

Research Report

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2019 Semi-Annual Report of China's Systemic Financial Risk – Policy Shift and Economic Recovery

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Summary

Using various approaches proposed in academic research and central banks, we monitor the systemic risk of China's financial system at both macro- and micro-levels. Together with macroeconomic background analysis, we provide insights about China's economic performance and financial stability, along with policy recommendations.

China's macro-level systemic risk indicator has dropped significantly recently relative to 2018. However, micro-level indicators have soared and remained at a high level lately. Nevertheless, due to major policy shifts since late 2018, the macroeconomic performance steadied and recovered, and in particular the financing difficulties facing non-state-owned enterprises (non-SOEs) have been partially alleviated. Still, the alarmingly high micro-level indicators imply the potential risk of non-performing loans

on banks' balance sheet, resulting from both the lagging macroeconomic cyclical effects and the policy burdens from stimulating small-to-medium enterprises (SMEs) and non-SOEs financing.

Currently, the Chinese economy faces headwinds from both internal weakness and external frictions. However, the key solution lies from within – structural reform and market opening will fundamentally defuse the external shocks. Over longer horizons, the supply-side reforms should aim to level the playing fields for both SOEs and non-SOEs, or so-called “competition neutral”. Over shorter horizons, the macroeconomic countercyclical policies should be relatively loose and aim to offset the negative shocks from the trade war.

I. Background

The government has been focusing on the so-called “supply-side reform” and preventing systemic financial risk since late 2016. After two years of intensive deleveraging and clamping down on shadow banking, many firms especially non-SOEs have encountered severe financing difficulties and resulted in widespread defaults. Related heightening of stock pledge risk further reflected the financing difficulties faced by the private economy. The trade tension between the United States (U.S.) and China has worsened the situation. As a result, the real economy tanked and the financial market turmoiled in China during 2018.

Among all the issues impeding economic growth in 2018, the non-SOE sector has been the focal point. President Xi attended a forum for addressing the concerns of non-SOEs in November 2018 and emphasized their vital role in China's economy: contributing 50 percent of tax revenue, 60 percent of GDP growth, 70 percent of technological innovation, 80 percent of urban employment, and 90 percent of total enterprises and newly-added employment. He also reiterated the official support for non-SOEs in China.

In February 2019, the General Office of the Communist Party of China Central

Committee (CPCCC) and the General Office of the State Council issued a guideline on strengthening financial support to non-SOEs. Afterward, China Banking and Insurance Regulatory Commission (CBIRC) also issued a policy to further help non-SOEs to solve financing difficulties and to reduce financing costs. Promoting the private sector, following the principle of competition neutrality, has become the core principle of the “supply-side structural reform” in pursuing high-quality economic development.

Since late 2018, the teetering economy has been stabilized and revitalized, confirmed by the economic indicators released in the first quarter of 2019. On April 19, the Political Bureau of CPCCC held a meeting to discuss the current economic situation, recognizing the achievements while acknowledging the uncertainties from both the external trade friction front as well as the internal weak spots. Therefore, the current debate is how to chart a path of maintaining the growth momentum while diffusing the negative trade shocks.

Our report introduces the CATFIN measure (catastrophic risk in the financial system) to assess the aggregate risk of China’s financial system. We also investigated various contributions made by financial institutions using three micro-level systemic risk measures: SES (systemic expected shortfall), ΔCoVaR (delta conditional value-at-risk), and SRISK (systemic risk measure). Technical definitions of these measures are laid out in Appendix I. Together with macroeconomic analysis, we provide insight of the economic and financial forecasts, with important policy recommendations.

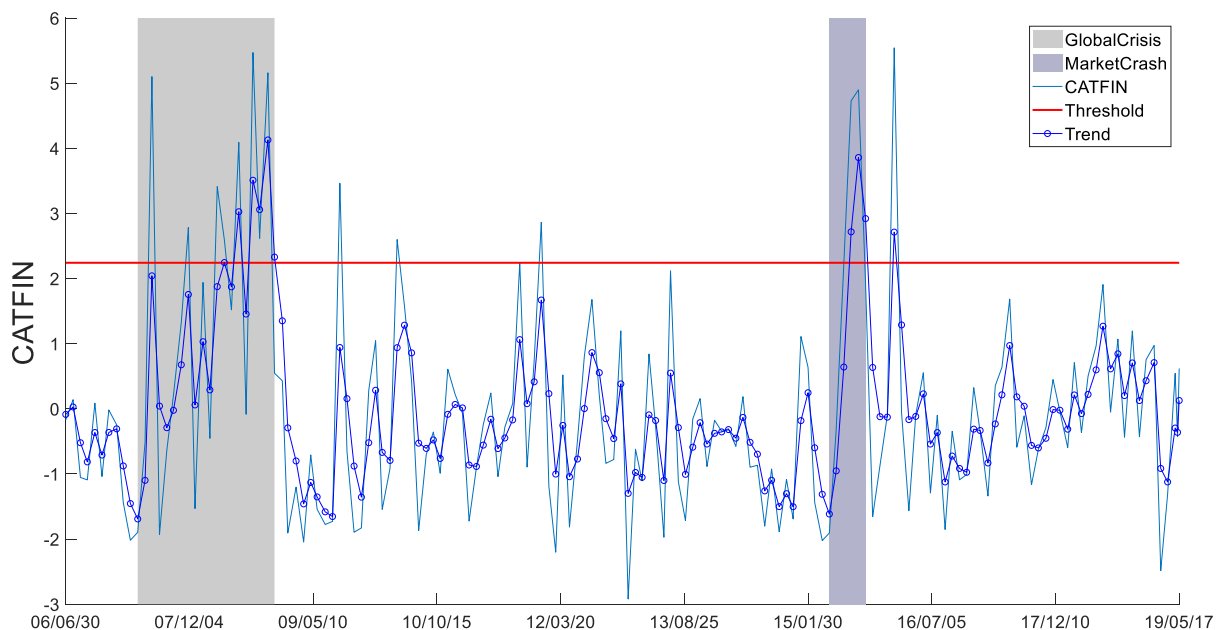
II. Macro Dimension: The systemic risk indicator has dropped significantly since late 2018, far below the alert threshold and historical average.

