



中國銀行

BANK OF CHINA NEW YORK BRANCH

Liquidity Risk Appetite and Limit Framework (Draft)

**Bank of China USA
Market Risk Management Dept**

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1 Overview

1.1 Purpose

The liquidity risk appetite and limit framework sets the Bank's risk profile and forms part of the process of development and implementation of the Bank's strategy and determination of the risks undertaken in relation to the Bank's risk capacity.

1.2 BOCNY Liquidity Risk Appetite Overview

According to the Bank's risk governance framework, the Risk Appetite Statement represents the aggregate level and types of risk that BOCNY is willing to accept in pursuit of its strategic objectives and business plan, taking into account the safety and soundness, financial condition and market perception of the Branch. The Branch recognizes that it is not possible or necessarily desirable to eliminate some of the risks inherent in its activities. Acceptance of some risk is often necessary to foster innovation within business practices. This RAS therefore facilitates all risk-taking and risk mitigation activity within the Branch. This RAS has been designed, as has the Framework as a whole, to be consistent with and complementary to the risk governance principles applicable to BOCNY's operations and with aspects of the Federal Reserve's EPS standards applicable to certain operations conducted by the Branch.

As Head Office has little guidance on the Bank's liquidity risk appetite methodology, the Bank's overall risk appetite methodology is developed using bottom-up approach due to its business nature, business profile, and the fact that its capital base is dependent on H.O. The Bank qualitatively adopt a low appetite on liquidity risk as defined in the Risk Governance Framework and also quantitatively adopts Cushion above the monthly EPS mandated liquidity stress test buffer as its appetite. The established liquidity risk appetite aligns with the Bank's business structure, risk profile, complexity, and size of the BOC CUSO.

1.3 Review and Calibration

The Bank maintains and calibrates its liquidity risk appetite and KRI limit annually using historical data and qualitative judgment from peer bank practice and regulator guidance.

1.4 BOCNY Liquidity Risk Limits Overview

BOCNY maintains a comprehensive suite of KRIs to support its RAS. KRIs are based on BOCNY's experience with meaningful types and levels of risk indicators and form the basis for monitoring its risk taking activity.

KRIs are reviewed and recalibrated through discussions and coordination among FLUs, IRM, RMICC, EMC, and the USRMC. These reviews take into account projected business growth, as well as any changes in the strategy, risk profile, or regulatory environment that might affect the overall risk appetite of the Branch.

Liquidity risk KRI

- Single Third Party Provider Funding Concentration as a Percentage of Total Assets
- Ratio of Brokered Deposits to Total Deposits
- Cumulative Gap Ratio
- Level 1 Liquid Assets to Buffer Portfolio Size.

Liquidity risk KRIs capture the Bank's potential liquidity needs and specific information related to the bank's concentration of funding, contractual maturity mismatch and available liquid assets. These KRIs not only work as a liquidity risk monitoring tools but also influence the Bank's risk appetite by limiting the Bank's potential liquidity difficulties on a certain level. Together with the Cushion above the monthly EPS mandated CUSO stress test buffer, the whole risk appetite and limit framework provide the cornerstone of information that aid the Bank to identify, measure, monitor and control the liquidity risk.

