



SECURITIES AND FUTURES COMMISSION
證券及期貨事務監察委員會

Report on Review of Securities Margin Financing Activities

August 2018



Executive Summary	1
Summary of findings	2
I. Macro analysis of securities margin financing business	2
a. Trends in total margin loans	2
b. Key observations	3
i. Deterioration in margin loan quality	3
ii. Increase in concentration risk to single securities collateral, particularly heavily pledged stocks	4
iii. Steady margin client concentration risk	6
iv. Increased reliance on bank borrowings	6
II. In-depth study	8
a. Profile of the 20 selected SMF brokers	8
b. Key findings	9
i. Granting of margin facilities and credit limits	9
ii. Concentration of securities collateral	10
iii. Concentration of margin clients	14
iv. Margin ratios for securities collateral	15
v. Margin calls and forced liquidation	16
vi. Stress testing	19
Conclusion	19



Executive Summary

1. The Securities and Futures Commission (SFC) noted considerable growth in securities margin financing (SMF) activities conducted by licensed corporations during the period from 31 December 2006 to 31 December 2017 (review period). Total margin loans increased ninefold over the period, reaching \$206 billion on 31 December 2017. In comparison, the total market capitalisation of the Hong Kong stock market only increased 1.5 times over the same period.
2. Since the 2008 global financial crisis, the Hong Kong stock market gradually recovered. Growth was particularly strong in 2017, when the Hang Seng Index (HSI) surged 35%. However, the risk of market correction should not be underestimated in view of global economic and political uncertainties such as interest rate hikes, geopolitical tensions and the threat of a trade war. As an open economy, the Hong Kong stock market is susceptible to volatility in the Mainland stock markets as well as in major overseas stock markets. For example, the HSI shed more than 1,600 points in one day in February 2018 following a plunge in the US stock market, demonstrating that market conditions can quickly change. In addition, a number of Hong Kong stocks have exhibited severe price volatility in recent years, with prices plunging more than 80% intraday, and some have been suspended from trading for prolonged periods.
3. In the course of our broker supervision, we noted that some SMF brokers did not manage their SMF business prudently. In recent instances, the SFC found that some brokers' liquid capital positions deteriorated significantly when their concentrated securities collateral experienced an acute price drop or a trade suspension.
4. Against this backdrop, the SFC conducted a macro analysis of SMF activities to understand overall trends in the industry along with an in-depth study of selected SMF brokers' risk profiles and margin lending practices (collectively, SMF review). The macro analysis was based on data reported in the monthly financial returns submitted by SMF brokers in accordance with the Securities and Futures (Financial Resources) Rules (FRR). The in-depth study covered the 20 largest SMF brokers in terms of margin loans and focused on the following risk control areas:
 - i. Granting of margin facilities and credit limits
 - ii. Concentration of securities collateral
 - iii. Concentration of margin clients
 - iv. Margin ratios for securities collateral
 - v. Margin calls and forced liquidation
 - vi. Stress testing
5. The results of the SMF review validated our concerns about the risk management of SMF brokers. The macro analysis revealed worrying trends, such as a significant increase in brokers' FRR margin shortfalls¹ compared to their shareholders' funds, an increase in the weighting of heavily pledged stocks² (HPS) in margin clients' securities collateral, an

¹ The amount of a margin loan which cannot be counted as liquid capital under the FRR. A margin shortfall would arise if the market value of the securities collateral securing the margin loan after deducting the applicable FRR haircut amount is less than the outstanding margin loan.

² A stock which was reported by an SMF broker in its monthly financial return as among the top three collateral for any of the top 20 margin loans, where the aggregate market value of the stock held by all SMF brokers was equal to or higher than 10% of the market capitalisation of the stock.



increase in margin loans secured by single securities collateral and a decline in collateral coverage³.

6. These trends can be attributed to some imprudent margin lending practices of SMF brokers. Among the brokers reviewed in the in-depth study, we noted that these practices were quite common. They included, among others, slack controls over total margin loan exposure, concentration risks to securities collateral and margin clients, lenient haircut percentages for securities collateral and failure to promptly collect margins.

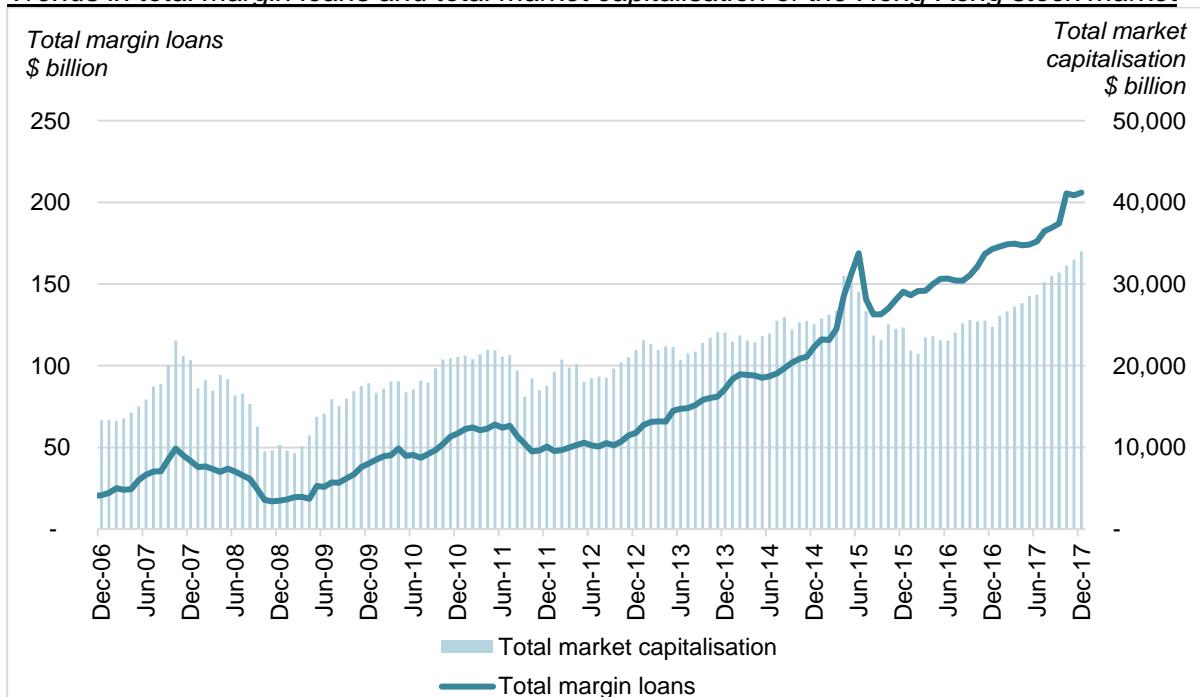
Summary of findings

I. Macro analysis of securities margin financing business

a. Trends in total margin loans

7. Total margin loans of all SMF brokers generally trended upward over the review period except around the time of the 2008 global financial crisis and the A-share market turbulence in 2015. The total increased ninefold over the review period, which was much higher than the increase of 1.5 times in the total market capitalisation of the Hong Kong stock market.

Trends in total margin loans and total market capitalisation of the Hong Kong stock market



	As at 31/12/2017 \$ billion	As at 31/12/2006 \$ billion	Change
Total margin loans	206	21	881%
Total market capitalisation of the Hong Kong stock market	33,999	13,338	155%

³ The ratio of total market value of securities collateral deposited by margin clients with SMF brokers to total margin loans.



8. The ninefold increase in total margin loans also outpaced increases in the numbers of SMF brokers and active margin clients, which grew 41% and 320% respectively over the review period. We also noted that margin loans were concentrated in the major players. The aggregate margin loans of the top 25 SMF brokers accounted for 80% of total margin loans as at 31 December 2017.

