hoc measures and standards. This, plus the industry’s short track record, makes it hard to know if an online lending firm is performing well. Equally, the P2P sector lacks a unified set of standards when it comes to reporting to government and industry bodies. Nor does it presently have the means to self-regulate.

These collective and mounting challenges are reflected in the rising incidence – detailed earlier – of P2P platforms in China getting into trouble, defaulting or absconding with investors’ money.
2. SIGNIFICANT CORRELATIONS

2.1 TRADITIONAL VS ONLINE LENDING

What prompted us to study internet finance in China through the prism of small loans and NPL sizes in the traditional banking sector?

Aside from a general dearth of risk analysis for China’s nascent internet finance sector, we found that most studies could identify only the factors that cause loans to become nonperforming. We wanted to go a step further by identifying variables that directly determine the size of NPLs, because NPL size is fundamental to performance and sustainability, whether for small traditional banks or online lending platforms.

Moreover, while there are many studies on risk management involving bank lending, most of these are Basel III-based in their analysis and thus suited only for regulated banking institutions. We saw a need for rigorous, consistent analysis of relevant NPL data from traditional banks that could shed light on lending and risk models for internet finance.

Our contention that small loans from smaller traditional banks provide a valid reference point for online P2P lenders is based on the following:

- Loans from both sources are relatively simple products
- From this baseline, it is possible to deduce that some risk features characteristic of all forms of lending – e.g. that risks increase with leverage and loan size – also apply to P2P lending
- Like P2P firms, smaller banks primarily serve the private sector, issuing both consumer and commercial loans
- Customers of smaller loans from banks are similar in size and profile to customers of P2P lenders
- In both traditional banking and online lending, borrowing occurs within the same overall business, legal, and regulatory environments
- Based on our observations, 80–90 per cent of P2P platforms are similar to banks in that they, too, operate as financial intermediaries between lenders and borrowers

Of course, traditional banking is not a perfect proxy for online lending. When online lenders provide basic matching services between investors and borrowers, for instance, no loan servicing occurs. Similarly, whilst both institutions act as a form of financial intermediation, depositors in a bank can make legal claims against the bank that holds their money. Depending on the complexity of their operations, this may not necessarily be the case with P2P
platforms. Despite these, however, we still believe the two are fundamentally comparable.

2.2 THIS STUDY: TWO DATA SETS

Under the PBoC’s five category loan classification system, banks classify loans as “normal”, “special mention”, “substandard”, “doubtful”, and “loss”. The last three categories constitute NPLs.

For this study, we accessed anonymized proprietary loan data from two groups of banks across China:

- **Group A** is a broad sample of five banks, from north to south. Three are small city commercial banks, and two are medium-sized joint-stock banks.

- **Group B** is a narrow sample of a single medium-sized joint-stock bank, based in southern China

Data from Group A comprises indicators of NPL ratios, in which NPLs are measured as a proportion of the bank’s total risk-weighted assets, including both normal and non-performing loans. This provides a broader snapshot of the determining factors that turn loans into NPLs. Figures for Group A are an unweighted average of data from the five banks.

Group B is a more detailed data set, consisting entirely of loans that have already been classified as non-performing. To better analyze the nuances of NPLs from Group B, we have expanded the data set to include NPLs that have been partially written off or will not be fully recovered, and reclassify these under the “loss” category. Together, we use this broader data set to identify the factors that contribute towards the size of expected losses from NPLs. This refers to the value of expected losses that accrue from the “substandard”, “doubtful” and “loss” categories, which constitute the riskiest categories of loans.11

The data from Group B can be classified by type, according to their borrowers:

- Smaller consumer loans, each averaging about RMB 1.6 mn, to individuals, industrial and commercial enterprises, and to the owners of small- and micro-sized companies. Two sample groups of loans of varying sizes were drawn from this category

