

Research Report

No. 2018-10

Tsinghua University National Institute of Financial Research

2017 Annual Report of China's Systemic Financial Risk

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March 28, 2018

Summary

In 2017, the Chinese government has launched a torrent of investigations and regulations to revamp the financial system. As part of the efforts on reining in risk in the financial market, tighter policies have been developed and imposed. In this context, we have employed selective measures to assess the systemic risk of China's financial systems. We have also investigated the systemic contribution of financial institutions at all levels. Based on the results, we have made relevant policy recommendations.

Using various approaches proposed in existing literature, we have monitored the systemic risk of China's financial system at both macro and micro levels. Our results show that: (i) when entering the era of tough financial regulation, the overall systemic risk soared once and has stabilized at a safe range later, indicating that the regulators should effectively

communicate with stakeholders to avoid high volatility induced by the unexpected policy change while maintaining the strong and rigorous regulatory regime; (ii) at the industry level, the banking sector has the highest contribution to the systemic risk, and joint-stock commercial banks with the lowest capacity on risk coverage, both worth close monitoring; (iii) at the institutional level, the authorities should draw special attention to Pudong Development Bank (SPDB), Bank of Beijing (BOB), Pingan Insurance (PINGAN), Pingan Bank (PAB), China Merchants Bank (CMB) and Industrial Bank (CIB).

I. Background

Since our 2017 first-quarter report (*Systemic Risk of China's Financial System 1Q17*) has published, the Chinese government has given greater emphasis to financial system oversight. It has prioritized three main tasks for China's future economic and financial development: boost the financial industry to better serve the real economy, prevent and dissolve systemic risk to ensure financial stability, pursue structural change and financial sector deepening. China is working towards enhancing its surveillance and monitoring capabilities to mitigate financial risks.

During the conference of the Political Bureau in April, China's highest decision-making body has set the bottom line as avoiding systemic events in China for the first time and underscored the importance of ensuring financial stability. This objective has been reemphasized in the National Finance Working Conference in July, which also announced that the State Council had established a Financial Stability and Development Committee to coordinate oversight and supervision in the financial sector. The financial regulatory agencies all have started to impose tighter regulations to improve stability and safety of the financial market.

First, the People's Bank of China (PBOC) further consolidated the evaluation mechanism of the Macro Prudential Assessment (MPA) framework. It has also released draft guidelines that will unify rules covering asset management products, jointly with China Banking Regulatory Commission (CBRC), China Securities Regulatory Commission (CSRC), China Insurance Regulatory Commission (CIRC) and State

Administration of Foreign Exchange (SAFE).

Second, CBRC, China's banking regulator, has devoted to eradicating irregularities in the sector, such as irregular arbitrage, illegal transactions, wrongful profit-making and improper fees or charges. A new guideline has been issued to regulate 10 major areas, encompassing equity and foreign investment, institutions and their executive members, regulatory framework, products and transactions, and business integrity.

Third, CSRC has stepped up efforts in supervising areas including mergers and acquisitions (M&A) and initial public offerings (IPO). It has also improved its regulatory mechanism, centering around supervising the transactions initiated by regulatory members, applying the 'penetrating' supervision method, to avoid the regulatory arbitrage.

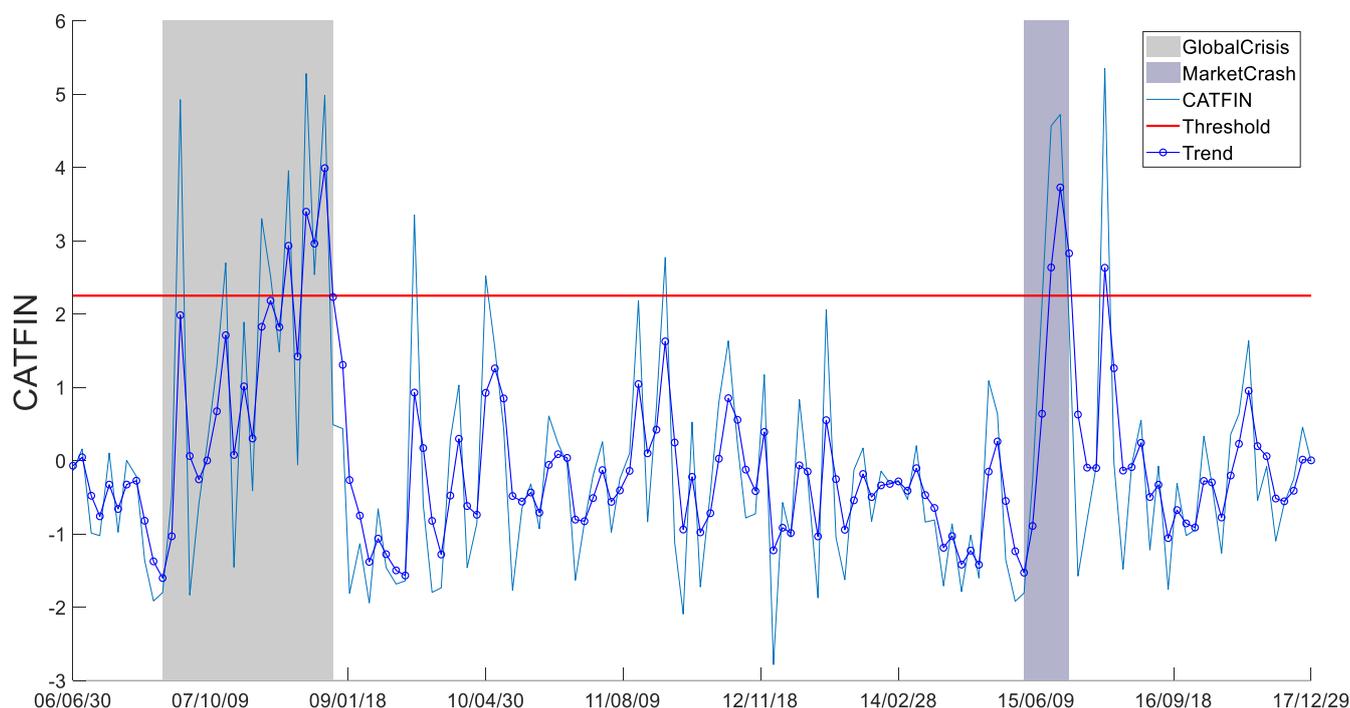
Last, CIRC has fully implemented the Solvency II. It can surveil the usage of insurance funds, and prohibit investing in multi-layer nested financial products, which have uncertain underlying assets, suspicious cash flows, or dubious risk profiles. It has also augmented the regulatory framework on market-exit and business-transfer in the insurance market.

II. Macro Dimension: Although the systemic risk remains stable, the authorities should continuously strengthen its regulatory mechanism.

Over the past twelve years (June 2006 – Dec 2017), our measure of catastrophic risk in the financial system (CATFIN) (Appendix I) has remained in a relatively stable and safe range (Figure 1¹). Its volatility is comparable to the historical average. These indicate the predictability and stability of the systematic financial risks at the macro level, which diminishes the possibility of the occurrence of systemic events in the foreseeable future.

¹ The sample includes 202 listed companies in finance and property 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.

Figure 1 Macro dimension: the time series of CATFIN (2006-2017)



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.

The performance of the real economy is in line with the movement of CATFIN. China's economy has maintained a sustained and balanced growth. Accompany with the deepening of the supply-side reform, the economic structure has been continuously optimized to improve the quality of economic growth. The GDP growth rate is 6.9% in 1Q17 & 2Q17 and 6.8% in 3Q17 & 4Q17, higher than (or equal to) those of last year and outpacing market expectations. The manufacturing PMI has stayed above the 50-threshold for seventeen consecutive months and peaked at 52.4% in September, the first time in the last five years. The monthly average growth rate of delivery value of industrial exports between March and December 2017 is 10.13%, well above 1.02% for 2016.

Even under such rigorous regulatory pressure, the financial outcomes have kept up with market expectations, and regulations forcing off-balance sheet assets back on balance sheet have sustained the credit expansion. This brings in 13.53-trillion-yuan worth of new lending in 2017, 7% higher than that in 2016. The credit balance has risen 12.7% to 120.13 trillion yuan. The amount of the total social financing (TSF) balance has risen 12.0% to 174.64 trillion yuan. Overall, the credit expansion is proceeding well, relatively unaffected by the strengthened regulations. It is worth noting that the Chinese government, in 2017, has imposed the most stringent and intensive regulation policies ever on the property market. In 2017, it has been estimated that there are over 180 policies² related to the real estate have been introduced to over 50 cities in total. These new policies, with greater precision and accuracy, are aimed at mildly reducing the accumulated risks in the property market.

In the financial industry, banking, insurance, and securities sectors all exhibit a steady growth, while experiencing structural reforms under stricter supervision. Therefore, the financial industry is providing more significant support to the real economy. Moreover, the stronger regulations also help to rectify the preexisting market disorder in the banking sector. The PBOC has maintained a prudent and neutral monetary policy, cultivating ‘contractive and balanced’ market expectations. It is advocating a gradual deleveraging to prevent accumulating systemic risks in the financial system. As regard to the exchange rate, it is stabilizing since the CNY depreciation trend against the USD has been reversed since March. The State Administration of Foreign Exchange (SAFE) has added a counter-cyclical factor to the currency pricing model in June, hedging against the cyclical volatility of market sentiment and countering the unilateral or directional expectation of the currency market.