Number of SMF brokers and active margin clients

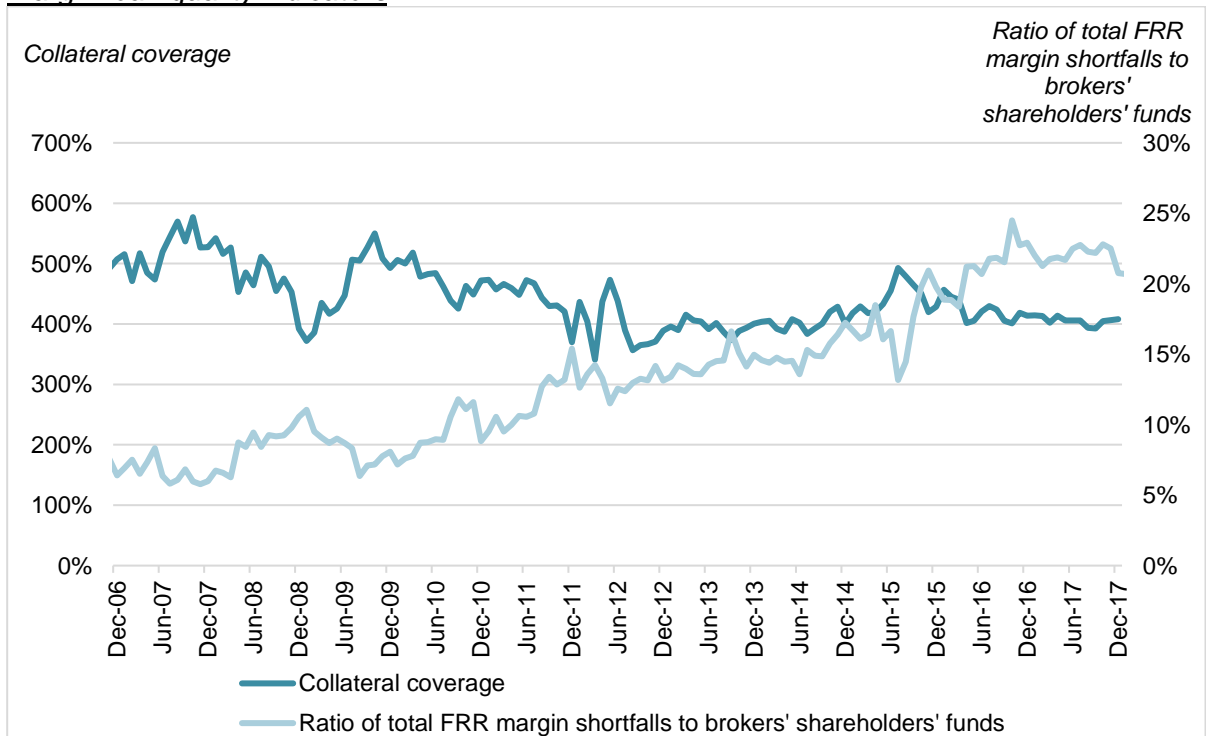
	As at 31/12/2017	As at 31/12/2006	Change
Number of SMF brokers	315	224	41%
Number of active margin clients	337,608	80,348	320%

b. Key observations

i. Deterioration in margin loan quality

9. The ratio of total FRR margin shortfalls to brokers' shareholders' funds was rising while the collateral coverage was declining (see the chart and table below). These trends were quite common among SMF brokers. For instance, 90 SMF brokers had higher ratios of FRR margin shortfalls to shareholders' funds and over 80 SMF brokers had lower collateral coverage compared to 2006. Moreover, the ratio of total FRR margin shortfalls to brokers' total margin loans also increased from 11% to 16% during the review period. The aforesaid trends indicated that the quality of margin loans had deteriorated and an increasing proportion of the brokers' shareholders' funds were at risk.

Margin loan quality indicators



	As at 31/12/2017	As at 31/12/2006	Change
Collateral coverage	412%	517%	-105%
Ratio of total FRR margin shortfalls to brokers' shareholders' funds	19%	7%	12%



ii. Increase in concentration risk to single securities collateral, particularly heavily pledged stocks

10. For the top 20 margin loans⁴ (major margin loans) of each SMF broker, about 30% of the aggregate loan value was secured by single securities collateral as at 31 December 2017, nearly triple the level in 2006. In addition, nearly 80% of the SMF brokers had major margin loans secured by single securities collateral as at 31 December 2017. On the other hand, HPS were held as single securities collateral by 75% of these SMF brokers and 22% of the major margin loans of the SMF brokers were solely secured by HPS as at 31 December 2017, an increase of nearly six times compared to 2006.
11. The weighting of HPS in securities collateral had increased. Among the top three collateral of the major margin loans of SMF brokers (major securities collateral) as at 31 December 2017, HPS accounted for 50% in terms of market value, an increase from 23% as at 31 December 2006.
12. The number of illiquid collateral⁵ stocks among the major securities collateral had also increased. As at 31 December 2017, around 600 stocks were reported as illiquid collateral, nearly twice the level as at 31 December 2006. At the end of 2017, one-third of brokers held at least three stocks which were illiquid collateral.
13. Accepting illiquid collateral stocks and HPS as collateral can give rise to liquidity concerns as the brokers' aggregate holdings as collateral usually far exceed the stock's turnover. When there is a sudden drop in the share price of one of these stocks, brokers holding a large number of shares as collateral for large amounts of margin loans may find it difficult to sell them in the market due to thin liquidity. The brokers may not be able to generate sufficient sales proceeds to recover their margin loans in a timely manner due to insufficient liquidity or deep discounts to the trading price of the securities collateral. This would in turn affect the financial position of the brokers.
14. 67 SMF brokers each held at least one securities collateral, which shareholding accounted for 10% or more of the total issued shares of that securities (individual broker-level HPS) and the largest shareholding was over 70%. The aggregate market value of individual broker-level HPS accounted for 34% of the major securities collateral held by all SMF brokers.
15. As at 31 December 2017, the individual broker-level HPS mainly comprised stocks that were non-Hang Seng Composite Index (non-HSCI) constituent stocks which on average had a market capitalisation of \$5.9 billion and an average daily turnover⁶ of \$10.9 million. Almost half of the individual broker-level HPS had an average daily turnover of less than \$5 million. Please refer to the charts below for details.

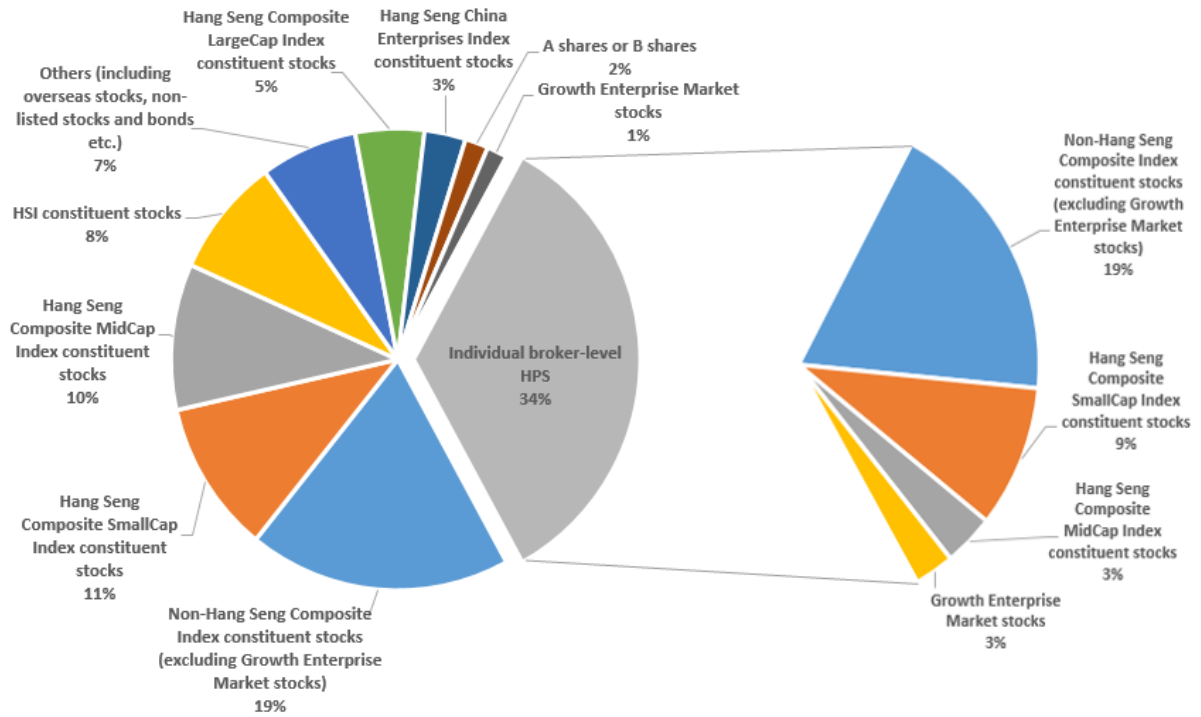
⁴ The top 20 margin loans represented 61% of the total margin loans of all SMF brokers as at 31 December 2017.

⁵ A stock will be treated as illiquid collateral in liquid capital calculations if the broker's aggregate holdings of the stock as margin loan collateral exceeds either (i) 5% of total issued shares of the listed company concerned or (ii) the average monthly turnover of the stock.

⁶ On the basis of 20 trading days a month.