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11 For the substandard, doubtful and loss categories, the PBoC recommends that banks respectively set aside 25 per cent, 50 per cent, and 100 per cent of the value of a loan for loan loss provisioning. Banks will adopt their own provisioning requirements around these guidelines, in anticipation of expected losses that may occur. See Borst, Nicolas. 2011. “What Do Increasing Loan Impairment Losses Mean for Chinese Banks?” *Peterson Institute of International Economics China Economic Watch*, 5 December.
Larger commercial loans, each averaging about RMB 9.2 mn, to small- and micro-sized companies, as well as to owners of small- and micro-sized companies. Two sample groups of loans of varying sizes were also drawn from this category.

Group A: Broad Trends

Several trends became clear in the loan data from Group A. As can be seen in Figure 3, smaller-sized loans, in the form of small- and micro-loans, had a NPL ratio of 0.98 per cent, significantly less than the 1.6 per cent NPL ratio for Group A loans of all sizes.

Who the borrower was also played a role. When money was loaned to owners of enterprises, as opposed to small- and micro-sized companies, NPL ratios fell by almost half, from 1.28 per cent to 0.65 per cent. In other words, it was a safer prospect to lend to individuals rather than companies.

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12 Refer to the Appendix in this paper for more graphs of these samples from Group A.
Figure 8a | NPL Ratios: Cross-Jurisdictional Lending in Commercial Loans (Group A)

Source: Group A banks

Figure 8b | NPL Ratios: Cross-Jurisdictional Lending in Consumer Loans (Group A)

Source: Group A banks
Lending across legal jurisdictions generally incurred higher NPL ratios as well, as illustrated in Figures 8a and 8b. For consumer loans, loans in the “loss” category jumped from just under 0.1 per cent to almost 2.2 per cent when issued to recipients outside the banks’ jurisdictional boundaries. In the commercial loans sample, the proportion of cross-jurisdictional loans in each NPL category was higher than in their intra-jurisdictional counterparts.

Figure 6 | NPL Ratios vs Leverage Ratios, Consumer Loans (Group A)

Source: Group A banks
NPL ratios rose markedly with loan size and leverage ratio. As seen in Figure 5 (see Appendix I, below), when loans increased past the RMB 1–1.5 mn range into the RMB 1.5–2 mn range, NPL ratios jumped from around 1.2 per cent to 1.6 per cent.

Significant jumps were also witnessed with leverage ratios in Figure 6, here defined as the ratio between a borrower’s total loan size and capital. In consumer loans, NPL ratios were at 0.34 per cent for loans leveraged at 50–60 per cent. Once these moved to the 60–80 per cent leverage range, they jumped to 0.7 per cent. At 100 per cent leverage, the NPL ratio fell to 0.62 per cent.13 However, it should be noted that loans in the "special mention category" have a high likelihood of moving into the "sub-standard" category of nonperforming loan. Even with a lower NPL ratio, the presence of a significant amount of "special mention" loans would also mean that the overall expected losses from nonperforming loans in the 100 per cent leverage category would exceed that of the 60–80 per cent category.

Indeed, at a leverage ratio of 100 per cent bribery and corruption can most certainly be expected. Lenders that allow 100 per cent leverage encourages moral hazard, as borrowers have no personal responsibilities for any downsides. However, in this case the major difficulty confronting the lender is that it does not know the true degree of leverage on the part of the borrower. This is not to mention the incentives for lenders to "evergreen", or continuously roll over, loans, so as to avoid having to recognize a loss.
For commercial loans to small- and micro-sized companies in Figure 7, NPL ratios jumped from 0.2 per cent for loans leveraged between 50-60 per cent, to 1.07 per cent for loans leveraged between 80-90 per cent, and higher still to 1.58 per cent for loans leveraged at 100 per cent.

**Group B: Five Key Correlations**

Through regression analysis of data from the Group B sample we were able to identify and verify five relationships, each of which independently influenced the size of NPLs.