2. Liquidity Risk Appetite Setting

Risk Appetite

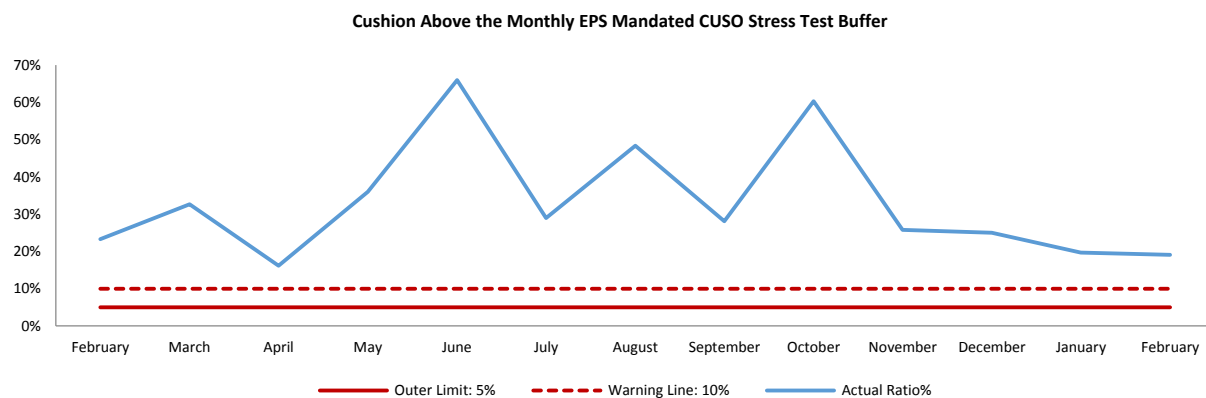
The Bank adopted **Cushion above the monthly EPS mandated CUSO stress test buffer** as its risk appetite. It is calculated as

Excess or shortfall / Monthly Stress Test Defined Buffer Requirement 14D time horizon under combined scenario

To be compliant with EPS Rule, the Bank has been conducting monthly liquidity stress testing since July 2016. The stress testing is a scenario-based approach to exam the balance sheet during different economic crises. Three scenarios, including idiosyncratic crisis, systemic crisis and combined crisis are considered in the Bank's liquidity stress testing.

The liquidity buffer is defined by the required level of the buffer corresponding to a 14-day stress test under the most limiting scenario – combined scenario. The cushion over the buffer is set as 10% as warning line and 5% as limit, which is a safety measure for conservatism.

Historical Trend (From Feb-2017 to Feb-2018)



BOCNY: Cushion Above the Monthly Stress Test Defined Buffer													
	February	March	April	May	June	July	August	September	October	November	December	January	February
Actual Ratio%	23.30%	32.67%	16.18%	36.01%	65.93%	28.96%	48.37%	28.13%	60.31%	25.81%	25.01%	19.67%	19.08%

For the past 12 months, the cushion above the monthly EPS mandated CUSO stress test buffer ranged from 16% to 66% and averaged at 33%. According to the historical trend, the ratio has never breached the limit or the warning line. Despite some volatility, the 14-day buffer cushion ratio has been sufficient and significantly above the limit.

Buffer Cushion Contribution by Funding Sources

The Bank's funding profile mainly composed of Due to Head Office (HO) and interbranches, Due to Bank/non Bank FIs, Demand, MM & Savings and time deposit from retail and corporate customers and brokered CDs. The buffer cushion contribution for February 2018 was presented below for illustration. To prevent buffer volatility caused by runoff of certain funding source, the Bank's funding profile needs to be closely monitored and controlled with sufficient quantitative measures.

Feb-18	
Funding Sources	Buffer Cushion Contribution
Due to Interbranch	22%
Brokered Deposits	37%
Due to Bank/Non-Bank FI	23%

Due to Banks - Investment - PBOC	8%
Due to Banks - Investment - CDB	8%
Demand, MM & Savings - Retail & Corporates	7%
Time Deposit - Retail & Corporates	6%
Other	4%
	100%

Calculation for buffer cushion contribution is based on 14-day liquidity stress test model. Buffer cushion contribution is equal to 14-day funding sources balance over liability under combined stress scenarios.

Note: Due to Interbranch is mainly from Head Office investment and call loans. Brokered Deposits is mainly from brokered CDs and retail FDIC sweep deposit. Due to Banks is mainly from PBOC and CDB. Non-Bank FI is mainly from GIFS, CIC and CME. Demand, MM and Savings is mainly from corporates excluding large corporates. Time deposit is mainly from corporates customers.

3. Liquidity Risk Limits Setting

The Bank sets up the Liquidity risk limits according to the regulatory requirement and risk tolerance. EPS (Regulation YY) has the requirement of the limits as below.