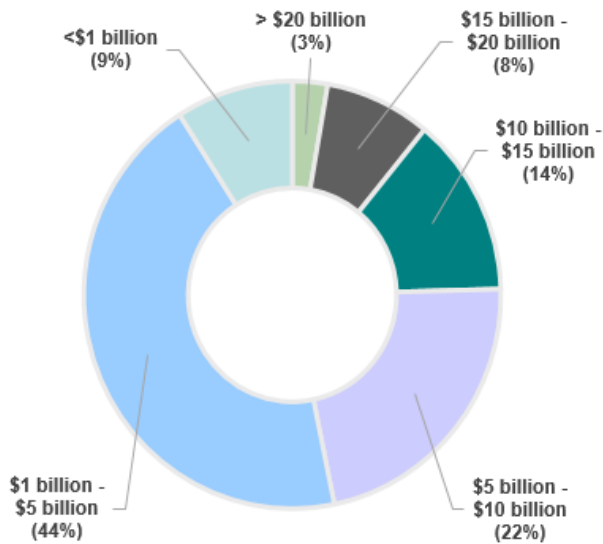


Breakdown of major securities collateral (in terms of market value)

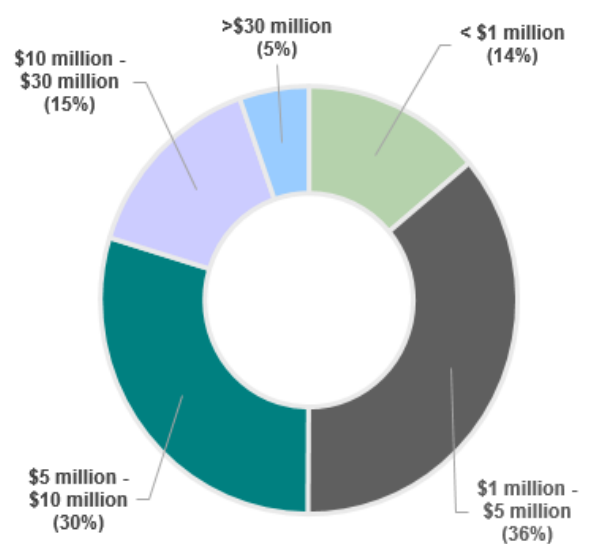


Breakdown of the individual broker-level HPS

Breakdown by market capitalisation



Breakdown by average daily turnover

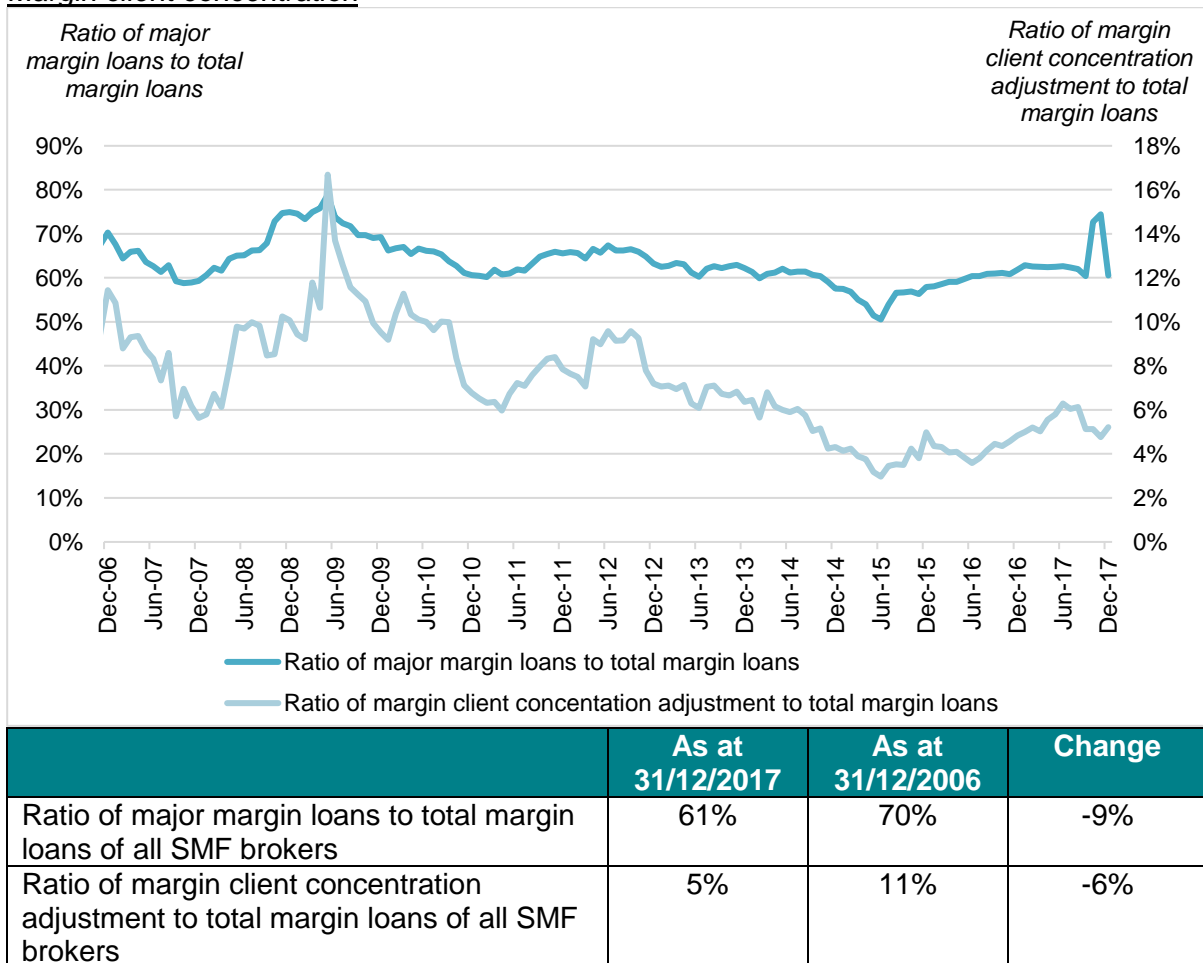




iii. Steady margin client concentration risk

16. The following graph and table show the respective trends during the review period in (i) the aggregate major margin loans as a percentage of total margin loans of all SMF brokers and (ii) the aggregate margin client concentration adjustment⁷ as a percentage of total margin loans of all SMF brokers. In general, there was no conspicuous rise in these ratios, indicating that there was no significant deterioration in client concentration. However, it is noteworthy that the total amount of the major margin loans remained above 60% of the brokers' total margin loans.

Margin client concentration



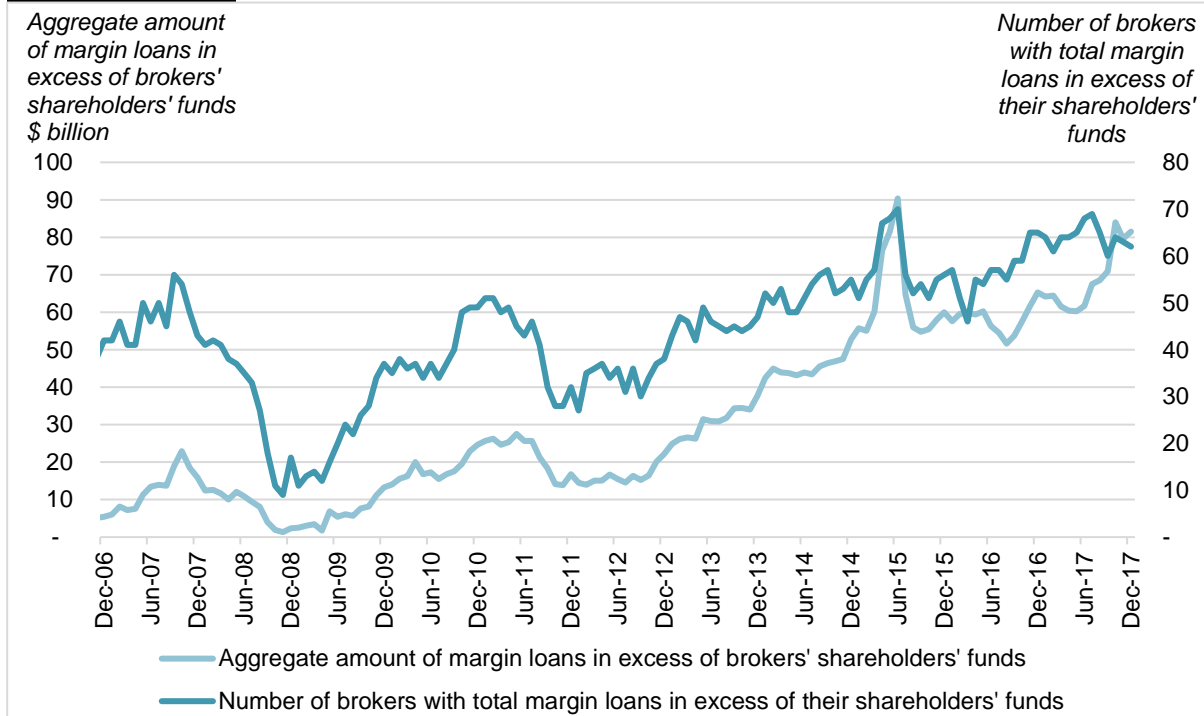
iv. Increased reliance on bank borrowings

17. While the total margin loans increased ninefold over the review period, the aggregate shareholders' funds of all SMF brokers only increased fourfold. The graph and table below depict a rising trend in the number of brokers with total margin loans exceeding their shareholders' funds and the aggregate amount in excess.