1. The loan size correlation, which indicates that larger loan sizes led to increased NPL sizes.
2. The collateral correlation, which indicates that loans with collateral and guarantees had larger NPL sizes.
3. The leverage correlation, which indicates that loans with higher leverage ratios had larger NPL sizes.
4. The actual borrower correlation, which indicates that lending to small companies, as opposed to lending to owners of small companies, generates larger NPL sizes.
5. The location correlation, which indicates that the further away a borrower was physically from the lender, the larger the NPL size.

The two consumer loan samples verified the correlations for loan size, collateral and leverage, whilst the two commercial loan samples verified all five correlations. These correlations have been shown to be statistically significant across the consumer and commercial loan samples.

In the consumer loan samples, the presence of collateral yielded a one-time, positive increase on NPL size. Leverage and loan size both had positive, linear relationships with NPL size, with the former being stronger than the latter.

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14 Refer to the Appendix in this paper for graphs, and to the Statistical and Supplementary Matter document for the statistical methodology used to treat data from Group B banks.

15 Note that with Group B data, we use “NPL size” to refer to the size of expected losses from NPLs.

16 As a traditional banking institution, it should be noted that the majority of loans issued through Sample B had collateral or were guaranteed.
When these three consumer loan variables were tested together in a combined model, the models fitted 78.5 per cent of the observed data in the first data sample, and 62 per cent in the second.

In the commercial loan samples, the presence of collateral yielded a large, one-time increase NPL size. Per-unit increases in the leverage ratio linearly increased NPL size, while per-unit increases in loan size similarly had a linear, though less strong, effect on NPL size. Per-unit increases in leverage similarly yielded a linear increase in NPL size, and per-unit increases in loan size similarly yielded linear increases, though to a weaker degree.\textsuperscript{17} However, in one sample the location of the borrower was shown not to be statistically significant. In another sample, the presence of a guarantee was shown to not be statistically significant. These make these variables weaker explanatory variables. In these cases, in more than 10 per cent of observations changes in NPL size could not be statistically attributed to the location of the borrower or the presence of a guarantee.

When these five variables from the commercial loans sample were considered together, the combined model fitted 82.8 per cent of observed data in the first dataset, 69.7 per cent in the second dataset, and 79.2 per cent in the combined first and second datasets.

The correlations identified by the loan size, leverage, actual borrower, and location factors in Group B’s NPL sample also broadly match the trends identified in Group A.\textsuperscript{18}

Such findings can usefully inform the development of more reliable benchmarks for risk control by online P2P lenders. They can also be used as a basis for developing better benchmarks against which risk for commercial loans to small- and micro-sized enterprises can be assessed, after careful selection of those variables that exert an active influence, such as leverage ratios.

\textsuperscript{17} Though it should be noted that, due to the way that the variable captures location, borrower location could provide up to a two-time increase to NPL size. See Section 1.2.3 Variable Selection and Design in the Statistical and Supplementary Matter document for more.

\textsuperscript{18} See also Figures 9 – 14 in the Appendix of this paper.
3. DISCUSSION OF THE FINDINGS

3.1 LESSONS FOR LENDERS

It is worth looking in more depth at the lessons both traditional and internet lenders can draw from this research.

First, they should take serious note of our evidence that with larger loan sizes come larger NPL sizes. While not necessarily a new or surprising revelation to experienced bankers, it reinforces why all financiers should diversify loan portfolios by issuing more loans to more customers, while keeping individual loan amounts small.

Second, our findings support the view that it is not necessary to rely heavily upon guarantees or collateral as a basis for issuing small loans, as traditional banks do. Such loans, which make little difference to an institution’s overall credit costs, can take up a disproportionate amount of processing time, and are costly to customers. This is not to say that guarantees and collateral always are an unjustified form of risk management. For instance, they may be relevant in helping secure loans for borrowers who are not considered financially strong enough.