“A foreign banking organization with combined U.S. assets of \$50 billion or more must monitor sources of liquidity risk and establish limits on liquidity risk, including limits on:

- (i) Concentrations in sources of funding by instrument type, single counterparty, counterparty type, secured and unsecured funding, and as applicable, other forms of liquidity risk;*
- (ii) The amount of liabilities that mature within various time horizons; ...*
- (2) Size of limits. Each limit established must be consistent with the company’s established liquidity risk tolerance and must reflect the company’s capital structure, risk profile, complexity, activities, and size.”*

Key Risk Indicators

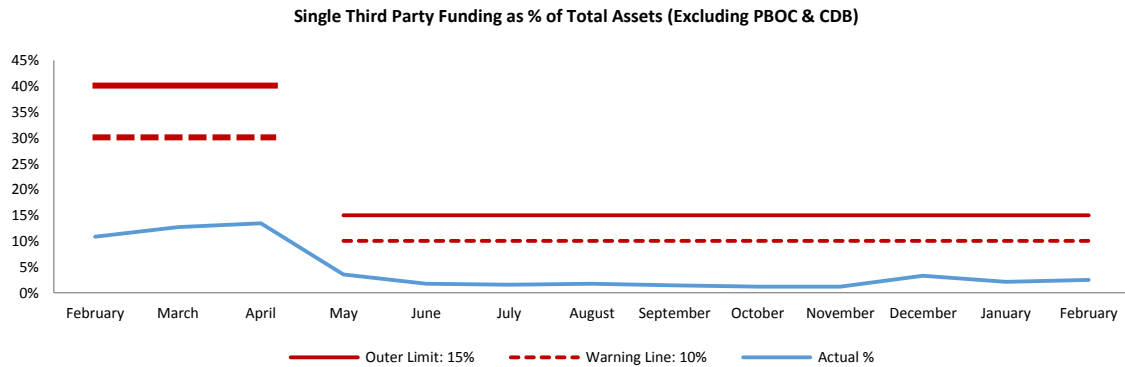
The liquidity risk KRIs were chosen and set at a level to constrain risk-taking within the risk appetite, taking into account *funding structure, funding concentration, short term maturity gap, and buffer composition.*

3.1 Single Third Party Provider Funding Concentration as a Percentage of Total Assets Limit

Max (all branch, affiliate, sum all subsidiary of Single Name Exposure)/Total Assets

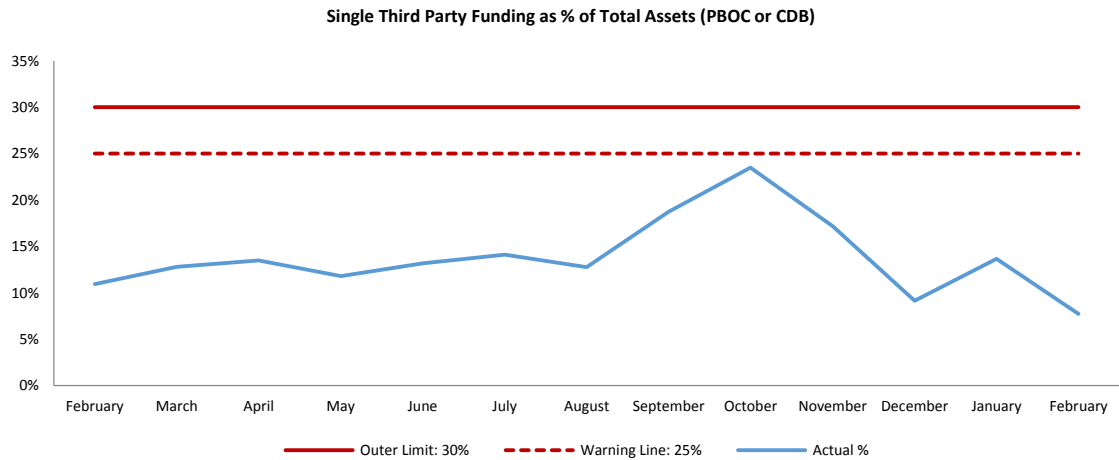
This KRI gives the Bank an indication of funding concentration from third parties relative to the total asset base. Two separate limits were set to monitor different customers: one for PBOC and CDB, the other for typical customers. As state-owned entities, CDB and PBOC have the highest deposit concentration ratios. The current limit is set at 25% (Warning line) and 30% (Outer limit). The other customers have relatively lower deposit concentration and the limit is set at 10% (Warning line) and 15% (Outer limit).