⁷ The capital charge imposed on a significant margin loan for liquid capital computation purposes if the adjusted loan amount exceeds 10% of an SMF broker's aggregate adjusted margin loans.



Funding structure



	As at 31/12/2017	As at 31/12/2006	Change
Aggregate amount of margin loans in excess of brokers' shareholders' funds	\$82 billion	\$5 billion	+ 15 times
Number of brokers with total margin loans in excess of their shareholders' funds	62	42	48%

18. As at 31 December 2017, there were 62 brokers with total margin loans greater than their shareholders' funds and the aggregate excess amount was \$82 billion, compared to 42 brokers and \$5 billion as at 31 December 2006. These trends indicated that more brokers relied on other sources of funding, such as bank loans, to finance their margin loan business.
19. A review of the funding sources of SMF brokers revealed that the number of brokers re-pledging margin client securities collateral to banks to obtain financial accommodation (re-pledging brokers) was 58, both as at 31 December 2006 and 31 December 2017 (see the table below). Nonetheless, the total bank loans secured by margin client securities collateral and the market value of margin client securities collateral re-pledged rose substantially by 18 times and 6 times respectively over the review period. Increased re-pledging by brokers puts the interests of more clients at risk. If a re-pledging broker encounters a liquidity crush, it may not be able to redeem the re-pledged margin client securities collateral and this may cause financial losses to clients.

Brokers' re-pledging status

	As at 31/12/2017	As at 31/12/2006	Change
Number of re-pledging brokers	58	58	0
Bank loans secured by margin client securities collateral	\$26.9 billion	\$1.4 billion	+ 18 times
Market value of margin client securities collateral re-pledged	\$85.6 billion	\$11.7 billion	+ 6 times



20. An analysis of the re-pledging practices of the brokers as at 31 December 2016⁸ revealed that 47 brokers re-pledged securities collateral belonging to non-borrowing margin clients (ie, those margin clients who had no outstanding loan balances in their margin accounts). For around one quarter of the re-pledging brokers, more than half of the re-pledged securities collateral belonged to non-borrowing margin clients. Such practices resulted in the securities collateral of the non-borrowing margin clients being used to finance the margin loans of the borrowing margin clients.
21. An analysis of the composition of the re-pledged margin client securities collateral as at 31 December 2016 (see the table below) revealed that in terms of market value over 60% were HSCI constituent stocks and 24% were HSI constituent stocks. The heavy weighting of index constituents among the re-pledged securities collateral may be due to the preference of banks for more liquid and higher-quality collateral in order to protect their interests.

Breakdown of margin client securities collateral re-pledged

	Market value \$ million	Acceptable discounted value \$ million	Weighting in total re-pledged securities collateral in market value
HSCI constituent stocks	37,073	17,909	61%
HSI constituent stocks	14,387	9,807	24%
Non-HSCI constituent stocks (excluding Growth Enterprise Market stock)	8,368	2,890	14%
Exchange traded Funds	448	256	1%
Growth Enterprise Market stocks	0.3	-	0.0005%
Others	6	6	0.01%
Total	60,282	30,868	100%

22. We also reviewed the liquidity positions of the re-pledging brokers as at 31 December 2016 and noted that three brokers may not have had sufficient liquidity to redeem all the re-pledged securities which belonged to non-borrowing margin clients. The liquidity shortfalls ranged from \$17 million to \$118 million. Subsequently, the brokers concerned took action to improve their liquidity positions, including reducing bank loans secured by non-borrowing margin clients' securities collateral or injecting additional capital.

II. In-depth study

a. Profile of the 20 selected SMF brokers

23. The in-depth study covered 20 SMF brokers with the largest amounts of outstanding margin loans as at 31 December 2016 (selected brokers). Their aggregate margin loans accounted for 73% of the total margin loans of all SMF brokers. The top three selected brokers accounted for almost one-third of the industry's total margin loans.

⁸ A detailed review of the re-pledging practices of the brokers based on the positions on 31 December 2016 was performed to assess the risks associated with the re-pledging of client securities collateral.



Margin loan size	Number of brokers
Over \$20 billion	1
Between \$16 billion and \$20 billion	1
Between \$11 billion and \$15 billion	1
Between \$5 billion and \$10 billion	5
Below \$5 billion	12
Total	20

24. Whilst the selected brokers accounted for a large share (73%) of SMF business, their aggregate shareholders' funds and aggregate number of active margin clients only accounted for 47% and 58% of the industry total respectively as at 31 December 2016.

b. Key findings

i. Granting of margin facilities and credit limits

Total margin loans limits not established or excessive

25. Eight selected brokers did not establish a total margin loans limit, which is the maximum amount of margin loans that an SMF broker is prepared to provide to its clients. Of the remaining 12 selected brokers, three had set a total margin loans limit at over five times of their shareholders' funds and in the most extreme case, the limit was over nine times. A lack of a total margin loans limit or setting the limit at a level far exceeding the broker's capital means that the broker may be highly leveraged, exposing it to high financial risk and making it financially vulnerable in stress situations.

Ratio of total margin loans limit to shareholders' funds	Number of brokers
Over 500%	3
Between 301% and 500%	4
Between 100% and 300%	5
Not applicable (no total margin loans limit)	8
Total	20

Aggressive client credit limits

26. About half of the selected brokers granted credit limits to their margin clients which in aggregate exceeded five times their shareholders' funds, of which three granted credit limits which in aggregate exceeded 10 times their shareholders' funds. The aggregate credit limits granted by five of these brokers exceeded their total margin loans limit. It is questionable whether the brokers are committed to comply with their self-imposed total margin loans limit. Moreover, a broker did not set credit limits for its margin clients and granted margin loans solely based on the value of collateral provided by its margin clients with no regard to the clients' financial capability.



Ratio of aggregate client credit limits to shareholders' funds	Number of brokers
Over 1,500% (Note)	1
Between 1,001% and 1,500%	2
Between 501% and 1,000%	6
Between 300% and 500%	4
Below 300%	6
Not applicable (credit limit not set for margin clients)	1
Total	20

Note: The aggregate client credit limits granted by this broker represented about 25 times its shareholders' funds.

Loose enforcement of credit limits

27. 15 selected brokers failed to strictly enforce credit limits granted to margin clients. In the most extreme case, the outstanding margin loans exceeded the credit limits by an aggregate amount equivalent to about one-third of a broker's shareholders' funds. Loose enforcement of margin client credit limits may undermine their effectiveness.

Ratio of aggregate of margin loans exceeding client credit limits to shareholders' funds	Number of brokers
Over 30%	1
Between 21% and 30%	-
Between 10% and 20%	3
Below 10%	11
Not applicable (no breach of the limit)	4
Not applicable (credit limit not set for margin clients)	1
Total	20

ii. Concentration of securities collateral

Absence of or insufficiently justified securities collateral concentration limits

28. Four selected brokers did not implement any securities collateral concentration limits.

29. Of the remaining 16 selected brokers, 13 did not take into account their financial capability in setting the securities collateral concentration limits. Most simply set the limit at a fixed amount or at a percentage of their total margin loans. Four only limited the total amount of a stock acceptable as collateral to a certain percentage of the stock's market capitalisation. However, no consideration was given to the total amount of margin loans that were or would be secured by the collateral stock under the limit.