Regarding the long-term historical pattern (June 2006 – May 2019) (Figure 1¹), our chosen aggregate measure of catastrophic risk in the financial system (CATFIN) (Appendix I) has fallen significantly from the recent high values in 2018, far below the

¹ The sample includes 203 listed companies in finance and real estate industries. CATFIN is calculated by standardizing the tail risk measures of the sample firms, applying generalized Pareto distribution (GPD), extreme value distribution (GEV) and non-parametric methods. See Appendix I for reference.

alert threshold based on the historical average. Given that CATFIN’s variations usually precede changes of the real economy and financial market, we infer that the likelihood of systemic risk fallout in the foreseeable future in China is negligible and the macroeconomic recovery would persist.

Figure 1 Macro dimension: the time series of CATFIN (2006/06-2019/05)



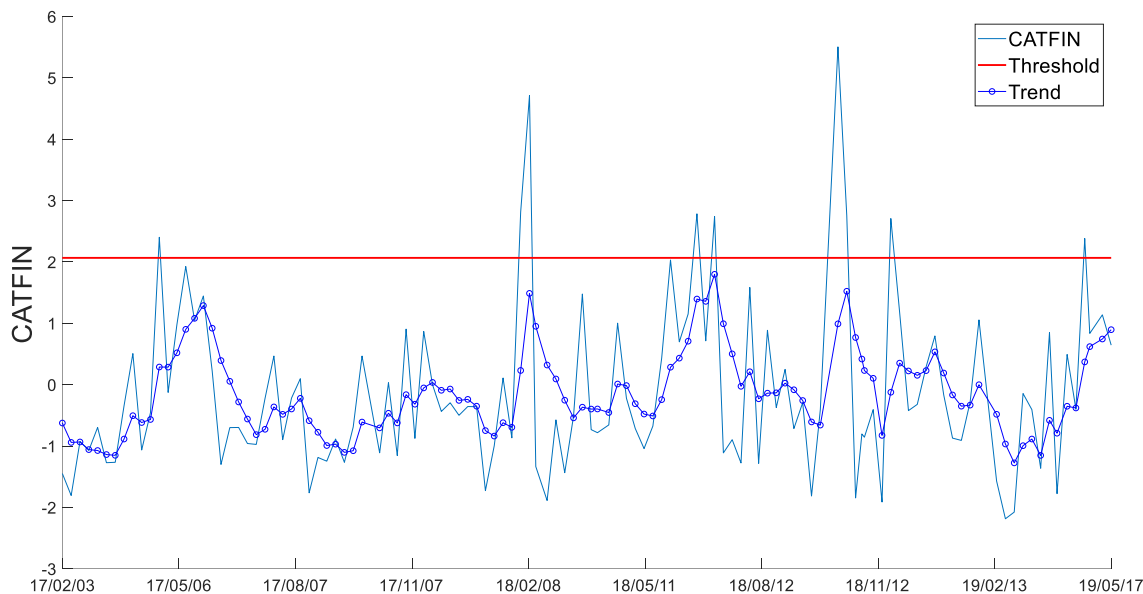
Source: Tsinghua University NIFR

Note: The global crisis period (May 2007 – November 2008) has been highlighted in light grey; the market crash (May 2015 – September 2015), when the A-share market fluctuated abnormally, has been highlighted in dark grey. The red line is the alert threshold, calculated as the historic average plus two standard deviations.

Zooming in on the recent two years and using high-frequency data (Figure 2²), the CATFIN has been fluctuating downward since its peak in October 2018, largely below the alert threshold. However, since the end of April, the CATFIN has been rising noticeably, most likely driven by the intensified trade tension between China and the U.S..

² A shorter period has been measured, applying the same approach as above; more frequent (weekly) data points have been included and adjustment has been made when calculating the trend, using a larger discounting factor.

Figure 2 Macro dimension: the time series of CATFIN (2017/02-2019/05)



Source: Tsinghua University NIFR

Note: The red line is the alert threshold, calculated by adding the historic average and two standard deviations.

Following the moderation of systemic risk measures, the macroeconomy in China has been recovering. In the first quarter, the gross domestic production (GDP) growth rate is 6.40%, exceeding market expectations. The consumer purchase index (CPI) has rebounded to 2.30% in March, the first time in the last four months that has exceeded 2.00%. The purchasing managers' index (PMI) has returned to above the 50%-threshold since last November and arrived at 50.50% in March. The RMB currency has exhibited an appreciating trend. The yuan's central parity rate has been decreasing from 6.85 per dollar at the start of January to 6.73 per dollar at the end of March.

As for international trade, the import amount (in RMB) has increased by 0.23% year-on-year (y-o-y) on average per month in the first quarter. The growth rate of the export amount has bounced back from a negative number (-16.6%) to 20.80% in March, while the monthly average is 6.27%.

Meantime, the stock market has expanded greatly in the first quarter. The number of

newly opened accounts in the A-share market has increased 105% monthly, and 36% more than the same period last year. The account number has reached its three-year peak. The total transaction amount of A-share has reached a record high since August 2015. The Shanghai Composite Index has a 25% rise in the first quarter.

However, since April, several macroeconomic indicators fell back by various extents. Specifically, the industrial production increased 5.4% y-o-y, lower than the previous month (8.5%); the PMI has dropped to 50.10%; the export amount's y-o-y growth is only 3.10%; the retail sales of consumer goods grew 5.1% y-o-y, below the level of last month (6.67%). The trade tension between China and the U.S. has intensified at the start of May. Accordingly, the exchange rate has depreciated quickly to 6.90 yuan per dollar. The stock market has suffered from a volatile downward movement. Shanghai's stock market experienced a one-day tumble of 5.58%. The fluctuations in April and May could be attributed to multiple aspects: higher comparison bases because of advanced inventory stocking in March while businesses anticipating lower tax rates, the end of the Spring Festival consumption boost, and China-U.S. trade frictions. Overall, the economic stabilizing trend is maintained.