Historical Trend (From Feb-2017 to Feb-2018)



BOCNY: Single Third Party Funding as % of Total Assets (Excluding PBOC & CDB)													
	February	March	April	May	June	July	August	September	October	November	December	January	February
Actual %	10.80%	12.70%	13.40%	3.50%	1.72%	1.50%	1.68%	1.38%	1.17%	1.17%	3.28%	2.11%	2.48%

Note: Before May 2017, Single Third Party Funding as % of Total Assets measures all third party customers including PBOC and CDB.



BOCNY: Single Third Party Funding as % of Total Assets (PBOC or CDB)													
	February	March	April	May	June	July	August	September	October	November	December	January	February
Actual %	10.93%	12.80%	13.49%	11.78%	13.16%	14.12%	12.77%	18.73%	23.49%	17.16%	9.13%	13.66%	7.73%

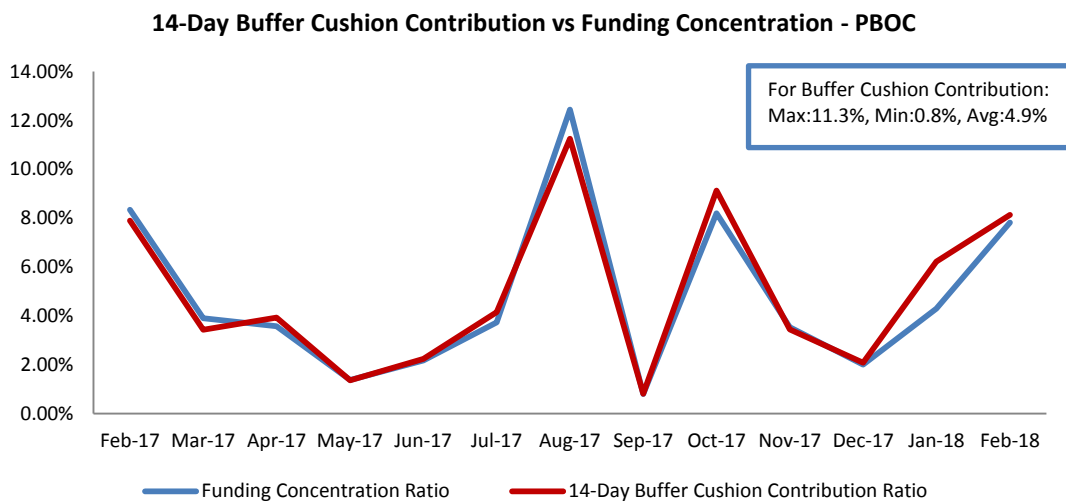
For the past 12 months, the range for single third party funding as percentage of total assets (excluding PBOC and CBD) is from 1.17%% to 13.40% and the average is 4.38%. The range for single third party funding as percentage of total assets (PBOC or CBD) is from 7.73% to