Breach of securities collateral concentration limits

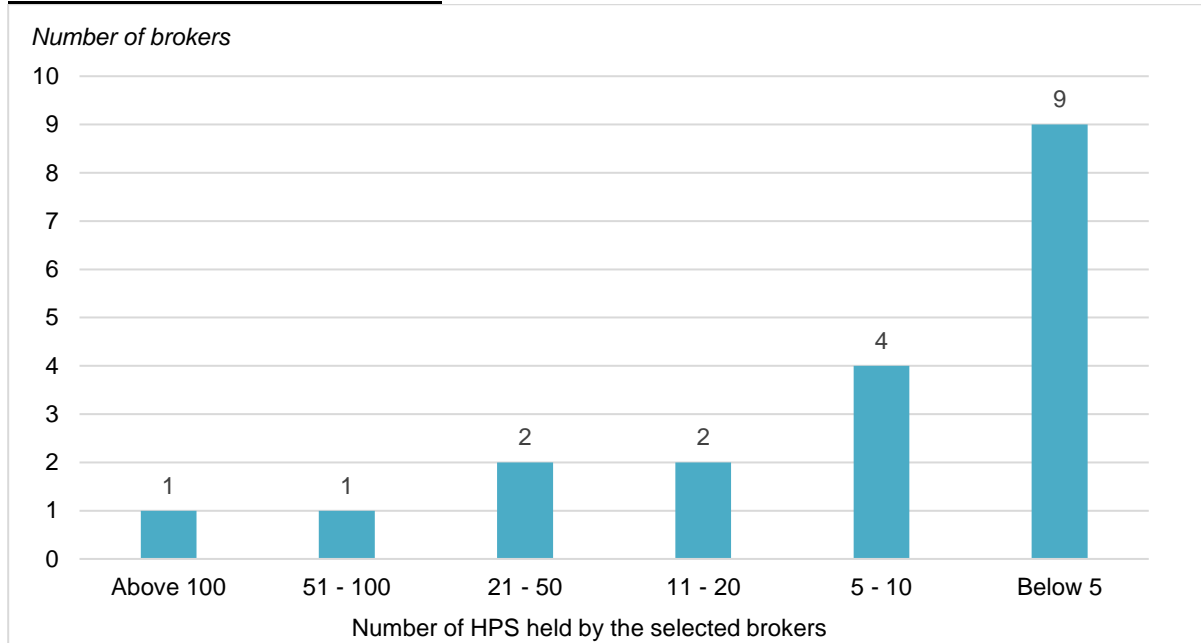
30. For the 16 selected brokers which had implemented securities collateral concentration limits, nine reported breaches of the limits and of these four had margin loans secured by concentrated stocks which exceeded 50% of their shareholders' funds. In other words, these brokers' financial stability were highly susceptible to event risk (such as a trading suspension) of the concentrated stocks.



HPS⁹ commonly accepted as collateral

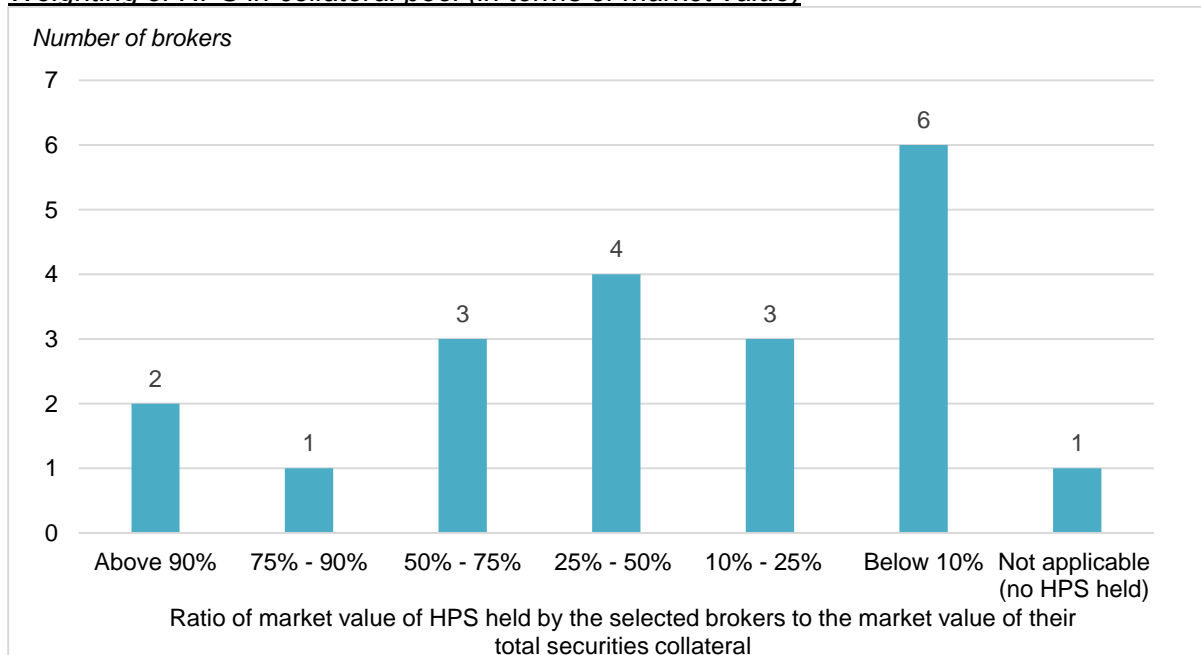
31. All but one of the 20 selected brokers held HPS as securities collateral. Six brokers held more than 10 HPS as collateral and one held 104.

Number of HPS held as collateral



32. The total market value of HPS held as collateral by six selected brokers accounted for more than 50% of their total securities collateral, with two having over 90% of their total securities collateral in HPS.

Weighting of HPS in collateral pool (in terms of market value)

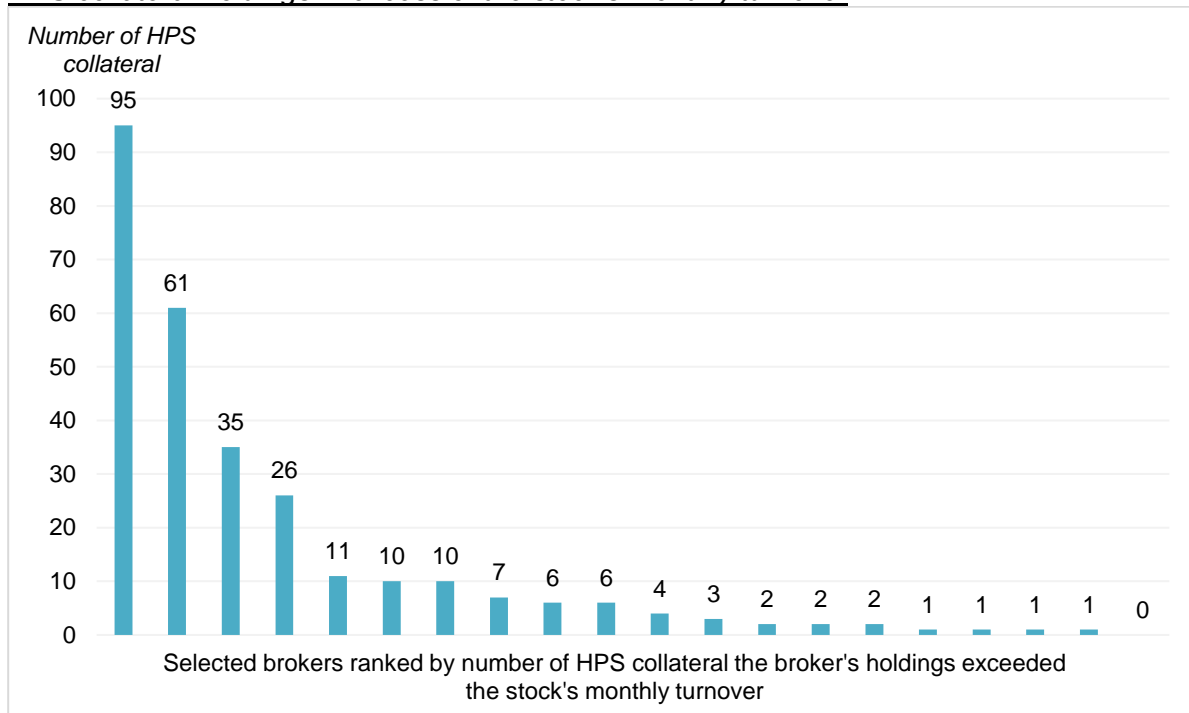


⁹ HPS mentioned in the in-depth study refers to the individual broker-level HPS.



33. Four selected brokers held over 20 HPS as collateral and their holdings exceeded the monthly turnover of the stocks. In the most extreme case, a broker held 95 HPS with holdings exceeding the stock's monthly turnover as collateral. The market value of the most illiquid collateral held by a broker equalled almost 200 times the stock's annual turnover. It is highly questionable whether the broker could liquidate the stock concerned to recover the related margin loan given the stock's extremely thin liquidity.