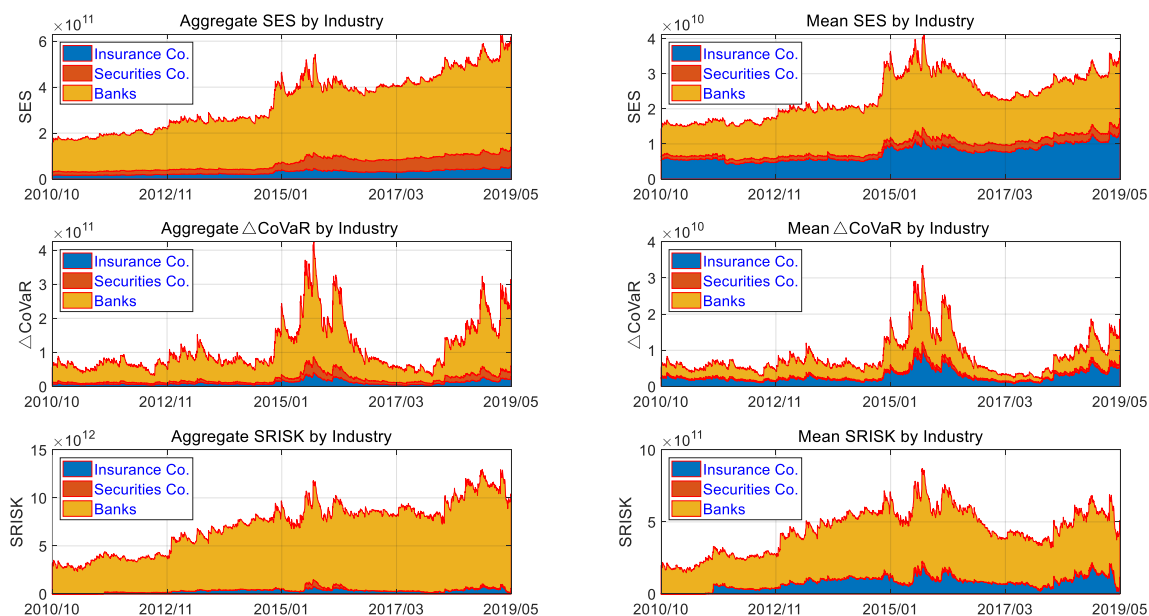
In summary, the initial moderation of the aggregate systemic risk measure is later confirmed by the macroeconomic stabilization and recovery. These improvements suggest that the implemented policies have achieved their intended goals, reinforcing the market's confidence in the economic resilience. This policy mix has effectively neutralized the negative impact of the earlier external trade shocks, which further reduces systemic risk and market volatility.

III. Micro Dimension: The systemic risk indicators of the banking sector have reached their peaks in recent months.

We have estimated three micro-level systemic risk indicators, including systemic expected shortfall (SES), delta conditional value-at-risk (ΔCoVaR), and systemic risk measure (SRISK), for 57 publicly listed financial institutions. We have conducted sample analysis for banking, securities, and insurance sectors (Figure 3).

Contrary to the downward trend in the aggregate systemic risk indicator, micro-level systemic risk indicators have risen and reached historical highs at the beginning of 2019, despite the nascent economic recovery. For the whole sample, the SES value has arrived at its record high, while SRISK is approaching its historical peak. Comparing to the security and insurance sectors, the banking sector not only has the highest contribution to the systemic financial risk, but also exhibits a significant upward trend.

Figure 3 Systemic Contribution by Industry

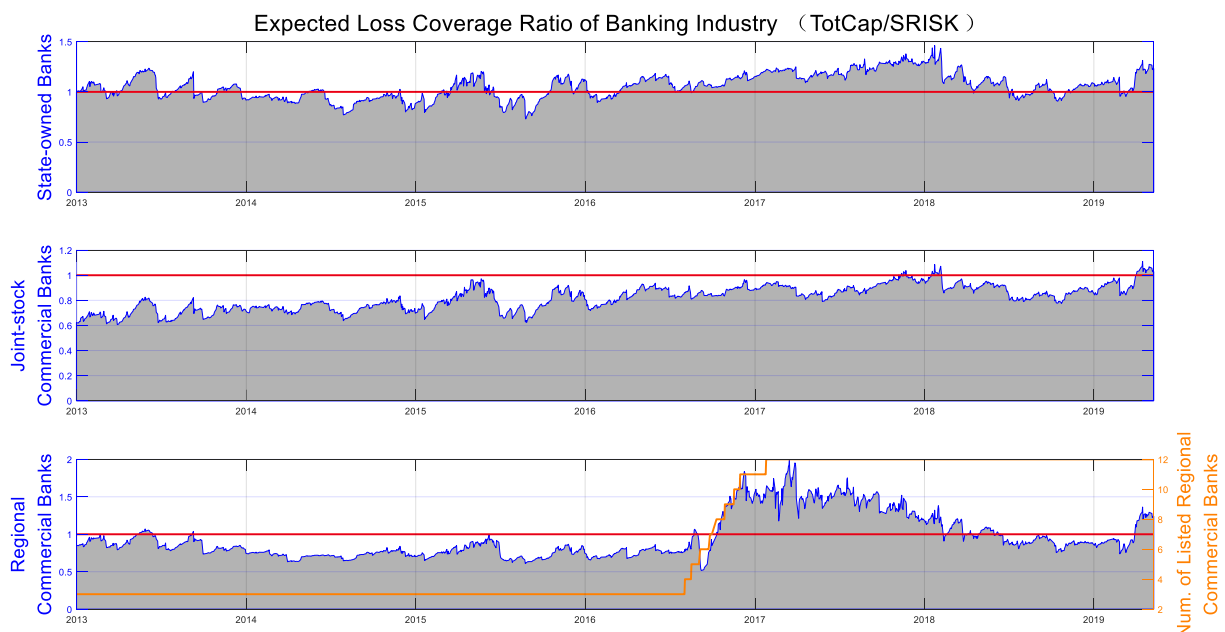


Source: Tsinghua University NIFR

The aggregate values of each sector indicators cannot provide detailed information for risk comparison and discrimination. Different institutions have different business focuses, operational styles, and ownership structures. Thus, they could face the same shocks and yet may take different risk mitigation actions. Therefore, we further divide the banking sector into state-owned commercial banks, joint-stock commercial banks, and regional commercial banks. We evaluate their risk-absorbing capacity by looking at the expected loss coverage ratio (Total Market Capitalization/SRISK).

At the beginning of 2019, the coverage ratios steadily moved upward and then plummeted in the middle of the first quarter (Figure 4). However, they rebounded above 100% quickly, indicating that the banking sector has a high capacity to absorb risks. Nevertheless, the joint-stock commercial banks and regional commercial banks have lower-than-threshold coverage ratios most of the time in the first quarter, suggesting that they have relatively lower capacity to cover the potential loss due to systemic shocks, which warrants special attention from the regulatory authorities.