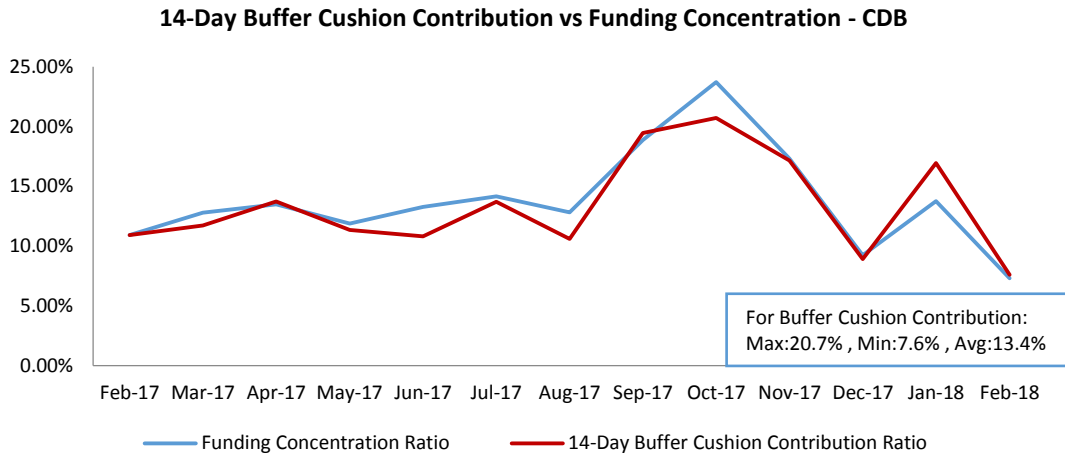
23.49% and the average is 13.77%. The ratios have never breached the limit or the warning line for the period. As displayed in the trend above, PBOC and CDB, as the major funding sources, are relatively volatile while other typical customers are stable.

Limit Rationale

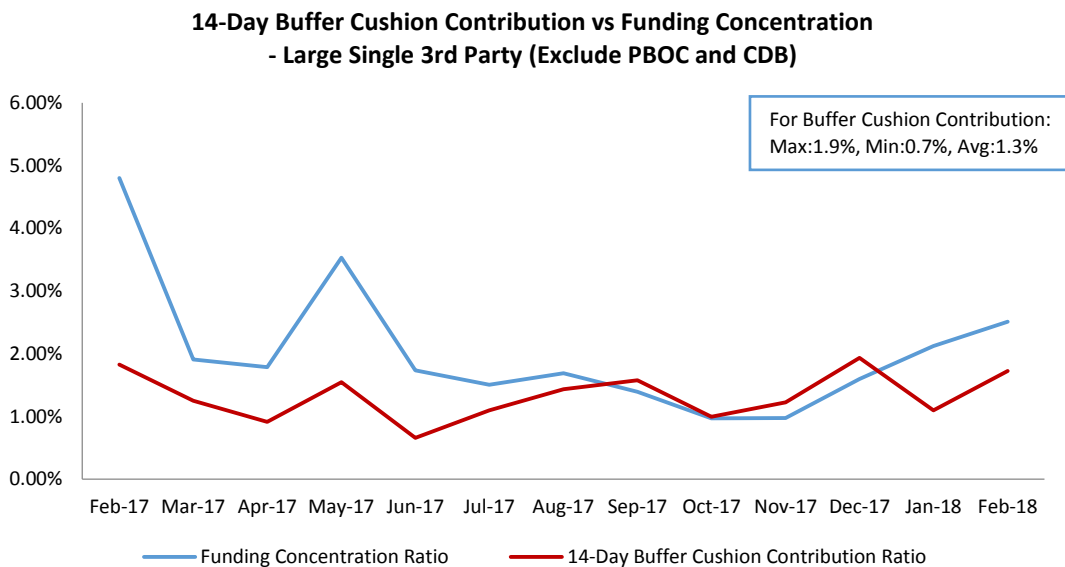
The Bank's funding source is mostly from deposits, which is also the major buffer contributor. Of the third party depositors, PBOC and CDB have the largest and the most fluctuated balances while the other customers are relatively stable and small in proportion. In order to control funding concentration risk and liquidity buffer volatility due to runoff, the deposit proportion of a single customer needs to be limited at a certain level.