Looking at more recent data from 2015, the CATFIN has been moving in a safe range most of the time, except during the periods when the stock market fluctuates

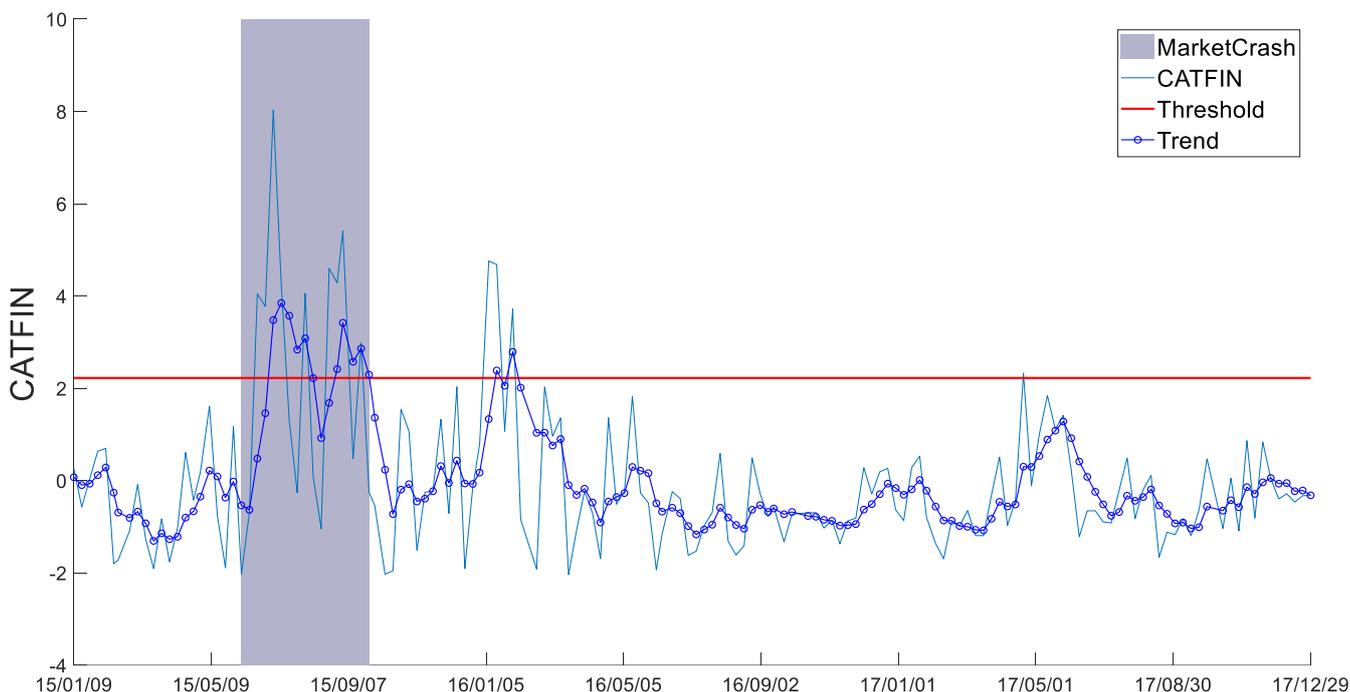
² Statistics source: Centaline Property Agency

abnormally (Figure 2³). Overall, CATFIN is trending toward the long-term market expectation and remains at a stable level. However, the measure's short-term fluctuation is more likely caused by the regulation changes or overreaction to such market shocks. For example, the CATFIN has soared between April and June, when CBRC took a firm position on regulating the financial industry and subsequently put forward rigorous regulation policies, causing widespread market panic. Nevertheless, the market has gradually absorbed the shocks caused by regulation changes and further benefited from stronger financial regulations. The government has been making progress on regulating the financial markets. Especially for the banking sector, the market turmoil has been pacified profoundly.

Based on the analysis above, we recommend that the authorities should maintain a strong and rigorous regulatory enforcement regime in the financial markets, reinforcing both functional and conduct supervisions. Strengthened regulations are conducive to deepen the financial reform while preventing systemic risk. A strong and stable financial market can better serve the real economy. Meanwhile, the regulators should monitor the market movement closely. Stable market expectations can be achieved by more proactive and effective communication with market participants to avoid high market volatility induced by unexpected policy adjustment. The regulatory mechanism can be continuously improved to generate substantial economic benefits at minimal costs.

³ 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 (2015-2017)



Source: Tsinghua University NIFR

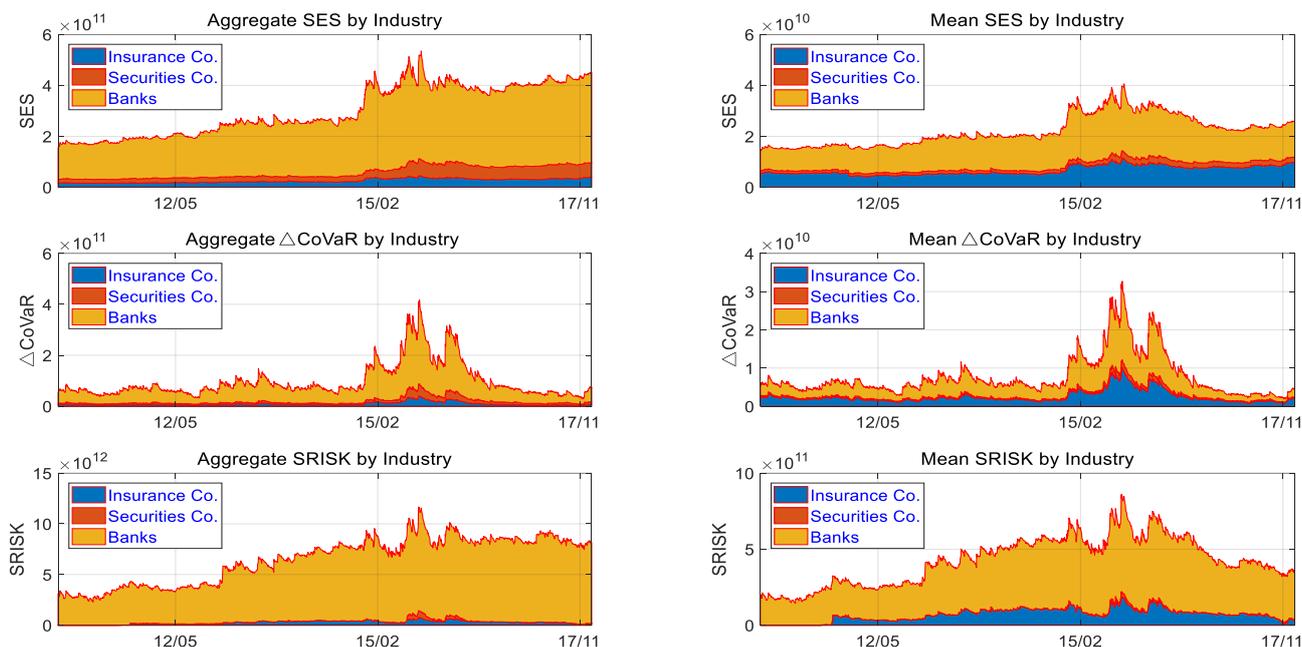
Note: the market crash (May 2015 – September 2015), when the A-share market fluctuated abnormally, has been highlighted in dark grey. The red line is the alert threshold, calculated by adding the historic average and two standard deviations.

III. Industry Dimension: The banking sector has the highest systemic risk contribution, yet the trend is improving; within the banking sector, the authorities should pay more attention to joint-stock commercial banks.

A. The banking sector has the highest systemic risk contribution in the financial industry

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) (Appendix I), for all listed financial institutions, 57 in total. The sample analysis has been conducted for banking, securities, and insurance sectors (Figure 3).

Figure 3 Systemic Contribution by Industry



Source: Tsinghua University NIFR

First, the ΔCoVaRs for banking, securities, and insurance sectors all have fallen sharply in 2017. SRISK and SES are far below the peak values in 2015, when the stock market experienced abnormal fluctuations, and are trending towards stable levels.