Figure 4 Expected Loss Coverage Ratio of Banking Industry



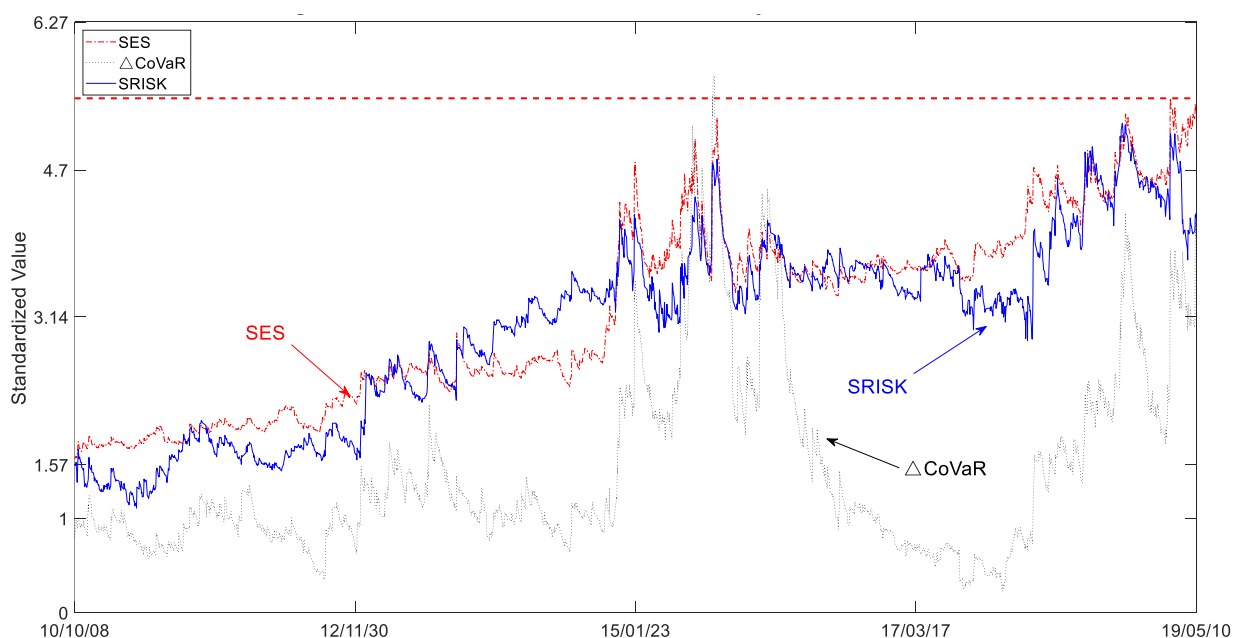
Source: Tsinghua University NIFR

The systemic risk contributions of state-owned commercial banks have surged at the beginning of the year; especially SES reached a record high in the first quarter (Figure 5). The joint-stock commercial banks have even more significant upward trend of their systemic risk contributions, with both SRISK and SES hit their record highs during the first quarter, surpassing their historical peaks achieved during the market turmoil in 2015 (Figure 6).

The regional commercial banks went public only since the end of 2016 and reached a reasonable sample size in 2017. Capturing their risk contributions recently, the indicators all soared to their historical highs at the beginning of the first quarter (Figure 7).

Overall, the micro-level systemic risk indicators all had rapid rises in early 2019, but retreated back quickly in a short period to a safe range. These ups and downs reflected mixed market sentiments for both optimistic prospects of stabilizing economy and pessimistic forecasts of trade friction.

Figure 5 The Average Values of State-owned Commercial Banks' Systemic Risk Contributions



Source: Tsinghua University NIFR

Note: The result has been scaled by their standard deviations. The red dashed line marks the historical peak of the normalized SES.

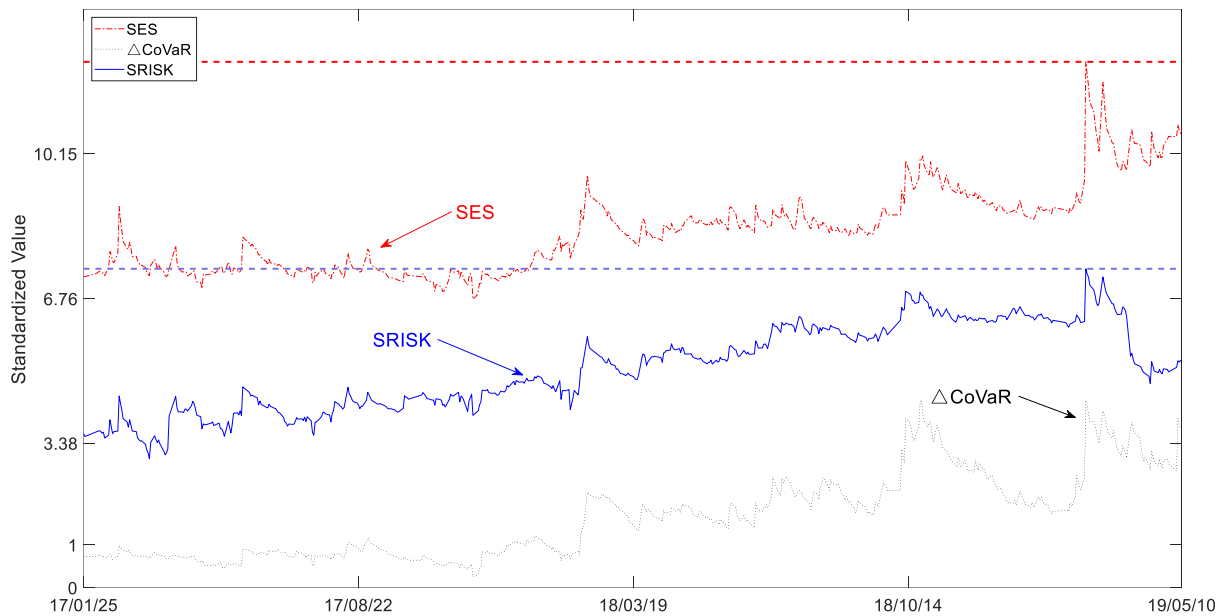
Figure 6 The Average Values of Joint-Stock Commercial Banks' Systemic Risk Contributions



Source: Tsinghua University NIFR

Note: The blue dashed line marks that the historical peak of the normalized SRISK, while the red dashed line marks the historical peak of the normalized SES, both surpassing their values when the market experiencing abnormal volatility in 2015.

Figure 7 The Average Values of Regional Commercial Banks' Systemic Risk Contributions



Source: Tsinghua University NIFR

Note: The blue dashed line marks that the historical peak of the normalized SRISK, while the red dashed line marks the historical peak of the normalized SES. Also, there are very few publicly listed regional commercial banks before 2017, so that the sample is more stable after 2017.