The 14-day buffer cushion impact analysis was performed to estimate the impact of a single third party deposit to the Bank's liquidity buffer. Based on the analysis for the past 12 months, PBOC/CDB contributes 13% to the monthly buffer cushion on average. Although these two customers contribute significantly to the buffer, the analysis shows high volatility. The buffer contribution ranges from 7.6% to 20.7% (CDB is usually higher) for the past 12 months.





For the past 12 months, other single third party customer contributes only 1% in average. The proportion of their deposit balance is very small compared to other funding sources.



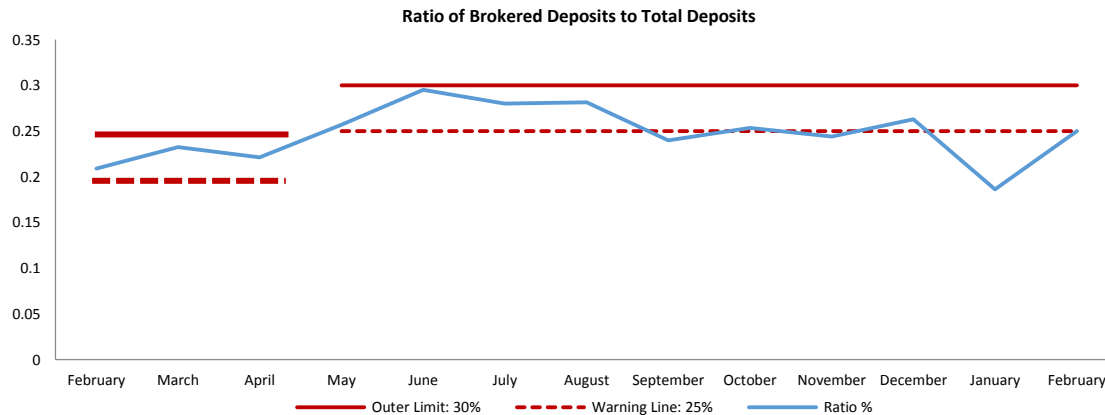
Since the 14-Day buffer contribution ratio has similar range and trend to the single third party concentration ratio as displayed above, the KRI can limit the impact of the buffer runoff caused by a single third party customer. After assessing the Bank's funding structure and LST results, the KRI is set at current level to protect the Bank from breaching its Risk Appetite - Cushion above the monthly EPS mandated CUSO stress test buffer.

3.2 Ratio of Brokered Deposits to Total Deposits

Total Amount of Brokered Deposits (incl. Brokered CD + Sweep Deposit) / Total Deposits

This KRI measures the amount of brokered CD's outstanding as a ratio of the total level of deposits from all sources, i.e. customer deposits, due to banks (including affiliate) and inter-branch deposits. The Bank currently mainly relies on short-term funding and is heavily weighted towards brokered CDs. In order to diversify the Bank's funding profile, it seeks to move towards a more diversified mix of short-and long-term funding. The current limit for brokered CD is 25% (Warning line) and 30% (Outer limit).

Historical Trend (From Feb-2017 to Feb-2018)



BOCNY: Ratio of Brokered Deposits to Total Deposits													
	February	March	April	May	June	July	August	September	October	November	December	January	February
Ratio %	20.88%	23.25%	22.12%	25.71%	29.51%	28.00%	28.13%	23.97%	25.33%	24.41%	26.30%	18.62%	25.01%

For the past 12 months, the range for ratio of brokered deposits to total deposits is from 18.62% to 29.51% and the average is 24.71%. The ratio has been exceeding the warning line several times for the past 12 months due to the decrease of total deposits.

Limit Rationale

Brokered deposits are another major funding source of the Bank, which include brokered CDs and retail FDIC sweep deposit. They are often viewed as a cost-effective source of liquidity and funding. According to FDIC guidance and the Bank's asset liability strategy, brokered deposits can be a suitable funding source when properly managed as part of an overall prudent funding strategy. However, in order to diversify the deposit funding profile and survive under stress scenario, the Bank needs to maintain multiple financing vehicles available and a mix of short-and long-term funding profile. With no explicit regulatory required limits, industry and peer practice research has been conducted to study the brokered deposits proportion to the total liabilities. The industry peers have shown a wide range of proportion ratios in recent years. Some financial institutions/organizations have shown brokered deposits ratios of more than 30%, while some others only obtained a small portion.