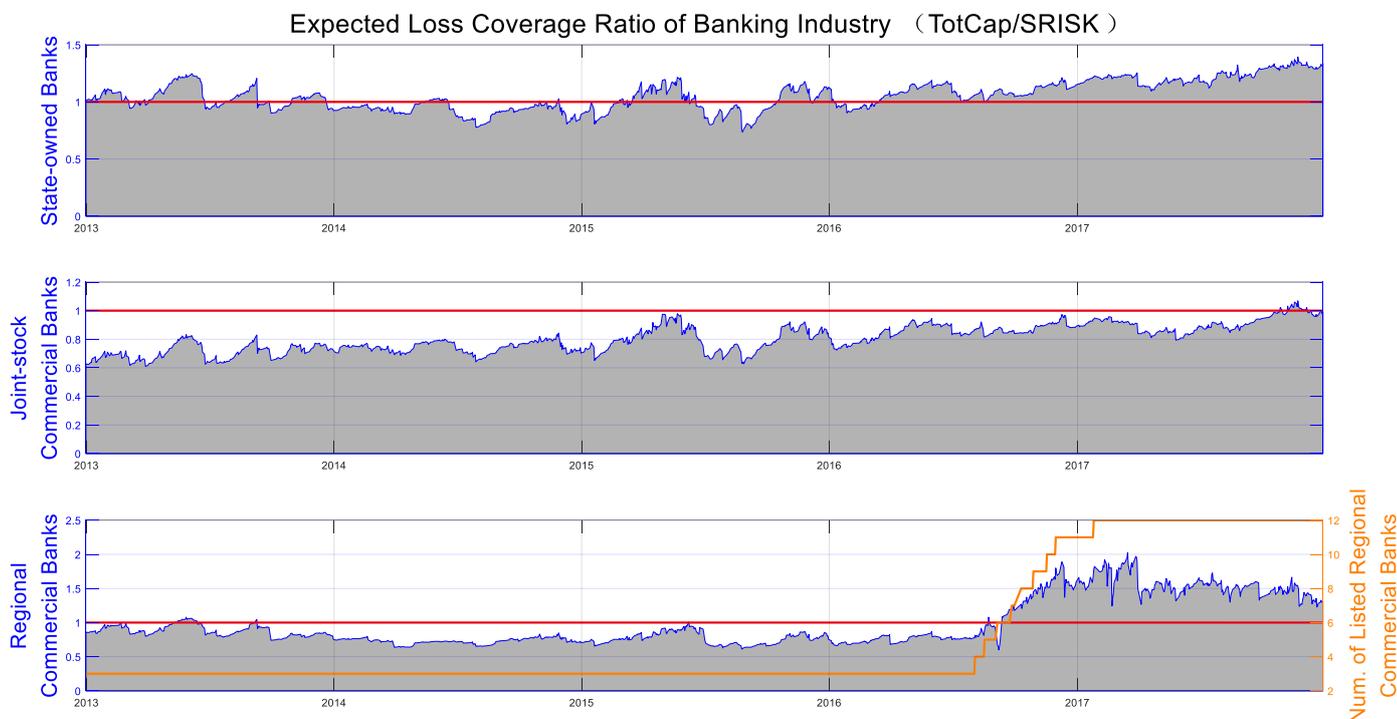
Second, the banking sector has higher total and average values of three indicators than the other two sectors, consistent with the fact that it has the highest overall size among the three. Thus, the banking sector has the highest contribution to the systemic financial risk. We advise to focus on the banking sector when taking measures to prevent systemic risk in the financial industry.

B. The joint-stock commercial banks have low loss coverage capacity

To investigate further, we divide the banking sector into state-owned commercial banks, joint-stock commercial banks, and regional commercial banks. We evaluate their risk absorbing capacity on loss coverage by looking at the expected loss coverage ratio (Total Market Capital/SRISK). Among the three categories, the joint-stock commercial banks

seem to have relatively low capacity to cover the potential loss, due to systemic shocks (Figure 4).

Figure 4 Expected Loss Coverage Ratio of Banking Industry



Source: Tsinghua University NIFR

On the one hand, the expected loss coverage ratios for state-owned commercial banks and joint-stock commercial banks are moving upwards, whereas ratios for regional commercial banks remain stable. Overall, the banking sector has been augmenting its capacity to absorb systemic risk shocks under more rigorous regulations. On the other hand, the expected loss coverage ratios for state-owned commercial banks and regional commercial banks have been mostly higher than 1 since 2015. Especially for regional commercial banks, the ratios stay above 1.5⁴. On the contrary, joint-stock commercial banks have low loss coverage ratios, mostly between 0.8 and 1. Thus, the joint-stock

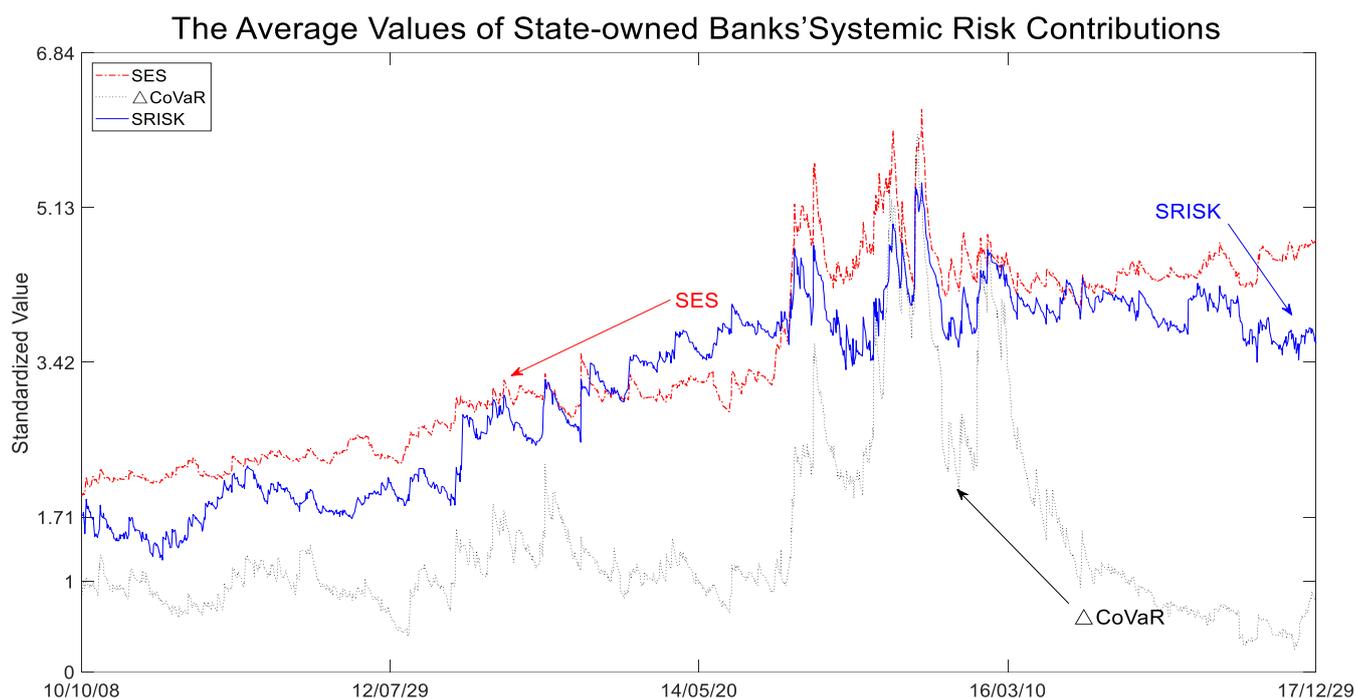
⁴Because many regional commercial banks were not listed until late 2016, the expected loss coverage ratios prior 2017 are less relevant and have low explanatory power for the sectors performance. Thus, our report has given more emphasis to its systemic risk since 2017.

commercial banks, revealing low coverage capacity for absorbing systemic risk shocks, should attract special attention from the regulatory authorities.

C. While the systemic risk contribution of large state-owned commercial banks has trended downwards, the systemic contribution of joint-stock commercial banks surged recently.

As reported in our 1Q17 report, within the banking sector, the risk indicators for state-owned commercial banks⁵ have been stabilized at low levels (Figure 5). Since the second quarter, the state-owned banks have further reduced their systemic risk contributions. Both SRISK and ΔCoVaR fell notably, and ΔCoVaR has reached the record low level since 2010. The risk level is brought down by two forces.

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



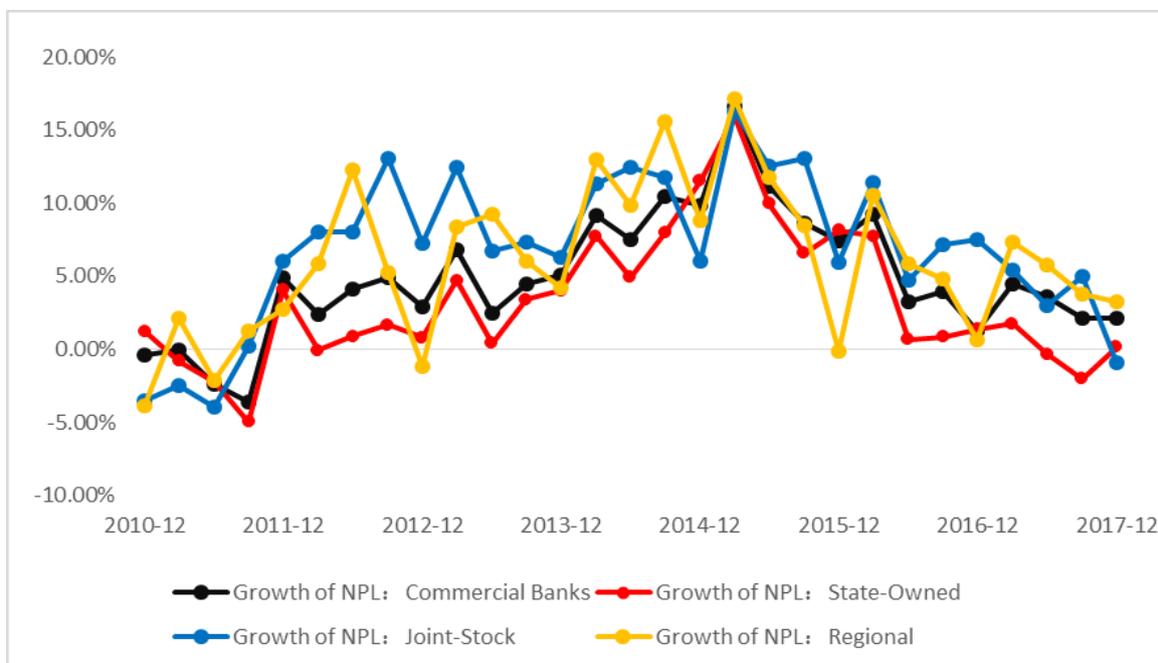
Source: Tsinghua University NIFR

Note: the result has been scaled by their standard deviations.