However, in a transitional economy like China, the reliability of guarantees and collateral registration systems still remain a problem. A better way to proceed, especially when processing applications from new customers, is to conduct stronger due diligence checks on borrowers throughout the entire credit life cycle. Relying upon collateral or guarantees from a third party without quality due diligence is not only useless, but increases moral hazard by encouraging reckless lending on the part of lenders who may be inclined blindly to issue more loans with larger amounts.

Third, the leverage ratios of borrowers must be properly checked and controlled. As alternative forms of financing become more available in China, the leverage ratios of many borrowers could be significantly higher than is first apparent when a bank checks only its own books. In this context, we recommend as a matter of urgency the building a nationwide credit bureau system. Also needed is a quality credit reporting system that can be used by banks and mobile internet financiers alike during the credit approval process and throughout the entire credit life cycle.

Fourth, if a lender knows a customer reasonably well, it is safer to lend the money directly to that person rather than to the company they own. In China, as with many Asian economies, businesspeople running their own small companies tend to be highly sensitive about their credit rating and financial standing. This is particularly true during difficult economic times, when it is vital for a borrower to have a good reputation in the loan market. Given that corporate governance is
less mature in small firms, particularly those in the start-up phase, loan relationships based on personal trust and respect assume particular importance in both traditional and internet finance. They are altogether more effective than loan transactions between anonymous agents when it comes to securing repayment. They also help to minimize the risk that a small company receiving a loan could misrepresent this to others as income suddenly gained through exceptional performance.

Fifth, uncertainties about customers increase with distance. Moreover, enforcement can become more difficult across jurisdictions and borders. The further away a borrower physically is, the greater the potential informational asymmetry, due to several factors:

- Data about their credit standing is harder to obtain and may be imperfectly transmitted across third parties.
- Different provinces have different disclosure requirements for credit approval assessments, potentially resulting in mismatched informational requirements for cross-border loans.
- Enforcement standards across jurisdictions can be inconsistent.
- There is potential for local applicants to receive preferential treatment in the enforcement of rules and laws.
- Many financiers lack the skills, knowledge and resources to do necessary due diligence. If third parties, such as consultants or solicitors, are called in to help assess the creditworthiness of customers based in other jurisdictions, this can be very costly.

We can form several obvious conclusions: failure to engage effectively with “distance” borrowers directly increases risks for all lenders. Secondly, traditional banks should meet the competitive challenge of internet finance by offering services that are more straightforward and inclusive – quickly issuing loans that are small and simple. While regulatory constraints mean this is easier said than done, it is not impossible.
4. CONTRIBUTIONS AND APPLICATIONS

4.1 WHO CAN BENEFIT

Through this research we have sought to contribute to a better understanding of online P2P lending and to pinpoint potential risk management solutions by using the following methodologies:

- Analysis of a large set of proprietary data accessed directly from banks, which spans sufficient time to constitute at least one credit life cycle. The data set covers different types of loans, asset classes, and risk
- Application of stepwise selection, regression and related data analysis so as to identify statistically significant risk correlations

We have offered specific, practical suggestions on how to place the future development of online P2P lending in China on a sounder footing. More generally, we believe that a better environment for online lending in China can be fostered by:

- Identifying and reaching out to marginalized customers or geographically remote areas that are presently below the radar of traditional lenders
- Addressing current issues in information quality and sharing systems, which is key to strengthening social trust and institutional stability
- Introducing a unified legal system and regulatory framework to protect the rights of small internet financiers and borrowers
- Ensuring that the enforcement of difficult loans and collateral is as efficient and effective for online platforms as it is for traditional banking

There are also potential benefits for traditional banks from this research. Many are keen to improve their overall efficiency, productivity and response to market demand by offering small retail and business loans online. Our findings can be used to support the internal case for transforming China’s traditional banks, making them more inclusive and simplifying their risk management processes and models.