IV. Policy Shift, Economic Recovery, and Potential Risks

A. Policy Shift and Economic Recovery

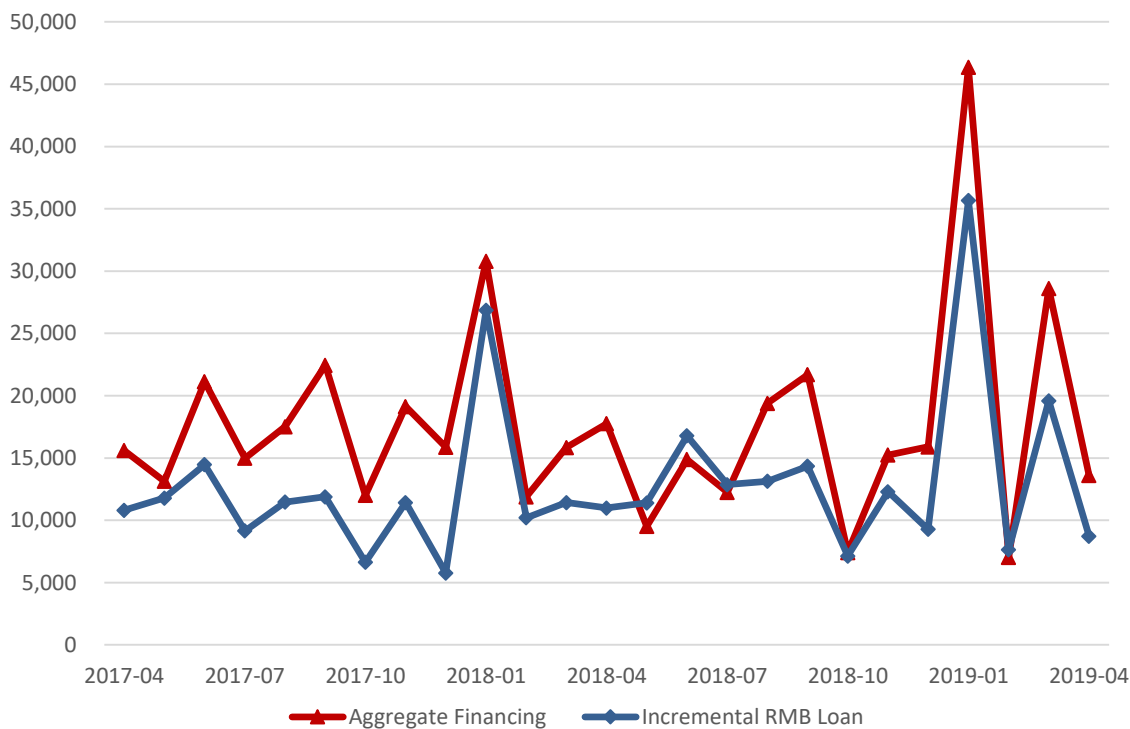
Since late 2018, to alleviate the downward economic pressure and to diffuse the gathering financial risk, various government agencies have coordinated major policy shifts, ranging from monetary policies, fiscal policies, the real estate sector, the shadow banking, to the stock market, which is validated by surprising quick economic recovery and pacifying financial market sentiment.

First of all, the monetary policy has proactively shifted from neutral to loose to ensure sufficient liquidity. The People's Bank of China (PBoC) has lowered the required reserve rate (RRR) by 1% at the start of the year. The broad money supply, measured by the M2 amount, has a y-o-y increase of 8.6% in March, the highest value in the past twelve months. The amounts of total social financing (TSF) and newly issued loans (in RMB) (Figure 8) expanded significantly, with the first four months registered y-o-y growths of 25.3% and 20.5% respectively. These prove to be a very strong credit expansion.

Following various structural and targeted stimulus policy mix, the financing conditions and business environment have been improved particularly for non-state-owned enterprises (non-SOEs) and small-to-medium enterprises (SMEs). The business conditions index (BCI) has been steadily moving upward since the beginning of the year (Figure 9). Meanwhile, in contrast to large enterprises' falling trend, the PMI for SMEs have rebounded from the bottom (Figure 10). The industrial production surged in March (Figure 11) by 8.5%, due to advanced inventory stocking in March while businesses anticipating lower tax rates. Its y-o-y growth rate fell to 5.4% in April, with the end of the Spring Festival consumption boost and a higher comparison base in last month. The growth rate of industrial profits has switched from negative values to positive ones from 2018 to 2019. These signs reinforce the argument for a quick economic recovery.

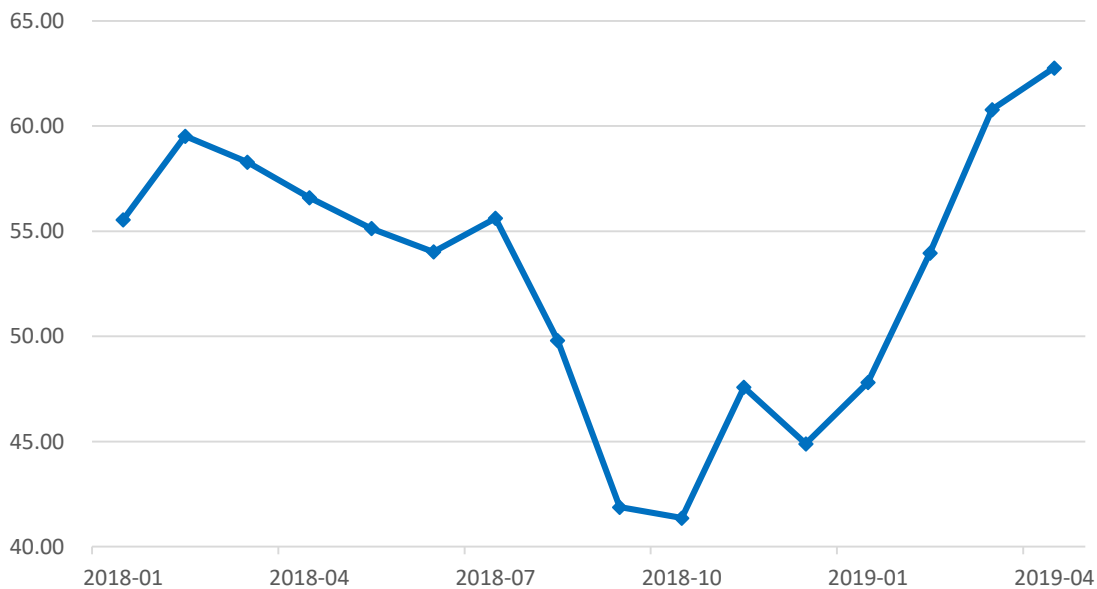


Figure 8 Total Social Financing Amount (0.1bil RMB)



Source: PBoC

Figure 9 Business Condition Index (BCI) (%)