⁵ The five largest commercial banks are Industrial and Commercial Bank of China (ICBC), Agricultural Bank of China (ABC), Bank of China (BOC), China Construction Bank (CCB) and (Bank of Communications) BOCOM. All are state-owned commercial banks.

First, state-owned commercial banks have made large progress on controlling credit risk. The growth rate of non-performing loans (NPL) has been decreasing in 2017, within the range between 2% and 5% (Figure 6). From 1Q17 to 4Q17, the quarterly growth rate of NPL for the state-owned commercial banks is -0.11%, well below the average rate 3.06% for the whole banking sector, 3.14% for joint-stock and 5.04% for regional commercial banks. Particularly in 2Q17 and 3Q17, the amount of NPL at state-owned commercial banks has been decreasing, and the growth rate in 3Q17 is -2.01%.

Figure 6 Growth Rates of NPL in the Banking Sector



Source: Tsinghua University NIFR, CBRC

Second, state-owned commercial banks have benefited sufficient capital and high return on assets (RoA). Since 2014, the average capital adequacy ratio of state-owned commercial banks has been approximately 2.37% higher than joint-stock commercial banks, and 1.73% higher than regional commercial banks (Figure 7A). Meanwhile, the RoA for state-owned commercial banks has been higher than both joint-stock and regional commercial banks since 2014 and this gap is stable around 0.2% (Figure 7B).



Figure 7A Capital Adequacy Ratios in the Banking Sector

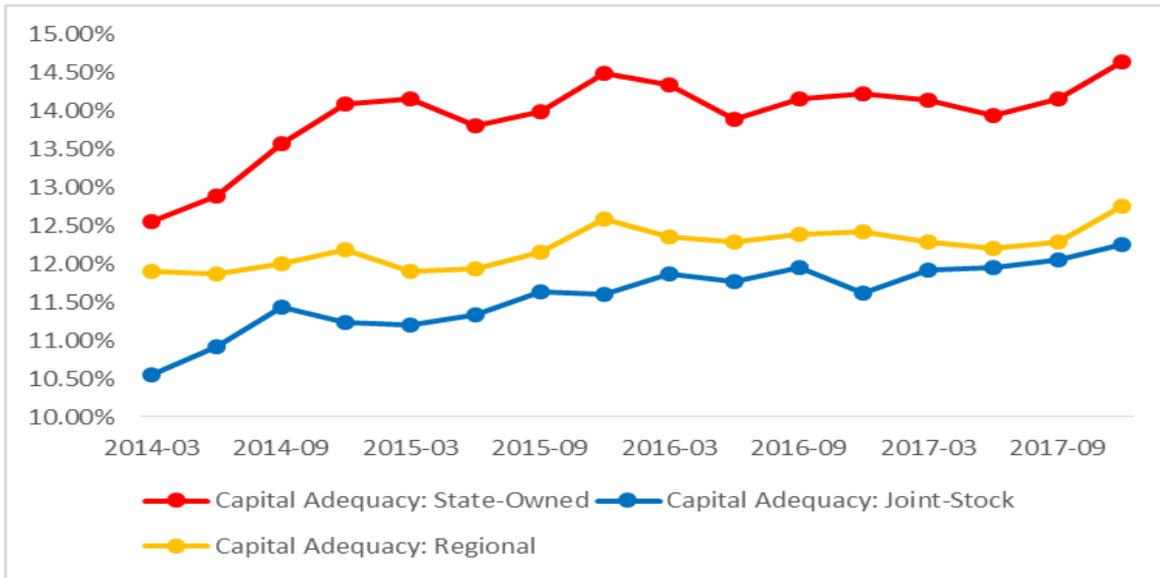
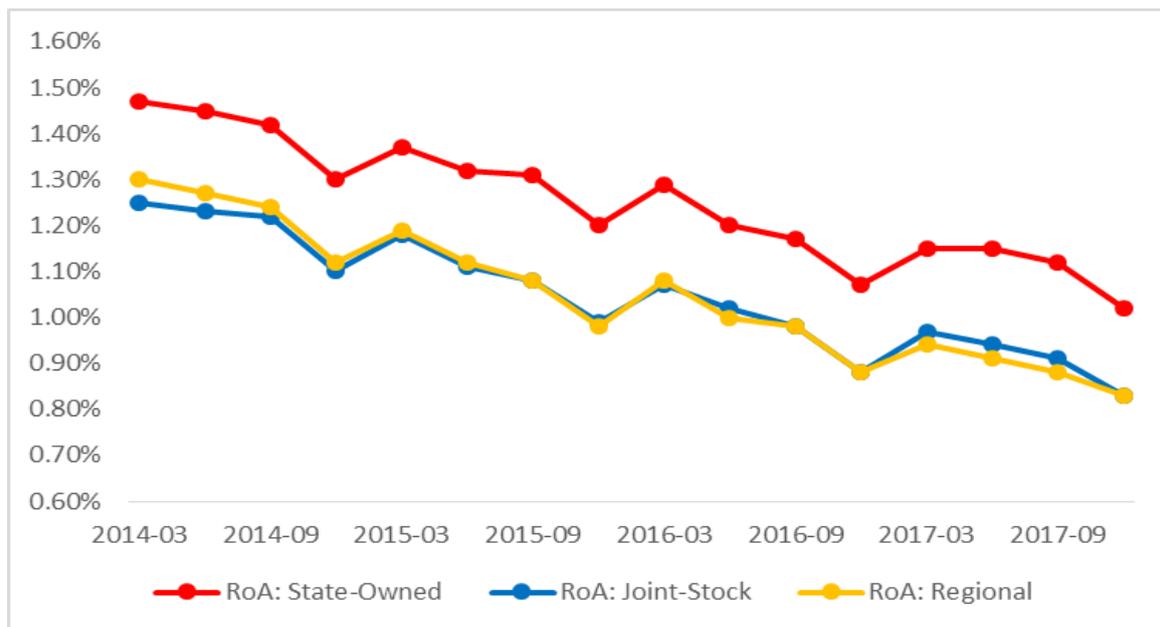


Figure 7B RoA in the Banking Sector

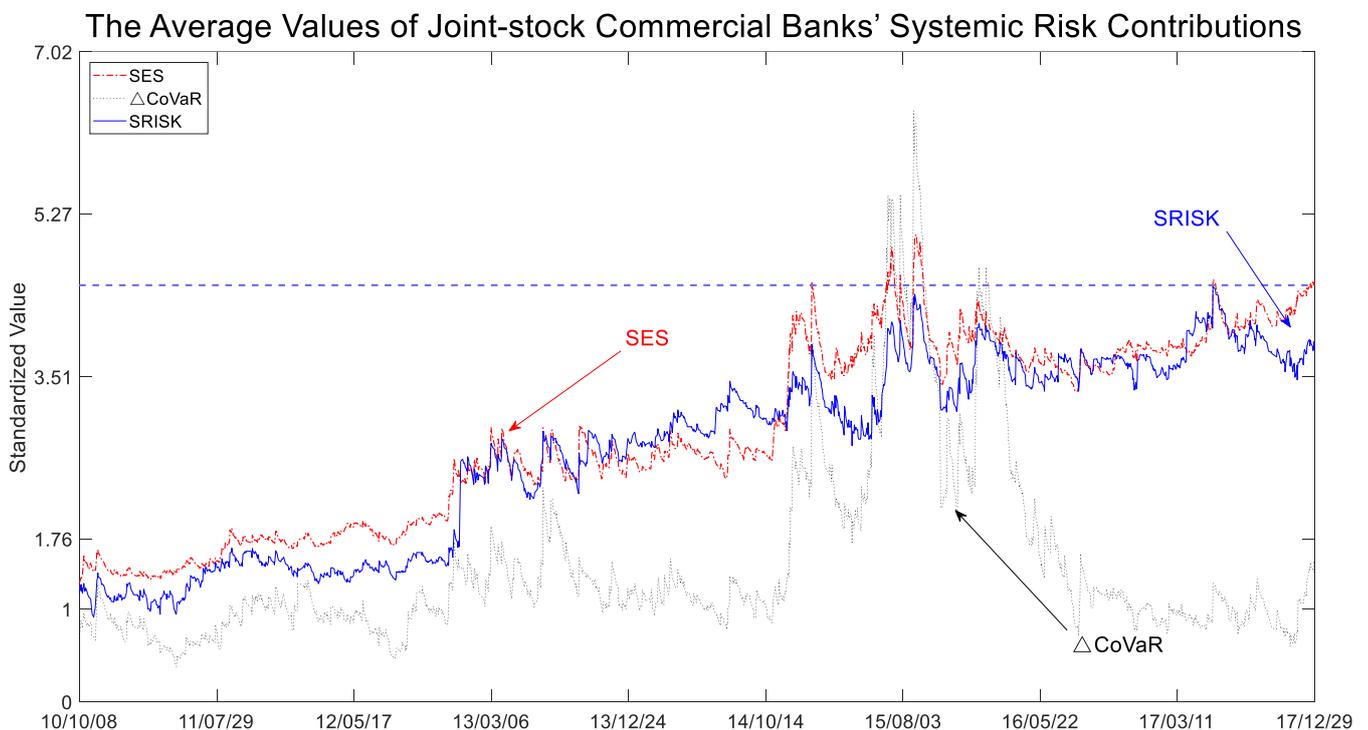


Source: Tsinghua University NIFR, CBRC

The joint-stock commercial banks are worthy of special attention, as we have mentioned in the first-quarter report especially, given the fact that the updated risk indicators continue the same message (Figure 8). Though SES, SRISK, and ΔCoVaR for