HPS collateral holdings in excess of the stock's monthly turnover



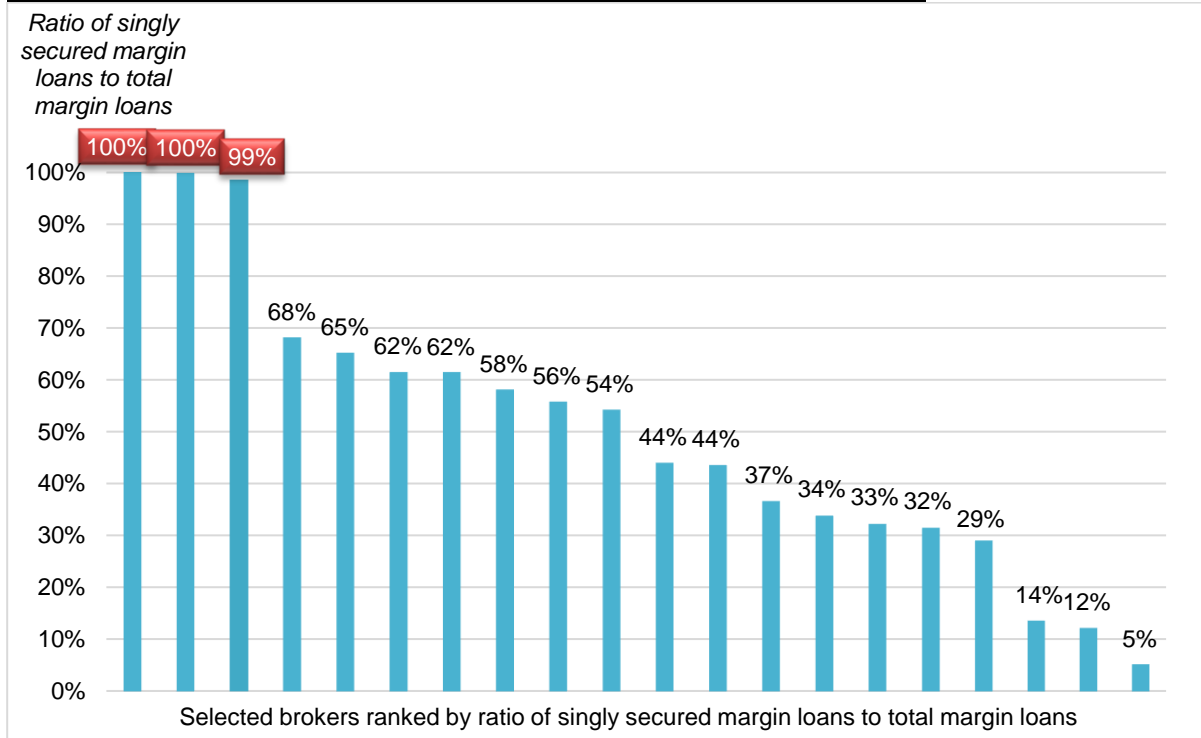
Margin loans solely or mainly¹⁰ secured by single securities collateral

34. 16 selected brokers allowed 30% or more of total margin loans to be solely or mainly secured by single securities collateral (singly secured margin loans), which may be HPS, illiquid collateral or other stocks. Three of these brokers' singly secured margin loans accounted for almost all of their margin loans (ie, over 99%) and amounted to between 86% and 179% of their shareholders' funds. Another four brokers had singly secured margin loans exceeding their shareholders' funds. Large exposures to singly secured margin loans, especially those secured by HPS and illiquid collateral, make brokers extremely susceptible to stock event risk (such as a trading suspension or price plunge) and liquidity risk.

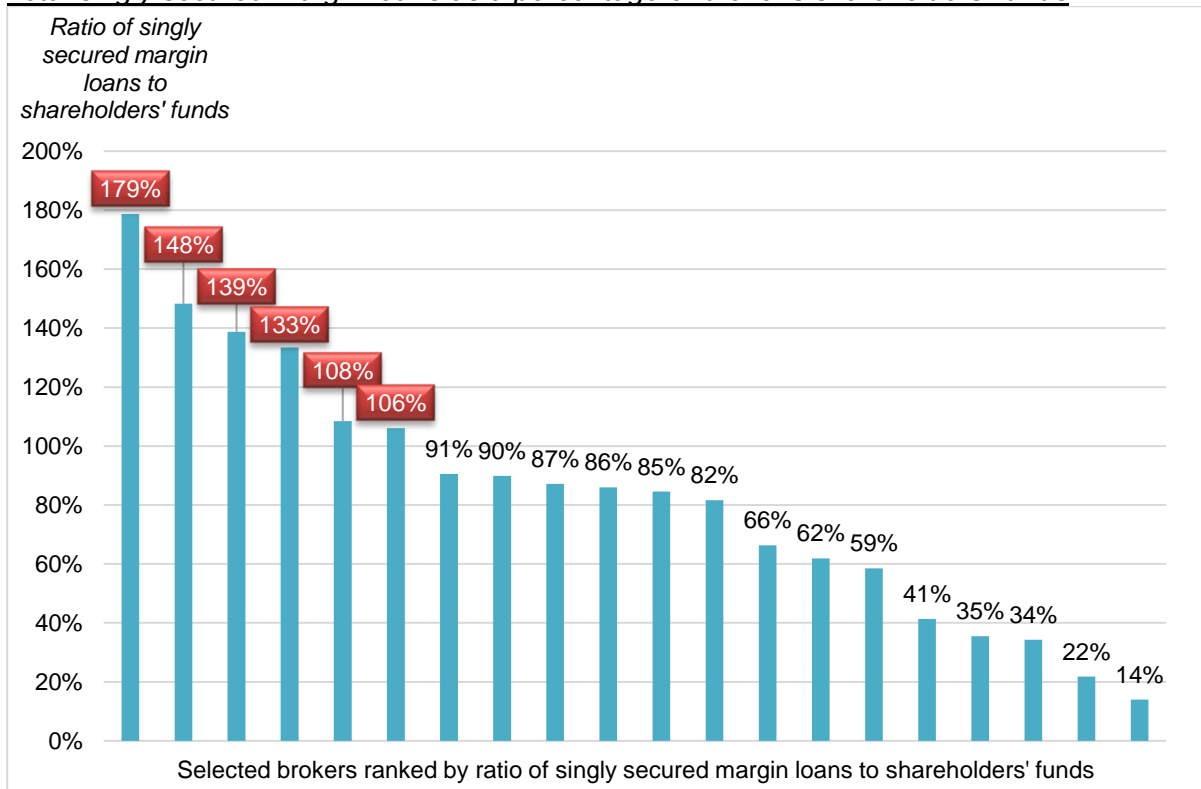
¹⁰ A margin loan where the market value of any single securities collateral accounts for 70% or more of the total market value of the underlying securities collateral.



Weighting of singly secured margin loans in broker's total margin loans



Total singly secured margin loans as a percentage of broker's shareholders' funds



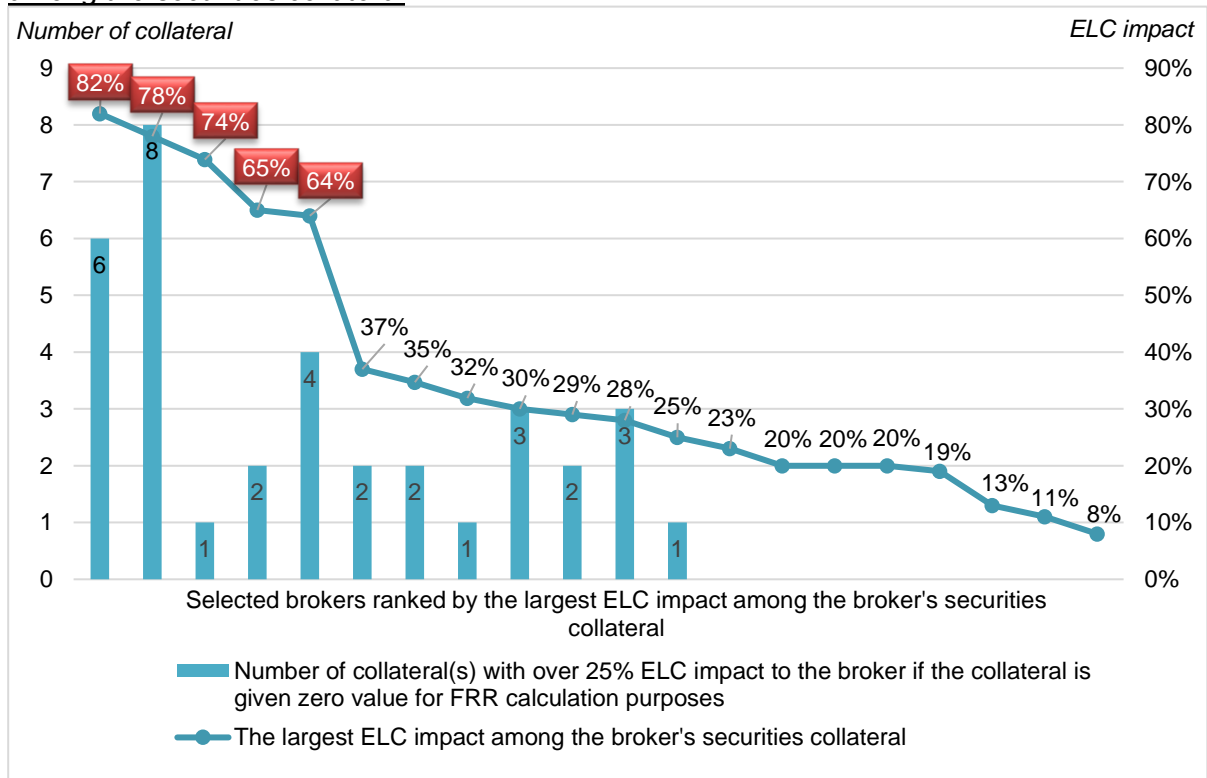


Significant financial impact when a stock was assigned zero value for FRR purposes

35. 12 selected brokers might suffer a reduction in excess liquid capital (ELC) of 25% or more if any one of their securities collateral was assigned zero value for FRR calculation purposes. For instance, this may happen if a listed stock is suspended from trading for three days or more. Among these brokers,

- Two held more than five such securities collateral; and
- Five brokers might experience an ELC reduction of over 50%, with one facing an 80% reduction, which meant the broker would be at the brink of breaching the FRR in the event the collateral stock with the largest ELC impact experienced a price plunge or was suspended.