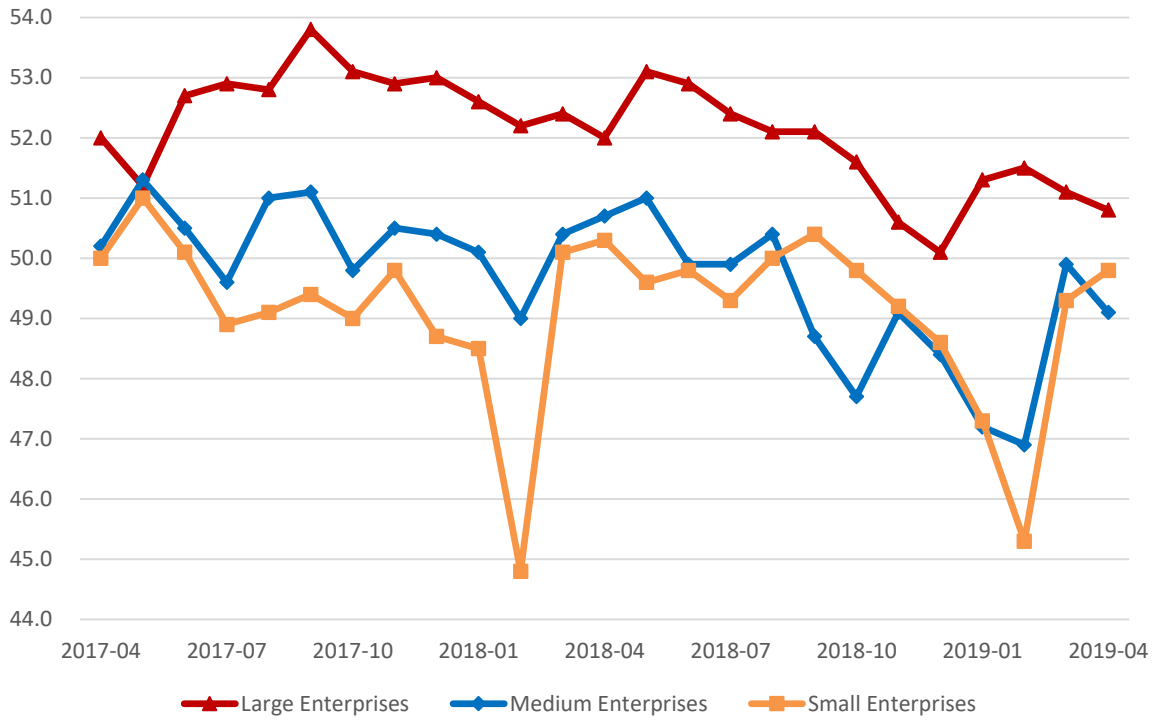


Source: CKGSB

Note: The Business Condition Index is created by surveying the Alumni enterprises of CKGSB, mostly private small-to-medium enterprises. The threshold is set at 50%. If above 50%, the business condition is likely improving. If below 50%, the business condition is probably worsening. The index encompasses four aspects: sales, profitability, financing environment and inventories.

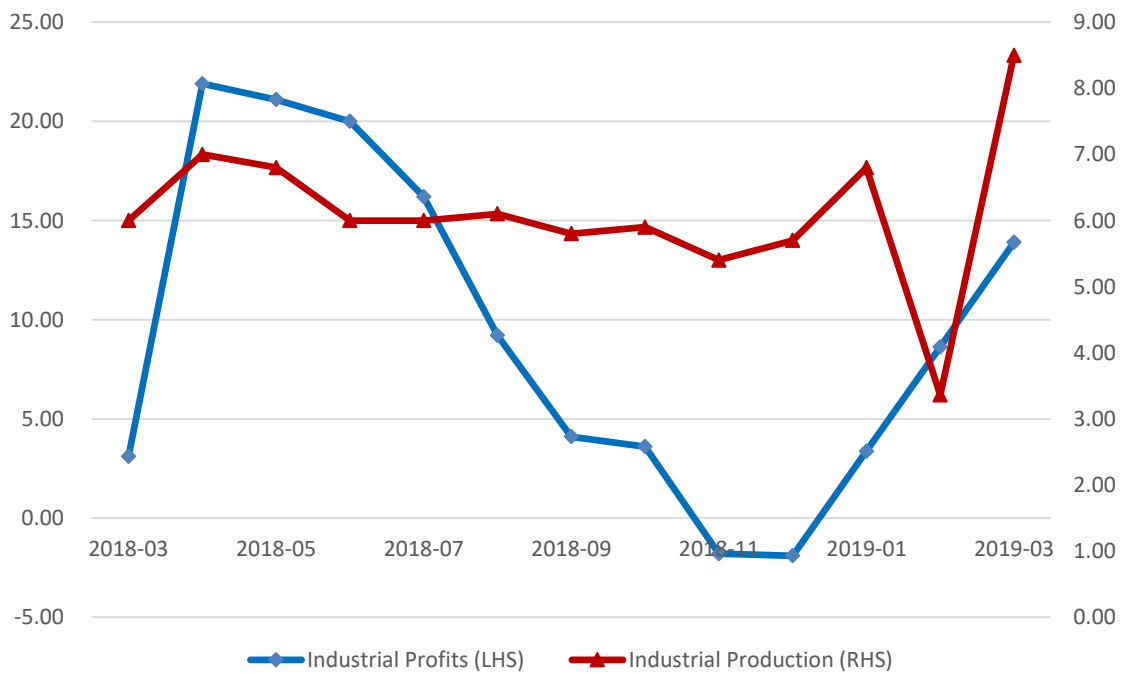


Figure 10 PMI (%)



Source: NBS

Figure 11 Industrial Production and Profits: y-o-y (%)