joint-stock commercial banks are largely stable, they have significant fluctuations and reached local peaks during 2017. SRISK, in particular, is approaching the same alerting level as in 2015 when the stock market was extremely volatile. This is due to both internal and external factors. Internally, the joint-stock commercial banks lacked sufficient governance and have rampant illicit transactions since 1Q17, including selling fictitious wealth management products, fabricating illegal official stamps, and providing illegal guarantees. Externally, the joint-stock banks have been more seriously impinged by the newly tightened regulation regime that have penetrated the whole banking sector and unified rules for the asset management products. However, joint-stock banks face higher pressure to attain high performance, due to tougher market competition than state-owned banks. Therefore, they tend to be more risk-taking and, consequently, under greater scrutiny under the tightened regulation framework.

Figure 8 The Average Values of Joint-Stock Commercial Banks' Systemic Risk Contributions



Source: Tsinghua University NIFR

Note: the blue dash line marks the level of a peak value in mid-2017.

IV. Institutional Dimension: Institutions including Pudong Development Bank (SPDB), Bank of Beijing (BOB), Pingan Insurance (PINGAN), Pingan Bank (PAB), China Merchants Bank (CMB) and Industrial Bank (CIB) need close monitoring

At the institutional level, our report mostly concerns with 19 systemically important financial institutions (SIFIs). We have ranked each individual institution’s annual growth rates of SES, SRISK and ΔCoVaR , while excluding the institutions with negative indicator values. We have identified 6 problematic institutions (Table 1): Pudong Development Bank (SPDB)⁶, Bank of Beijing (BOB), Pingan Insurance (PINGAN), Pingan Bank (PAB), China Merchants Bank (CMB) and Industrial Bank (CIB), whose systemic risk changes are way above the average for at least one of the three indicators (Appendix II).

Table 1 Top Institutions on the Ranking List of Indicators

	SPDB	BOB	PINGAN	PAB	CMB	CIB	AVERAGE
SES Yearly Change (%)	18.49	8.73	42.36	38.95	27.33	22.18	11.81
CoVaR Yearly Change (%)	67.79	84.71	54.5	21.33	72.53	58.91	13.79
SRISK Yearly Change (%)	8.29	37.54	-35.65	17.07	-12.54	7.23	-8.43

Source: Tsinghua University NIFR

V. Comparing with Other Measurements

In the 1Q17 report, we have compared our measures with three alternative measures that have been used in assessing China’s financial risk. Three alternative indicators are the credit-to-GDP gap measure proposed by the Bank of International Settlements (BIS), the NPL ratio for commercial banks, reported by the regulatory authority CBRC, and the debt-at-risk measure proposed by the International Monetary Fund (IMF) in the Global Financial Stability Report (GFSR). Our measures are unique and superior in four areas⁷: (i) our indicators are forward-looking by relying on financial data, rather than backward-looking

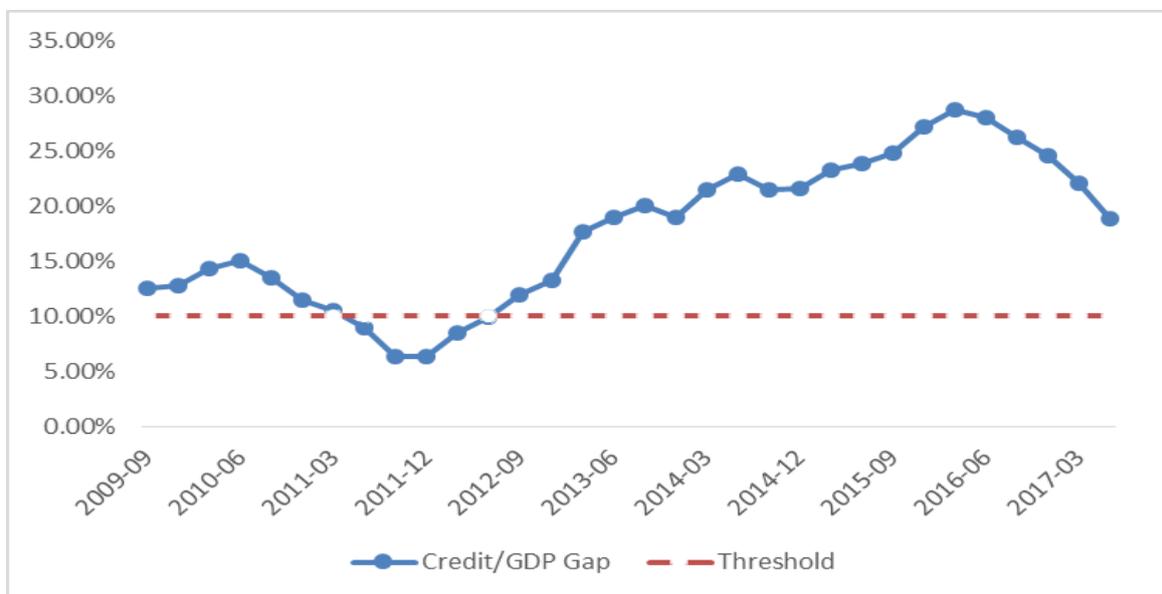
⁶ In the first draft of this report dated on Dec.15, 2017, we explicitly identify SPDB as one of the institutions which need close monitoring. In Jan. 2018, CBRC released the finding of their investigation of SPDB’s fraud case involving 77.5 billion RMB fake credit.

⁷ Check details in 1Q17 report: http://www.pbcfs.tsinghua.edu.cn/content/details414_13423.html

by relying on economic data; (ii) our measures (based on stock prices) include current expectations of market participants; (iii) the information content of stock prices tend to be more objective and less susceptible to reporting errors and manipulations that are common concerns for those alternative measures; (iv) our real-time analysis on the data (stock prices), which is available at daily frequency, can reflect the latest change in the financial system.

Since 2Q17, we have updated the outcomes for these alternative measures. First, the credit-to-GDP gap measure, proposed by the Bank of International Settlements (BIS), has reached a record high at 28.8% in 3Q16, followed by successively tapering in next five quarters to 18.9% in 2Q17. It has gone through the largest decrease and reached the lowest level in four years (Figure 9). Although the absolute value is still above the alert threshold (10%), since it is a lagging economic indicator, the large decline since 2Q17 is sufficient to justify our conclusion that the systemic risk in Chinese financial market has notably decreased.

Figure 9 Credit-to-GDP Gap

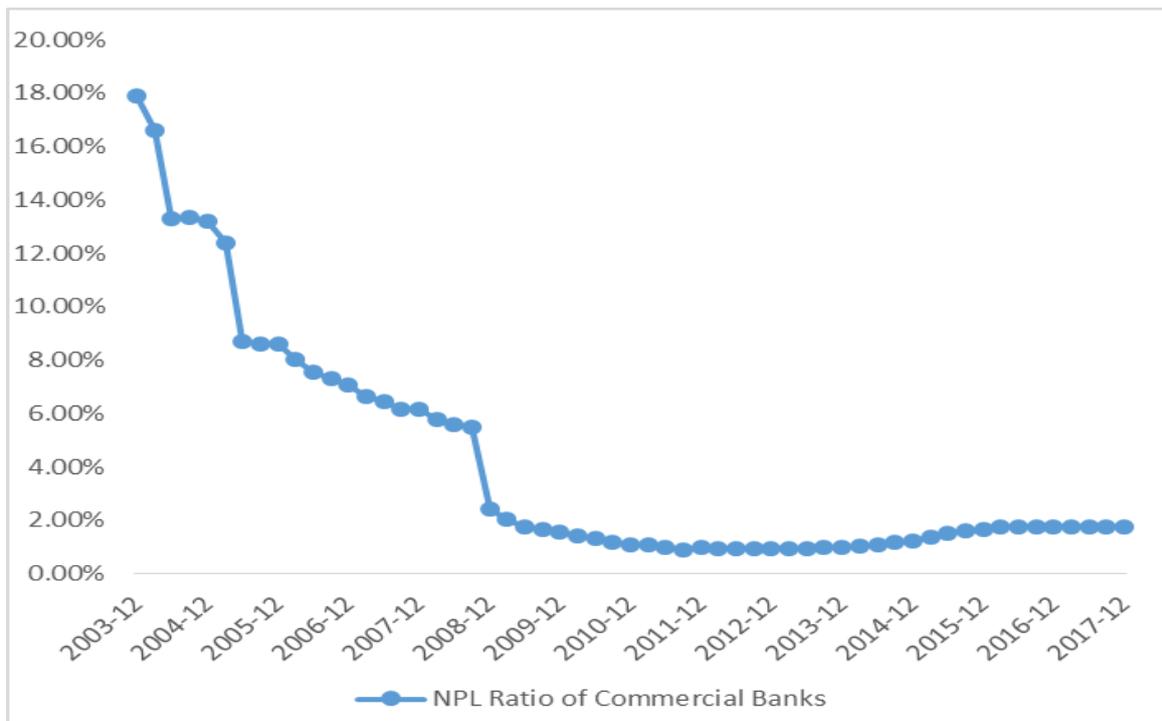


Source: Tsinghua University NIFR, BIS

Second, the NPL ratio for commercial banks, reported by the regulatory authority CBRC has climbed to the locally high at 1.76%, and remained at 1.74% in the following