Our key findings can also assist policymakers tasked with developing and designing a future regulatory and supervisory regime for online lending. They need to create a framework that boosts the online financial sector’s resilience, while upholding market confidence and leveling the online playing field for traditional lenders.
4.2 THE CASE FOR FLEXIBILITY

With the insights we have gained, we are firmly of the view that the existing framework for financial regulation in China should be revised and broadened to include P2P lending and other forms of internet finance. Regulators and market supervisors should work together to simplify the current patchwork of regulation covering prudential measures and ethical conduct. Gaps in regulatory coverage and supervision should be identified and bridged.

There is little need for a heavy blanket of regulation as the overall systemic risk currently posed by online lending in China is relatively small. The guiding principle should be flexibility as widely varying degrees of financial complexity and risk are involved. We would like to see an adaptive system, able to handle the reality that the business of online lending keeps evolving. Such a system should be buttressed by a robust risk management infrastructure with built-in adjustment mechanisms, as discussed below.

Amongst others, there are two considerations in the application of general principles of financial regulation to P2P lending platforms. The first is whether “fit and proper” criteria should apply to owners and managers of such lenders. Whilst they are not involved in deposit-taking, the fact that they are handling financial resources means that the industry should not welcome known criminals, bankrupts or persons of ill repute. Hence, in the registration or licensing of such P2P platforms, some consideration on this issue is warranted.

The second issue is one of cyber-security, as online platforms are highly vulnerable to cyber-attacks, data loss and other IT problems. In some cases, cyber-attacks may even be the excuse for defaults or frauds. Hence, one key consideration is the stability of IT platforms and resilience and robustness of data systems against hacking, attacks and failures.

One way to go about building a flexible, adaptive regulatory regime for online lending is by introducing a three-tiered licensing system for P2P platforms. It could be designed on the following lines:

**Tier A**

Tier A is for companies currently classified as “information intermediary platforms”, in that they serve only as information platforms to potential borrowers and lenders. They provide basic off-the-shelf lending packages for individual consumers or small start-up businesses, and an identity verification service to verify the names and addresses of parties involved.

As no actual online loan transactions take place, there is little reason for formal regulation and supervision. But such companies should be better trained in: a) properly addressing customer privacy protection; b) conducting anti-money
laundering and anti-terror financing with appropriate reporting, using a common standard and practice, and c) properly to addressing cyber security and business continuity issues.

Identity verification services form an important cornerstone of knowing one’s customer, and should be significantly emphasized. Knowledge of a borrower’s leverage ratio, whether they are the owner of a business, and location, are key, as is the process of identity verification. We believe that the technologies to verify these already exist, though it is outside the scope of this paper to discuss their specific technical details.

It is also important to stress that lenders should rely on minimal use (and abuse) of big data, so as to better protect borrower privacy. In this sense, relying on these key traits in borrowers would not only be sufficient in verifying their identities, but also in ensuring that lenders can respond to borrowers in a timely fashion, to improve the customer experience. Smaller loan sizes can be used to control risk and to lock up bottom lines.

Tier A can also cover businesses such as third-party payment platforms, as well as crowdfunding platforms that specialize in charitable donations. As such, they do not have credit, liquidity or trading risks, and do not need regulation or supervision in the traditional sense.

Firms in this Tier should be subject to a registration process and, as part of that, receive special training in the areas listed above from relevant industrial associations. In this respect, we strongly recommend the establishment of an association of internet financing industries in China.

**Tier B**

Tier B is for internet companies whose P2P lending platforms offer basic deposit and loan functions. We would classify these as bankers in that the transactions on their platforms entail credit, liquidity, trading and operational risks. For this tier, there is a distinct need for prudential supervision and for requirements such as risk-based capital and provisioning. However, there should also be room for flexibility.