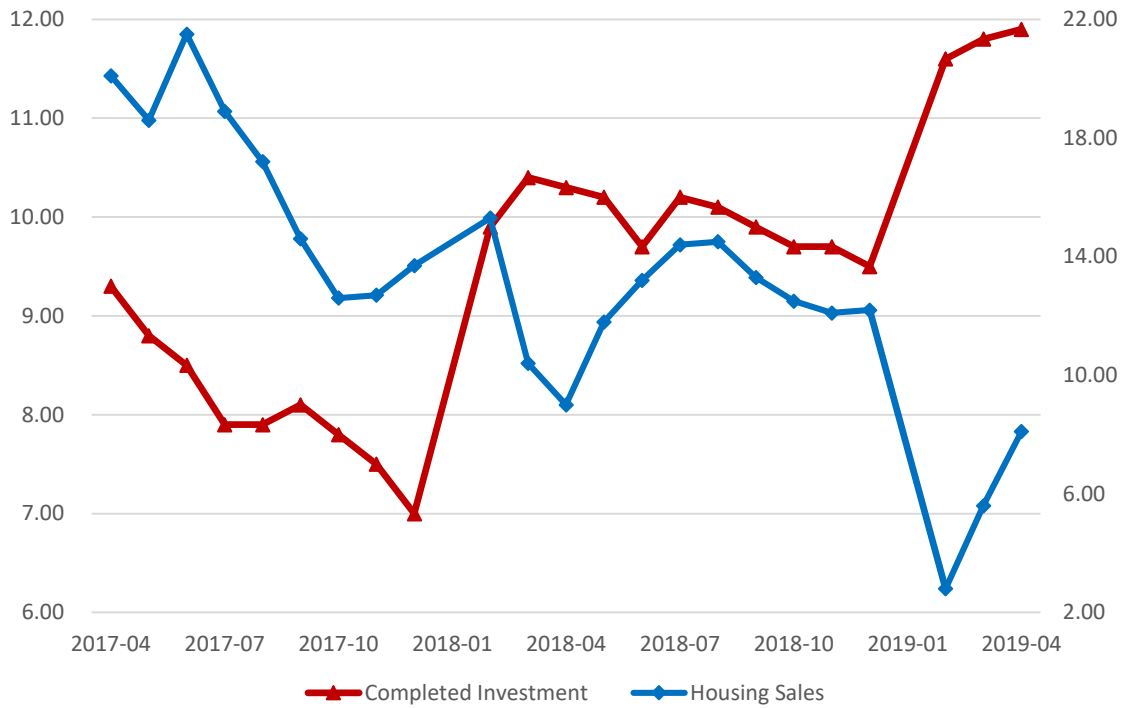
Source: NBS

Premier Li Keqiang stated a plan to cut 2 trillion yuan (around \$300 billion) taxes and fees in the *Government Work Report* during the national congress in March, vowing to take expansionary fiscal policies to push forward the structural reform. The y-o-y growth of the fixed assets investment has been steadily rising in the first quarter, while the growth rate was 6.3% in March. The amount of newly issued local government bond increased by 541% in the first quarter compared to the same time last year and by 285% compared to the previous quarter. These striking growths indicate the local governments' determination to expand infrastructure investment, laying the ground for more sustaining economic recovery.

Following the central government's guidance of "one city, one policy", put forward by the Central Committee Economic Work Conference in December 2018, megacities including Beijing, Guangzhou, Shenzhen, and Hangzhou all have relaxed their restrictions on housing sector, including purchase limits, price ceilings, land supplies, and mortgage rates. The real estate sector has been revitalized as reflected by the recent data released. The amount of real estate investment and housing sales rebounded significantly (Figure 12). The residential housing price for large and medium cities has ratcheted up in the second half of 2018 (Figure 13). The real estate industry continues to be an important driving force of economic growth in China.

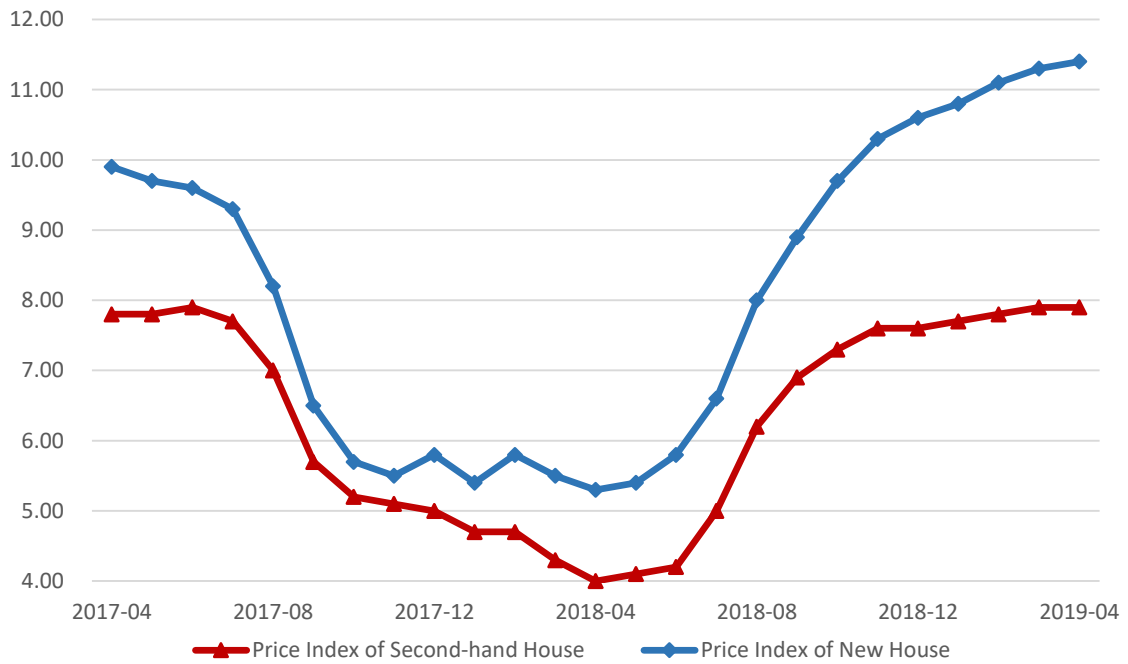


Figure 12 Real Estate Investment and Sales: y-o-y (%)



Source: NBS

Figure 13 Housing Price Index for 70 Large and Medium Cities: y-o-y (%)