five quarters (until 4Q17) (Figure 10). These low values are consistent with our argument that the overall systemic risk at commercial banks has stayed at a low level. It also corresponds to the fact that the authorities have implemented rigorous regulations to rectify the disorder in the banking sector, which brought the NPL growth rates under control.

Figure 10 NPL Ratios for Commercial Banks



Source: Tsinghua University NIFR

Third, the debt-at-risk measure, proposed by the International Monetary Fund (IMF), has not been updated in the latest Global Financial Stability Report (Oct 2017). However, referring to the data in the last report (April 2017), this indicator has decreased significantly from 16.4% in 2015 to 12.8% in 2016, approaching its 10-year average.

Overall, the systemic risk in Chinese financial market has dropped markedly, corroborated by declines of these alternative indicators in recent two years. However, the absolute values for some indicators are still above the thresholds or higher than in other emerging markets. We believe that there is no material difference between the result from analyzing the trends of these alternative indicators and that from our preferred measures.

However, we have argued that these alternative indicators may lack some nice qualities, such as forward-looking, relevance, objectivity, timeliness and data quality.

VI. Conclusion

This report assesses how the systemic risk of China's financial systems reacts to the new rigorous regulatory regime, and evaluates the systemic risk contributions for all types of financial institutions. First, since 1Q17, the overall systemic risk has been stabilized at a safe range that is far below the alert threshold. However, the CATFIN soared when the 'regulatory storm' started to blow. This indicates that the regulators should effectively communicate with market participants to avoid high turbulence induced by the unexpected policy change, while maintaining a strong and rigorous regulatory regime. Second, the banking sector, which has the largest size in the financial industry, has the highest contribution to the systemic risk. State-owned commercial banks have diminishing marginal contribution, while joint-stock commercial banks have limited capacity to cover the expected loss from systemic risk shocks and should be monitored closely. Lastly, at the institutional level, the authorities should pay special attention to Pudong Development Bank (SPDB), Bank of Beijing (BOB), Pingan Insurance (PINGAN), Pingan Bank (PAB), China Merchants Bank (CMB) and Industrial Bank (CIB).

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 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.

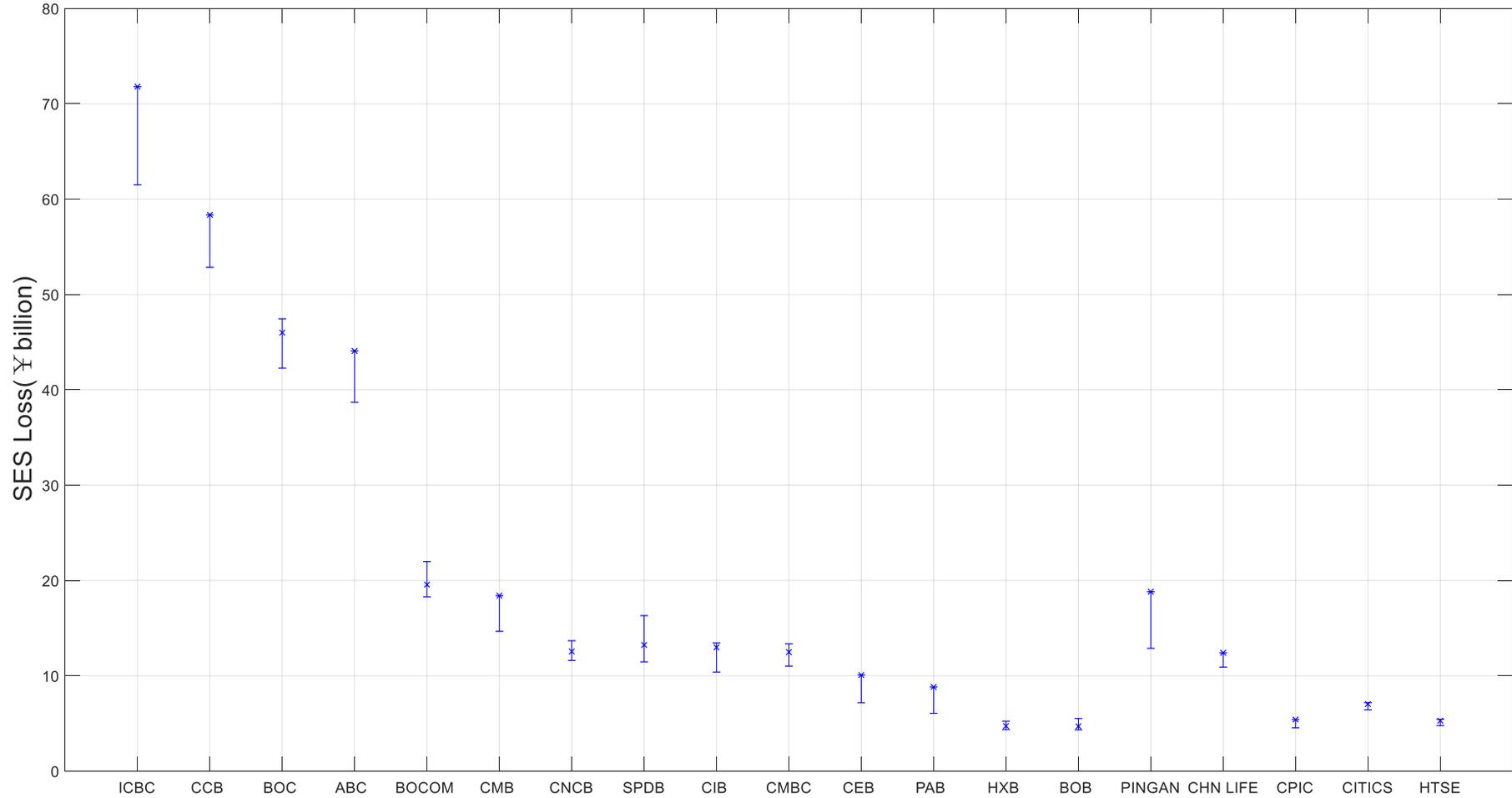
SRISK is proposed by Brownlees and Engle (2016), with similar ideas as SES. Both SRISK and SES measure expected shortfalls for individual financial institutions under a systemic distress. For SRISK, the systemic distress is defined as the scenario that stock market will fall 40% in six months.