Number of securities collateral with an ELC impact over 25% and the largest ELC impact among the securities collateral



iii. Concentration of margin clients

Absence of or insufficiently justified margin client concentration limits

36. Five selected brokers did not implement any margin client concentration limits. Among the remaining 15 brokers, only two set margin client concentration limits based on their own financial positions. Nine brokers set the limit as a percentage of their total margin loans, while two made reference to their total margin loans limit and two set the limit at a fixed amount.



Breach of margin client concentration limit

37. Four selected brokers reported breach of margin client concentration limits. One broker's aggregate limit breach amount (ie, margin loan in excess of concentration limit) represented 40% of its shareholders' funds. The findings indicated that most of the SMF brokers with margin client concentration limits in place complied with the limits.

Ratio of aggregate of margin loans exceeding margin client concentration limit to shareholders' funds	Number of brokers
40%	1
Below 5%	3
Not applicable (no breach of the limit)	11
Not applicable (no margin client concentration limit)	5
Total	20

Excessive exposure to significant margin loans

38. For four selected brokers, the aggregate amount of significant margin loans (ie, a margin loan which accounts for not less than 10% of the broker's total margin loans) represented more than half of their shareholders' funds and all but one of the significant margin loans were solely or mainly secured by single securities collateral. In the event of default of one of these significant margin loans, the broker may be forced to liquidate the underlying single collateral to mitigate the financial impact of the default. If the broker needs to sell the collateral at a large discount, it may suffer a significant financial loss.

iv. Margin ratios for securities collateral

Granting of special margin ratios

39. 13 selected brokers granted special margin ratios to the securities collateral provided by so-called "special" clients. Such ratios were often higher than the margin ratios applied to the same securities collateral provided by ordinary margin clients. In the most extreme case, the broker granted a special margin ratio which was 80 percentage points higher than its standard margin ratio. In addition, four brokers had such "special" margin loans which in aggregate exceeded 50% of their shareholders' funds.

Ratio of aggregate "special" margin loans to shareholders' funds	Number of brokers
Over 100%	1
Between 76% to 100%	2
Between 51% to 75%	1
Between 25% to 50%	3
Below 25%	6
Not applicable (no special margin ratio granted)	7
Total	20

Aggressive margin ratios for securities collateral

40. Four selected brokers granted margin ratios for over 50 securities collateral which exceeded the margin ratio offered by their major lending banks by 20 percentage points or more. Among these brokers, two had assigned such aggressive margin ratios to around 400



collateral stocks, of which one assigned margin ratios which were 40 percentage points or more than its lending banks' for 100 collateral stocks.

- 41. High margin ratios mean that the haircuts on the securities collateral applied by the broker may not provide a sufficient buffer to protect the broker's interest as the client's creditor.

v. Margin calls and forced liquidation

Imprudent triggers for margin calls and forced liquidation

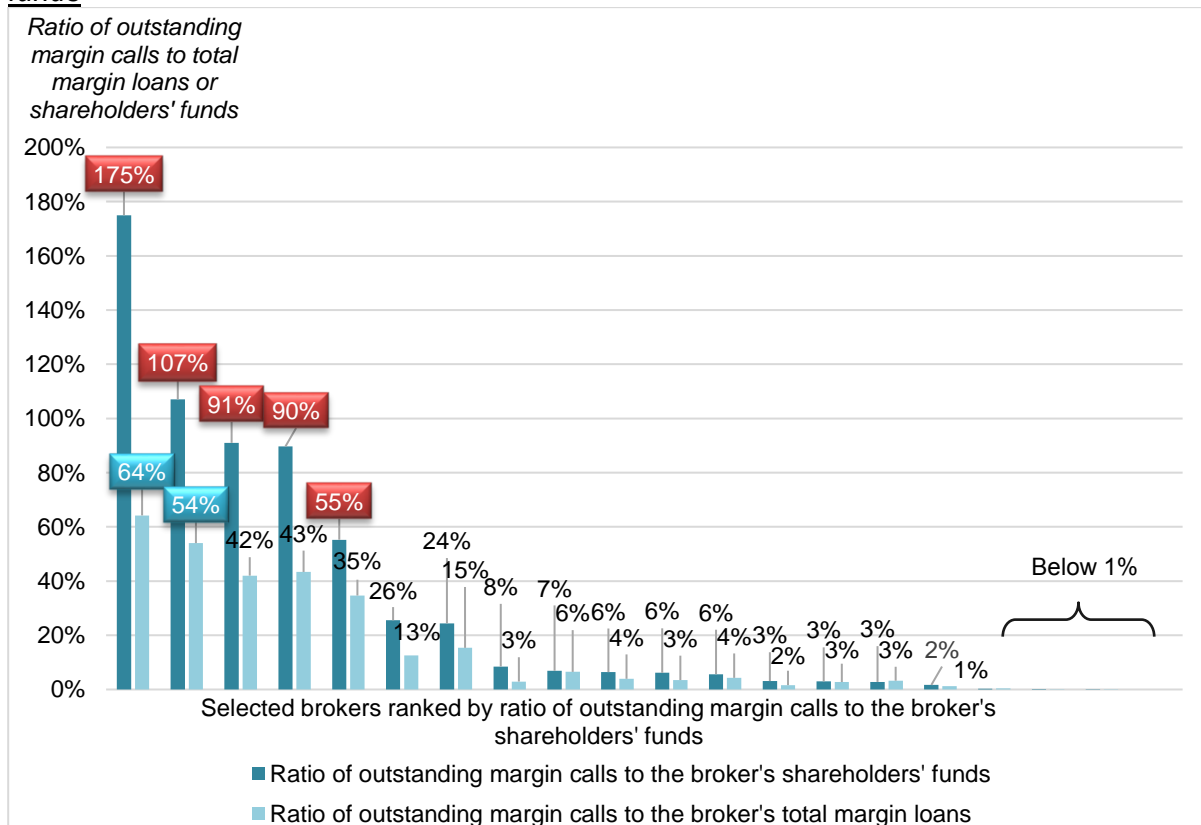
- 42. Eight selected brokers set margin call triggers without considering the margin value of the securities collateral, or set them at a level higher than a 100% loan-to-margin value ratio. In other words, a margin call would not be triggered even if the margin loan balance exceeded the total margin value of the underlying securities collateral.

- 43. A selected broker set the forced liquidation trigger higher than a 100% loan-to-market value ratio, which means forced liquidation would not be triggered even when the market value of the securities collateral fell below the margin loan balance, ie, when part of the margin loan had become unsecured.

Excessive outstanding margin calls

- 44. Five selected brokers had total outstanding margin calls exceeding half of their total margin loans or shareholders' funds. Among these brokers, the total outstanding margin calls of two brokers exceeded their shareholders' funds.