Source: NBS

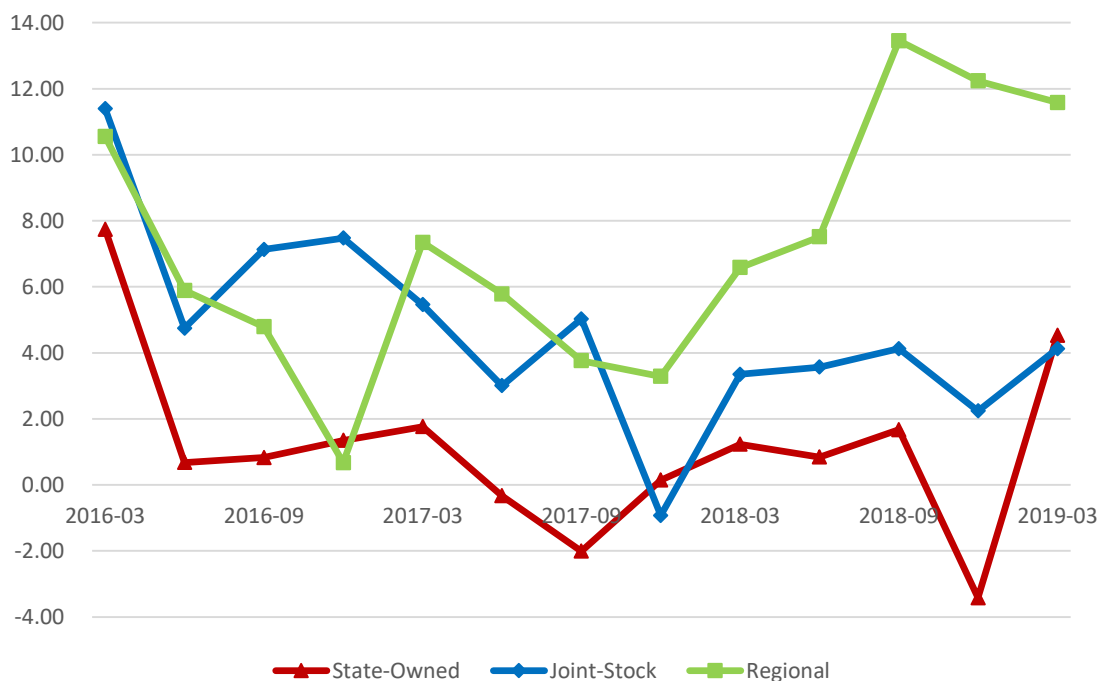
B. Potential Risks – NPL

During the first quarter 2019, China’s economy has been stabilized and systemic risk is mitigated. Nevertheless, the micro systemic risk indicators stay high in recent months, which calls for attention from the policy makers and regulatory authorities.

Currently, the policy mix has largely directed credit resources to non-SOEs and SMEs, which lack sufficient collateral assets and third-party guarantees. Admittedly, they have higher operational efficiency than SOEs; however, these firms have higher default risks, which may create potential policy burdens for the banking sector, affecting banks’ credit reallocation and profit margin.

During the first quarter of 2019, the growing rate of the amount of non-performing loans (NPL) for the banking sector has accelerated (Figure 14), cross-validating the high values of micro-level systemic risk indicators. Considering the lagged effects of policy changes and business cycles, the regulatory department should closely monitor bank loan defaults and prevent default risks from outbreak and contagion.

Figure 14 Growth Rates of NPL in the Banking Sector : y-o-y (%)



Source: Tsinghua University NIFR, CBIRC

V. Policy Recommendations

The Political Bureau Meeting of the CPCCC on April 19 stated that China should strive to maintain growth momentum, reform progress, structural adjustment, public welfare improvement, risk prevention, and political stability. Currently, the Chinese economy has been confronted with threats both internally and externally. However, the critical challenge comes from within. Handling well internal institutional and structural problems help to lay the foundation to defuse the negative impact of the external shocks. We recommend that for a longer horizon, economic policy should aim for deepening market-oriented reform and advancing high-standard opening-up. Meanwhile, the short-term policies should aim for stabilizing economic growth and reducing market volatility, which wins the time window to deepen the reform and further opening-up.

As witnessed in 2018, the trade tension between China and the U.S. has great negative impacts on the financial market, eroded investors' confidence, impeded the reform progress, and damaged the Chinese economy which is still in a transitional stage. Therefore, it is of paramount importance to minimize and avoid any escalation of the trade war, as much as possible. There is no winner in a trade war.

One long-term objective is to create a “competition neutral” business environment, especially for non-SOE firms. Beyond financing support for SMEs and non-SOEs, more measures need to be implemented for “competition neutral” taxations and fees, access to production factors, market access, licenses, government procurement, public bidding, subsidies, regulations, etc. Non-state capitals should be encouraged to participate in the “mixed-ownership” reform of SOEs. The preferential treatment for SOEs, such as soft budget constraint, implicit subsidies, government guarantees, should be gradually abolished. Only “competition neutrality” can stimulate the economic vitality.

In summary, we need to balance among different tasks, including reducing short-term volatilities, alleviating internal and external shocks, reform and opening-up, and economic restructuring. These goals are not necessarily contradicting with each other, but we need to judiciously choose the priority and sequence. Given the stabilizing

macroeconomic performance in the first quarter yet moderating growth in April, we should continue strengthening economic fundamentals to prolong the growth momentum for a complete economic recovery in a medium term. The monetary policy must be moderately loose to maintain adequate liquidity. Learning from the recent lesson that overly aggressive deleveraging could severely damage the economy, the supply-side structural reform should proceed cautiously and prudentially, conditioning on that the economy has been fully revitalized.

Appendix I: Technical note on systemic risk indicators

The systemic risk indicators used in this report include both macro- and micro-dimensions. The macro-indicator includes catastrophic risk in the financial system (CATFIN), and the micro-indicators include systemic expected shortfall (SES), delta conditional value-at-risk (ΔCoVaR), and systemic risk measure (SRISK).

CATFIN was proposed by Allen et al. (2012), by using extreme value theory to measure catastrophic risk in the financial system (and the real estate sector). This measure has been proven to be a good leading indicator (by 6-12 months) for the economic downturns, and also a good leading indicator for banks' credit tightening and profit shrink. This measure has been widely used in academic research, industry, and regulatory practices. Chen et al. (2017) shows that this measure is applicable to China's financial system.

SES was proposed by Acharya et al. (2017), which measures expected shortfalls (capital shortage) for individual financial institutions under a systemic distress. A higher SES indicates a higher contribution of the individual financial institution to the systemic risk, i.e., this financial institution has higher systemic risk. Acharya et al. (2017) shows that SES is positively correlated to financial leverage.

VaR is a measure of tail risk for a portfolio or an individual financial institution. It fails to take into account of the externality effect and is highly pro-cyclical. To overcome these shortcomings, Adrian and Brunnermeier (2016) modified the VaR measure and proposed ΔCoVaR . It measures the expected value-at-risk for the financial system if the tail risk happens to an individual financial institution, i.e., whether and how serious the failure of one financial institution will cause losses to the whole financial system. A higher ΔCoVaR indicates higher systemic risk of the financial institution.

SRISK is proposed by Brownlees and Engle (2016), with similar ideas as SES. Both SRISK and SES measure expected shortfalls for individual financial institutions under a systemic distress. For SRISK, the systemic distress is defined as the scenario that the stock market will fall 40% in six months.

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