References

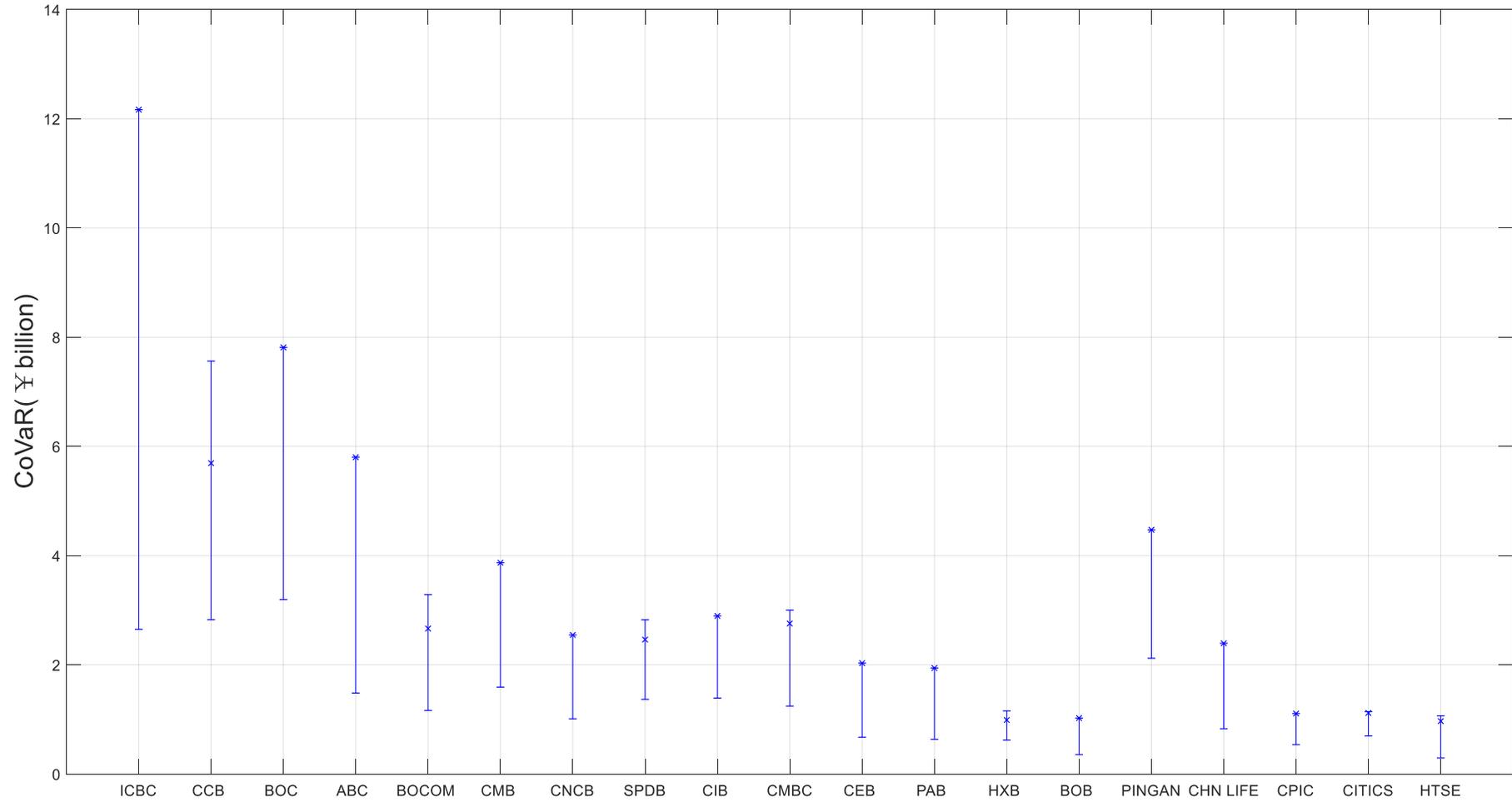
- [1] Acharya, V. V., Pedersen, L. H., Philippon, T., et al. (2017). Measuring systemic risk. *The Review of Financial Studies*, 30(1), 2-47.
- [2] Adrian, T., & Brunnermeier, M. K. (2016). CoVaR. *American Economic Review*, 106(7), 1705-1741.
- [3] Allen, L., Bali, T. G., & Tang, Y. (2012). Does systemic risk in the financial sector predict future economic downturns? *Review of Financial Studies*, 25(10), 3000-3036.
- [4] Brownlees, C., & Engle, R. F. (2016). SRISK: A conditional capital shortfall measure of systemic risk. *The Review of Financial Studies*, 30(1), 48-79.
- [5] Chen, X., Zhou, H., & Zhu, H. (2017). Systemic risk of China's financial system 1Q17. Working Paper, Tsinghua University National Institute of Financial Research.