By taking reference to the five correlations we described earlier, Tier B firms can diversify their loan portfolios – and thus their risks – by: a) keeping the scale of each transaction small; b) fully identifying the borrower's leverage ratio both before credit approval is given and during the loan life cycle; c) paying more attention to who the borrower is – a company or a company owner; d) conducting better due diligence over collateral management; and e) factoring in whether the borrower's location potentially involves cross-jurisdictional or cross-border issues. Because Tier B companies are well positioned to cover their
risks with fee-based income and provisioning, there is no need to impose complex, high-level capital adequacy requirements.

Tier C

Tier C firms are P2P platforms with complicated business models. In this category are internet financiers notable for sudden growth spikes, often in the absence of transparency. Their methods typically involve a higher degree of financial complexity. As previously mentioned, already there have been cases of complicated online funding malpractice and fraud in China. Some individuals have tried to use loans raised online improperly by investing in offline assets or trading in debentures. Others have conducted proprietary trading without adequate knowledge, skill or experience. Another problematic group of P2P operators within Tier C aims to attract funds by offering guaranteed returns without appropriate risk assessment and control methods.

For Tier C companies, therefore, there is a need to keep the risk of misconduct high on the supervisory agenda. Risk cultures should be scrutinized and regulators should set limits on how much time Tier C companies are given to rectify any regulatory concerns over ethics, conduct, disclosure, risk management and cyber security.

By way of preventative measures, it is important to give all lending platforms in China more exposure to what are considered proper ethical standards of behavior, and to international best practices for handling the above issues.

There is also a need – domestically and globally – to coordinate the establishment of appropriate industry standards for internet finance. There should, in particular, be effective regulation and oversight internationally of P2P lending platforms found to engage in excessive credit risk-taking, insider dealing, or worse. It should be a global requirement to offset these and other embedded hazards through risk-based capital, ample provisioning, and a thoroughly developed custodian system.

4.3 PARTNERSHIP POTENTIAL

The financial industry in China as elsewhere faces rising costs for control and compliance, as well as costs associated with installing new data management technologies. Many online lending firms are looking to outsource functions such as compliance reporting and data management, so that they can focus on their core operations and customers. Here, traditional banks and financial practitioners familiar with China’s regulatory regime have a significant and constructive role to play.

When internet lenders eventually come under proper regulatory supervision, there is likely to be initial confusion or uncertainty among some over how to
comply with new rules or report to regulators. Having access to experienced partners in the traditional financial sector would accelerate them up the learning curve. Regulators and supervisors, too, should be proactive about rendering guidance and assistance.

For their part, internet financiers – with their pioneering business models and egalitarian service culture – can be a source of inspiration to traditional bankers feeling market pressures to change. Traditional lenders can, in particular, take reference from the way successful lending platforms innovate through their collection and analysis of consumer data for credit and risk management.

To conclude, our research has led us to identify and propose methods by which internet financiers in China can continue innovating while operating more safely and efficiently. It has also enabled us to suggest ways in which China’s traditional banking institutions can begin the task of transforming themselves for a more inclusive, complex digital era.

### 4.4 Future Research Directions

A clear implication of our research is that P2P platforms and other online lenders need to study, devise and set up their own systematic, consistent methodologies for capturing data. This will allow more refined and penetrating analysis to be conducted in future.

Beyond the five correlations from our analysis of relevant data from traditional banks, internet financiers should take greater advantage of consumer big data as a basis for understanding borrower behavior, and supplementing risk management. An ability to aggregate or mine such vast data troves would pave the way for lending platforms to offer more complex loan products on a larger scale to more sophisticated borrowers.
Figure 3 | NPL Ratios: Small and Micro Loans vs All Loans (Group A)

Source: Group A banks

Figure 4 | NPL Ratios: Loans to Small- and Micro-Sized Enterprises vs Loans to Owners (Group A)