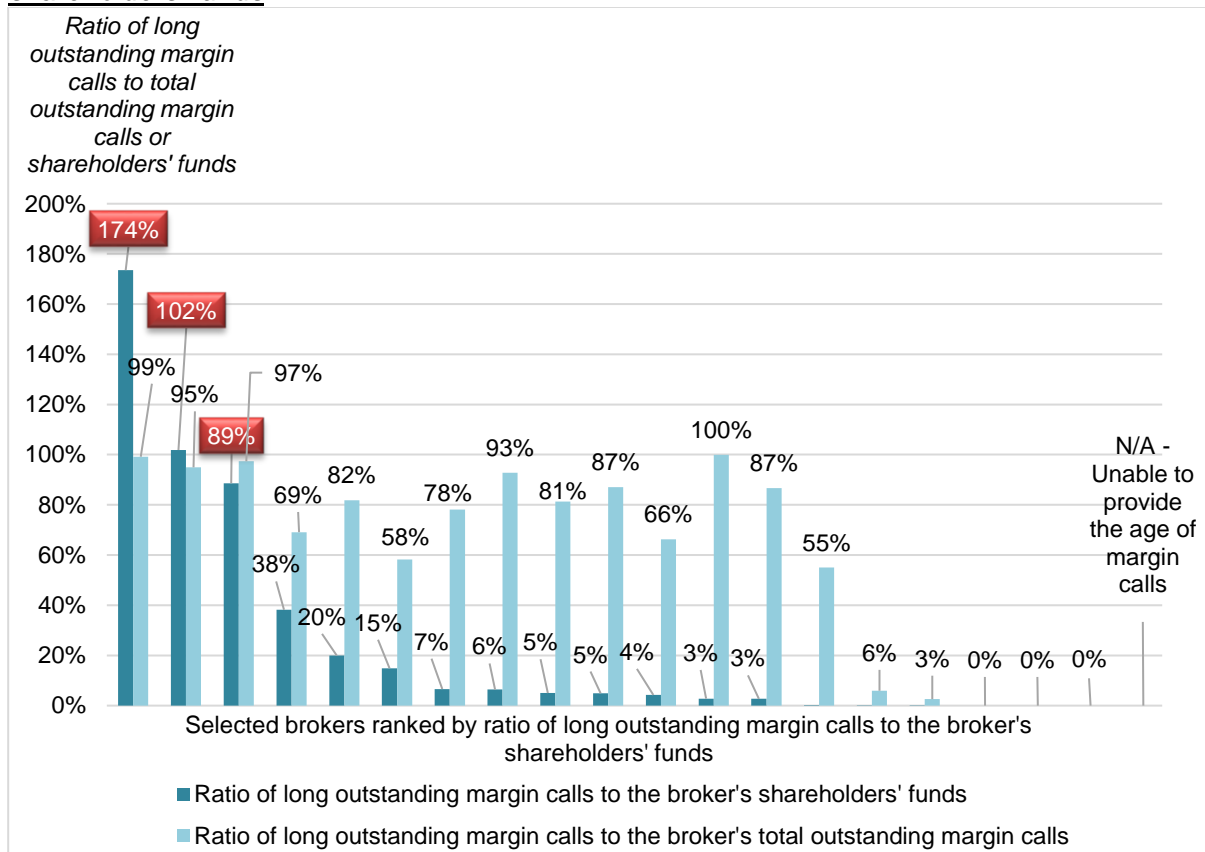
Outstanding margin calls as a percentage of broker's total margin loans or shareholders' funds





45. In terms of the age of outstanding margin calls, 14 SMF brokers had over 50% of outstanding margin calls which had been overdue for one month or more (long outstanding margin calls). In particular, three brokers' long outstanding margin calls amounted to between 89% and 174% of their shareholders' funds as depicted in the chart below.

Long outstanding margin calls as a percentage of broker's total outstanding margin calls or shareholders' funds



46. In extreme cases, two brokers had long outstanding margin calls which were outstanding for one year or more and these amounted to more than half of the broker's shareholders' funds.

47. Nine selected brokers failed to take appropriate follow-up action on material and significantly overdue margin calls¹¹. In the most serious case, the broker waived margin calls of five margin clients with the largest margin call amounts, even though some of these margin calls had been overdue for more than three years.

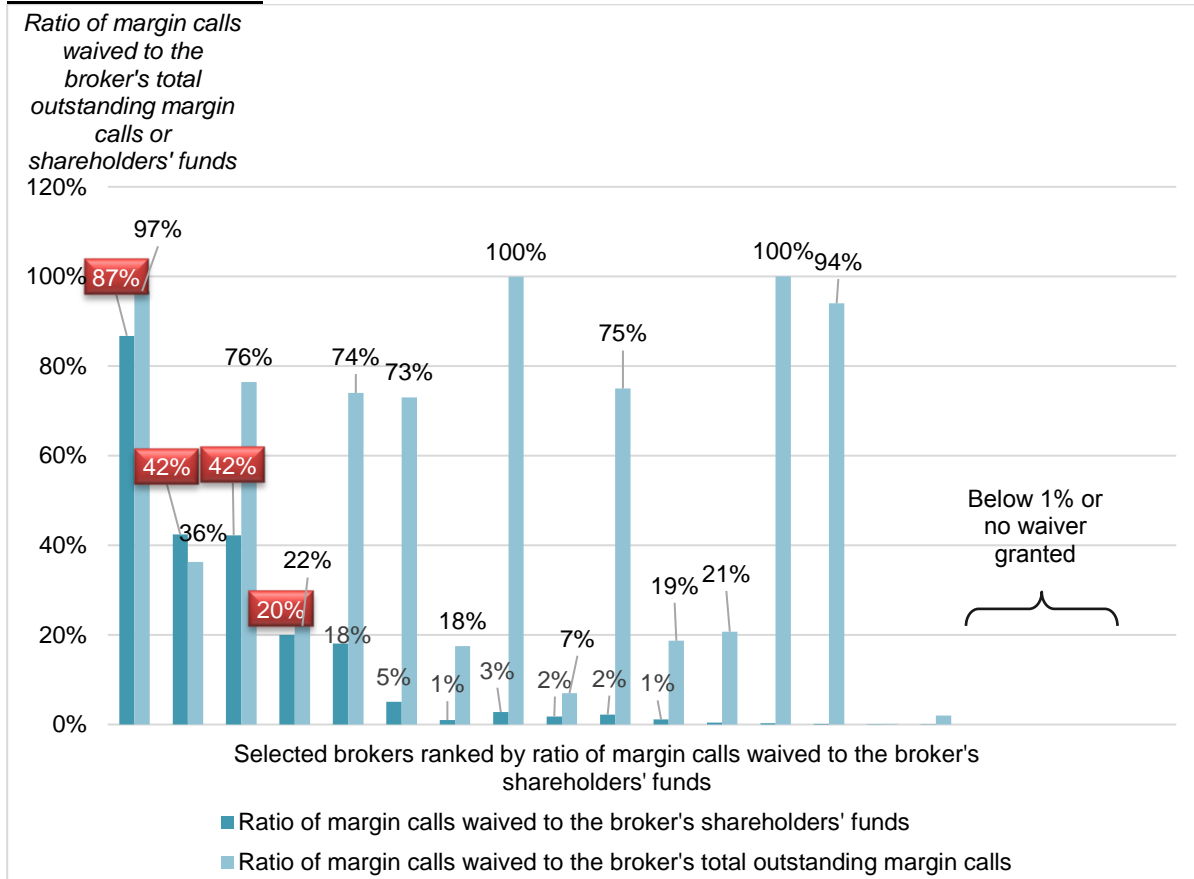
Waivers of margin calls and forced liquidation granted loosely

48. 16 selected brokers allowed waivers of margin calls or forced liquidation. Four of these brokers waived margin calls which in aggregate amounted to 20% or more of their shareholders' funds. Eight of the 16 brokers mentioned above waived 70% or more of margin calls. In an extreme case, a broker waived a total of \$1.6 billion in margin calls, which represented 97% of its total margin calls, 42% of its total margin loans and 87% of its shareholders' funds.

¹¹ Among the five largest margin calls, those overdue for at least six months.



Margin calls waived as a percentage of broker's total outstanding margin calls or shareholders' funds



Allowing margin clients with outstanding margin calls to execute further purchases or withdraw cash

49. 13 selected brokers allowed margin clients with outstanding margin calls to make further purchases or withdraw cash. Eight brokers reported over \$100 million of such purchases or cash withdrawals during October to December 2016. In the most extreme case, a broker allowed over 950 margin clients with outstanding margin calls to make further purchases or withdraw cash in over 11,000 instances during October to December 2016, which in aggregate amounted to \$7.3 billion.

Aggregate amount of further purchases or cash withdrawals made by margin clients with outstanding margin calls during October to December 2016	Number of brokers
Over \$7 billion	1
Between \$1 billion and \$2 billion	1
Between \$100 million and \$500 million	6
Between \$50 million and \$100 million	2
Below \$50 million	3
Not applicable (no further advances provided to clients with outstanding margin calls)	7
Total	20



vi. Stress testing

No or no regular stress testing

50. It was noted that 18 selected brokers conducted stress tests on their ELC to assess the financial impact of stress scenarios. Among these brokers, 15 conducted stress tests at least monthly and three conducted stress tests quarterly, biannually or annually. The remaining two brokers did not regularly conduct stress tests.
51. A wide range of stress scenarios were adopted by the brokers. The more common scenarios tested by the brokers included significant price drops or trading suspension of major securities collateral and significant overall market movements.
52. All but one of the selected brokers which conducted stress testing reported that no material financial impact was expected according to the latest stress testing results. The remaining broker arranged a capital injection to improve its financial position.
53. Among the 20 selected brokers, 11 re-pledged margin clients' securities collateral to obtain financial accommodation. However, only one broker conducted stress tests to quantify the effect on its liquidity of potential margin calls from its lending banks in the event of a slump in the share price of the re-pledged securities collateral.

Conclusion

54. The above findings indicate that, generally, the financial risks faced by SMF brokers have increased and imprudent lending practices are common among the selected brokers. This gives rise to concerns about the SMF brokers' susceptibility to financial crisis and stock event risk, as well as about the implications of this susceptibility to the interests of their clients, especially those margin clients whose securities have been re-pledged.