Appendix II: Systemic Risk Measures of Financial Institutions

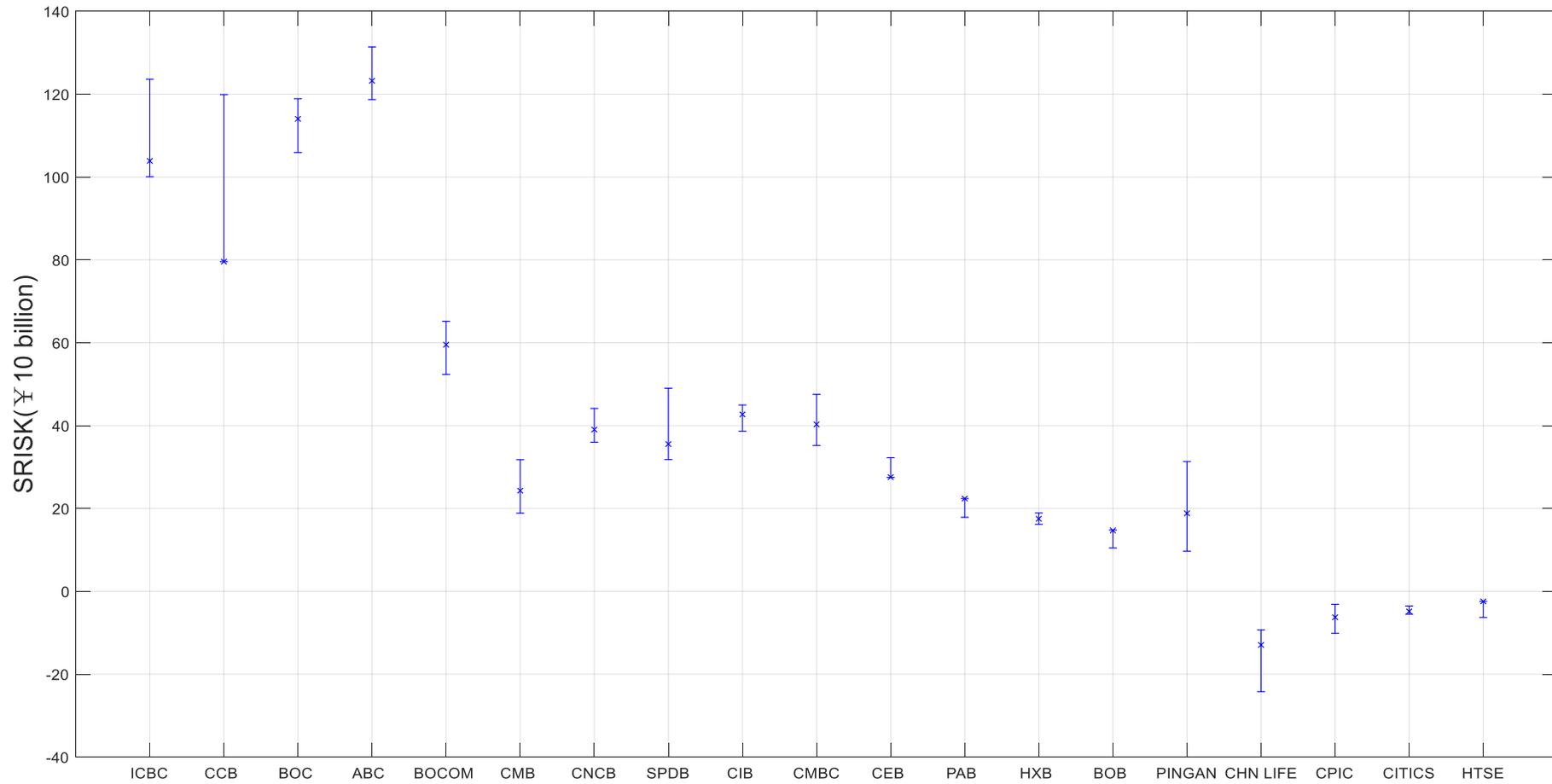
SES



CoVaR



SRISK

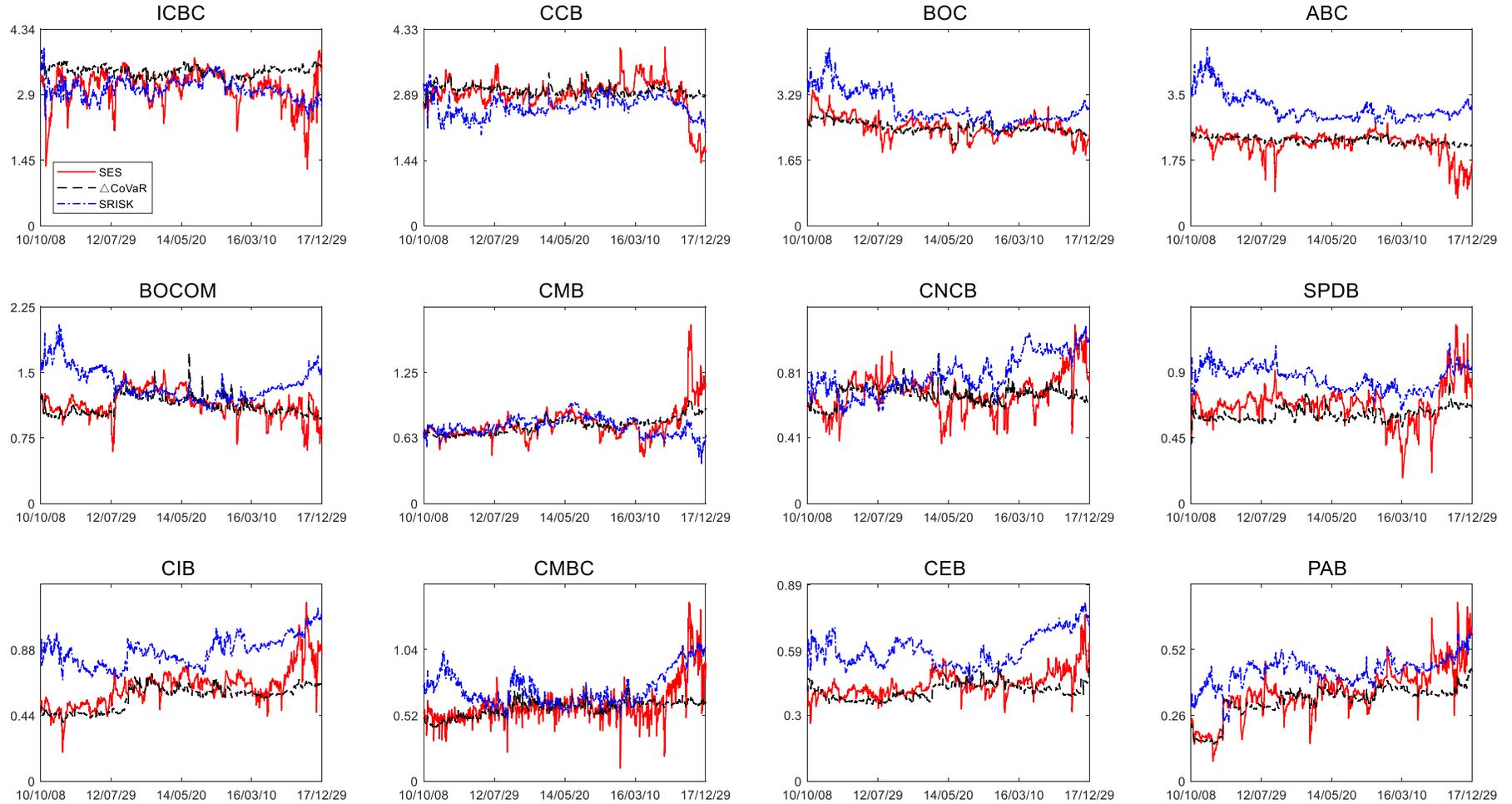


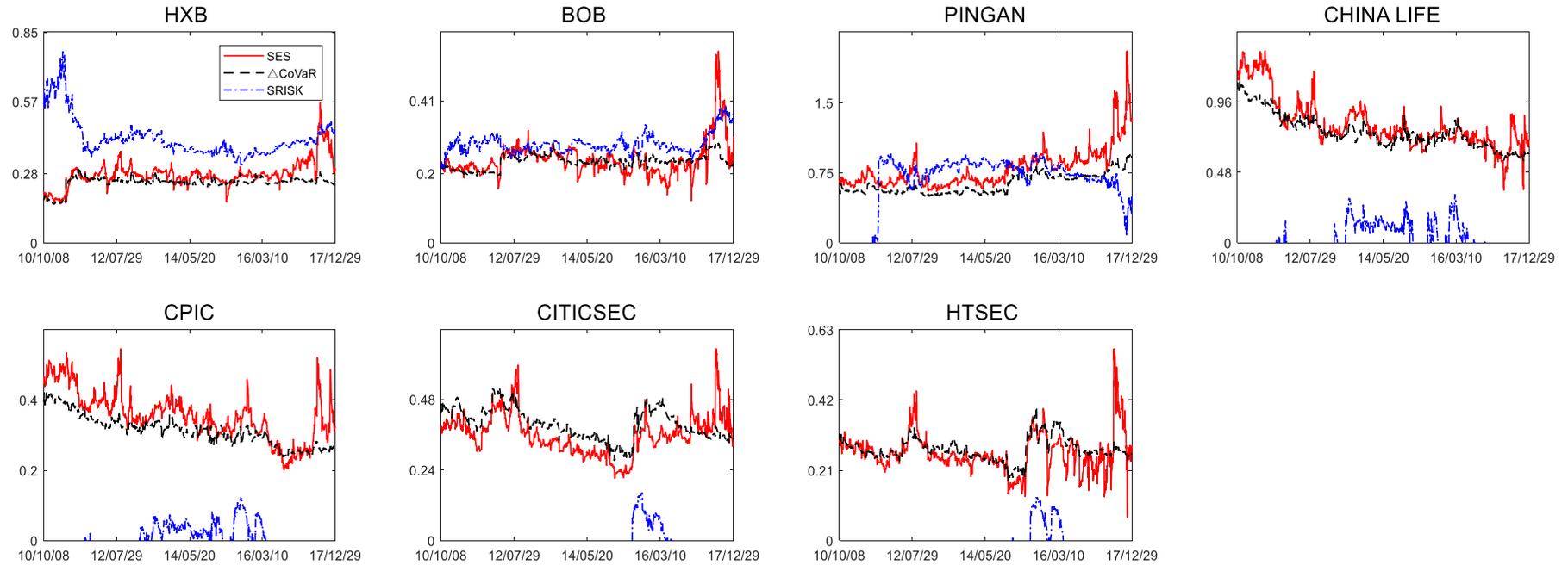
Source: Tsinghua University NIFR

The current value of the indicated risk measure, plotted with the maximum and minimum month-end values over the past 12 months (Jan.2017 – Dec.2017).



Relative Systemic Risk Measures Over Time: SES, CoVaR, SRISK





Source: Tsinghua University NIFR

The relative SES (CoVaR/SRISK) measure is calculated by dividing an institution's SES value at each point in time by the average SES value for all financial institutions over the past seven years.

Systemic Risk Measures of Financial Institutions

SES										
Institutions	ICBC	CCB	BOC	ABC	BOCOM	CMB	CNCB	SPDB	CIB	CMBC
CurrentValue(0.1bil)	717.96	583.48	459.95	440.79	195.63	184.10	125.53	132.36	129.82	124.83
Monthly Change (%)	0.64	2.41	1.11	3.69	0.39	6.25	-4.00	-1.22	0.55	1.58
Yearly Change (%)	15.21	5.34	4.57	9.57	2.05	27.33	-2.28	18.49	22.18	8.84
Value Oct.2010(0.1bil)	302.02	215.10	220.61	210.73	90.93	53.43	48.01	53.07	37.38	38.12
Institutions	CEB	PAB	HXB	BOB	PINGAN	CHINALIFE	CPIC	CITICSEC	HTSEC	AVERAGE
CurrentValue(0.1bil)	100.85	88.32	47.37	47.01	188.16	124.15	54.13	70.38	52.89	203.56
Monthly Change (%)	11.95	2.87	-1.38	5.84	3.18	3.87	4.37	-0.54	4.48	2.01
Yearly Change (%)	32.45	38.95	1.90	8.73	42.36	3.57	18.60	4.51	9.87	11.81
Value Oct.2010(0.1bil)	37.72	14.63	15.28	17.99	52.68	92.67	33.35	38.15	25.92	84.09
ΔCoVaR										
Institutions	ICBC	CCB	BOC	ABC	BOCOM	CMB	CNCB	SPDB	CIB	CMBC
CurrentValue(0.1bil)	121.67	56.93	78.13	58.01	26.65	38.70	25.47	24.62	28.95	27.57
Monthly Change (%)	28.05	42.62	58.50	105.55	30.93	45.05	4.14	20.31	34.27	80.06
Yearly Change (%)	50.15	-42.06	9.90	-15.52	-6.66	72.53	14.46	67.79	58.91	29.40
Value Oct.2010(0.1bil)	101.20	80.86	82.82	71.89	34.85	20.10	17.95	21.30	14.55	15.40
Institutions	CEB	PAB	HXB	BOB	PINGAN	CHINALIFE	CPIC	CITICSEC	HTSEC	AVERAGE
CurrentValue(0.1bil)	20.31	19.41	9.89	10.25	44.73	23.94	11.08	11.19	9.69	34.06
Monthly Change (%)	42.86	27.87	9.97	90.51	7.90	37.76	23.62	11.72	47.29	37.87
Yearly Change (%)	38.70	21.33	11.17	84.71	54.50	15.01	58.64	-12.68	27.47	13.79
Value Oct.2010(0.1bil)	10.94	5.83	5.97	6.48	21.36	36.47	13.56	11.57	8.69	30.62

SRISK										
Institutions	ICBC	CCB	BOC	ABC	BOCOM	CMB	CNCB	SPDB	CIB	CMBC
Current Value(10bil)	103.89	79.58	114.04	123.24	59.52	24.29	39.05	35.55	42.71	40.31
Monthly Change (%)	-6.35	-7.75	0.44	2.36	1.67	28.72	-2.05	0.82	2.98	5.67
Yearly Change (%)	-16.16	-34.75	0.76	-1.97	7.65	-12.54	-2.79	8.29	7.23	7.61
Value Oct.2010(10bil)	54.34	42.53	51.43	55.50	22.27	9.29	10.01	11.10	11.87	10.44
Institutions	CEB	PAB	HXB	BOB	PINGAN	CHINALIFE	CPIC	CITICSEC	HTSEC	AVERAGE
Current Value(10bil)	27.55	22.39	17.50	14.70	18.83	-12.94	-6.26	-4.85	-2.42	38.77
Monthly Change (%)	-4.00	3.53	0.79	10.72	27.71	-26.95	-24.15	-11.64	-48.08	1.91
Yearly Change (%)	-4.77	17.07	3.35	37.54	-35.65	213.50	30.33	18.37	-55.86	-8.43
Value Oct.2010(10bil)	8.47	4.39	8.34	3.29	-3.03	-14.42	-3.43	-2.43	-2.36	14.61

Source: Tsinghua University NIFR

- (1) The benchmark is the value of Oct.2010.
- (2) Current time is the end of Dec.2017.
- (3) The time series of 'AVERAGE' is calculated as the average value of 19 financial institutions' systemic risk measures over time.