Source: Group A banks
**Figure 5 | Loan Size vs NPLs (Group A)**

NPL Ratio

<table>
<thead>
<tr>
<th>Loan Size (RMB Thousand)</th>
<th>0.0%</th>
<th>0.5%</th>
<th>1.0%</th>
<th>1.5%</th>
<th>2.0%</th>
<th>2.5%</th>
<th>3.0%</th>
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<td>0-500</td>
<td>0.02%</td>
<td>0.41%</td>
<td>0.58%</td>
<td>0.83%</td>
<td>1.09%</td>
<td>0.83%</td>
<td>0.66%</td>
<td>0.45%</td>
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<tr>
<td>500-1000</td>
<td>0.31%</td>
<td>0.69%</td>
<td>0.95%</td>
<td>0.69%</td>
<td>0.40%</td>
<td>0.89%</td>
<td>0.58%</td>
<td>0.09%</td>
</tr>
<tr>
<td>1000-1500</td>
<td>0.41%</td>
<td>0.95%</td>
<td>0.95%</td>
<td>0.69%</td>
<td>0.40%</td>
<td>0.89%</td>
<td>0.58%</td>
<td>0.09%</td>
</tr>
<tr>
<td>1500-2000</td>
<td>0.58%</td>
<td>1.34%</td>
<td>0.89%</td>
<td>0.66%</td>
<td>0.89%</td>
<td>1.34%</td>
<td>0.89%</td>
<td>0.09%</td>
</tr>
</tbody>
</table>

*Source: Group A banks*

**Figure 6 | NPL Ratios vs Leverage Ratios, Consumer Loans (Group A)**

NPL Ratio

<table>
<thead>
<tr>
<th>Leverage Ratio</th>
<th>0.0%</th>
<th>0.2%</th>
<th>0.4%</th>
<th>0.6%</th>
<th>0.8%</th>
<th>1.0%</th>
<th>1.2%</th>
<th>1.4%</th>
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<td>0-10%</td>
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<td>10-20%</td>
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<td>0.0%</td>
<td>0.0%</td>
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<tr>
<td>20-30%</td>
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<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
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<tr>
<td>30-40%</td>
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<td>0.0%</td>
<td>0.0%</td>
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</tr>
<tr>
<td>40-50%</td>
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<tr>
<td>50-60%</td>
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<td>60-80%</td>
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<td>0.0%</td>
</tr>
<tr>
<td>100%</td>
<td>1.4%</td>
<td>1.4%</td>
<td>1.4%</td>
<td>1.4%</td>
<td>1.4%</td>
<td>1.4%</td>
<td>1.4%</td>
<td>1.4%</td>
</tr>
</tbody>
</table>

*Source: Group A banks*
Figure 7 | NPL Ratios vs Leverage Ratios, Small & Micro Businesses (Group A)

![Graph showing NPL Ratios vs Leverage Ratios, Small & Micro Businesses.](source)

Source: Group A banks

Figure 8a | NPL Ratios: Cross-Jurisdictional Lending in Commercial Loans (Group A)

![Graph showing NPL Ratios for Cross-Jurisdictional Lending.](source)

Source: Group A banks
Figure 8b | NPL Ratios: Cross-Jurisdictional Lending in Consumer Loans (Group A)

Source: Group A banks

Figure 9 | Small and Micro NPLs: Breakdown of Different Categories by Size (Group B)

Source: Group B bank
Figure 10 | Small and Micro NPLs: Breakdown of Different Categories by Size (Group B)

Source: Group B bank

Figure 11 | NPL Distribution according to Different Guarantee Methods (Group B)

Source: Group B bank
Figure 12 | NPL Distribution according to Leverage Ratio of Small and Micro Enterprises (Group B)

![Chart showing NPL distribution according to Leverage Ratio]

Source: Group B bank

Figure 13 | NPL Distribution for Different Borrowers (Group B)

![Chart showing NPL distribution for different borrowers]

Source: Group B bank
Figure 14 | NPL Distributions for Intra- and Cross-Jurisdictional Lending (Group B)

Source: Group B bank
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