14-Day Buffer Cushion Contribution Ratio	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	
Broker Deposit	29.06%	29.41%	33.56%	33.34%	35.05%	38.39%	34.46%	36.26%	32.64%	35.64%	36.89%	33.61%	37.32%	
												Min	Max	Average
												29.06%	38.39%	34.28%

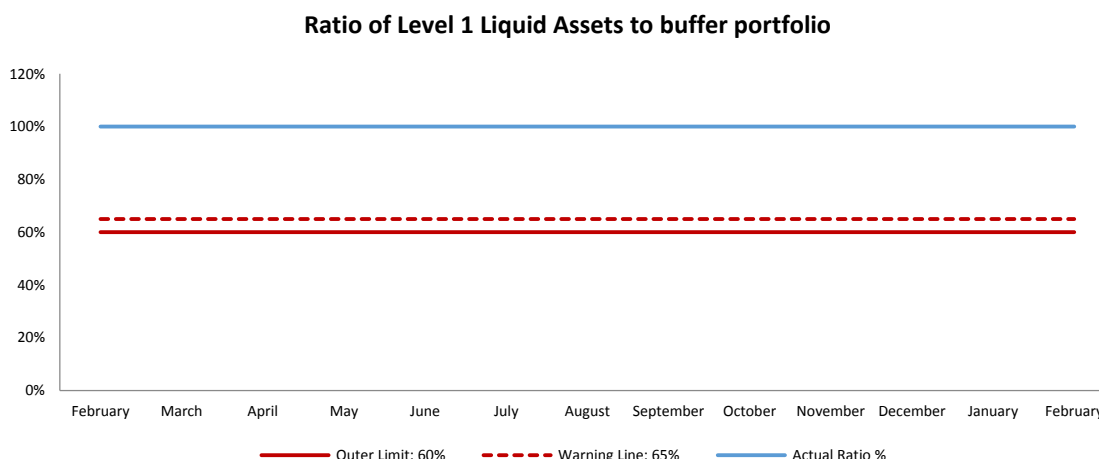
Brokered deposits, as a stable funding source, have low runoff compared to other liabilities in the Bank's liquidity stress testing. Based on the 14-day buffer cushion contribution impact analysis for the past 12 months, brokered deposits contribute 34% to the 14-Day buffer cushion on average, which has the most significant portion in cushion contribution. To closely monitor and control the Bank's funding source stability and concentration risk, a prudent funding strategy should be considered with limiting the proportion of brokered deposits to total deposits.

Based on bank's funding strategy and peer practices, the Bank adopts current limit for the KRI and the limits are deemed to be appropriate to enhance the Bank's funding diversity and satisfy the liquidity buffer cushion needs at the same time. By fully utilizing the current limit, the Bank satisfied the needs for liquidity stress buffer and cushion with stable and high quality funding sources.

3.3 Ratio of Level 1 Liquid Assets to Buffer Portfolio Size

Level 1 asset are high quality liquid assets as in cash, central bank reserves, high quality marketable securities and sovereign & central bank debt. The ratio of level 1 asset to the total buffer size indicates the quality of the buffer composition.

Historical Trend (From Feb-2017 to Feb-2018)



For the past 12 months, the Ratio of Level 1 Liquid Assets to buffer portfolio has maintained at 100%. The ratio has never breached the limit or the warning line for the period.

Limit Rationale

The Bank shall hold adequate high quality liquid assets (HLA) to meet liquidity demands defined under stressed scenarios in a timely manner. The limit threshold was initially established by leveraging LCR Rule, which allows equal or less than 40% of HQLA Level 2 assets.

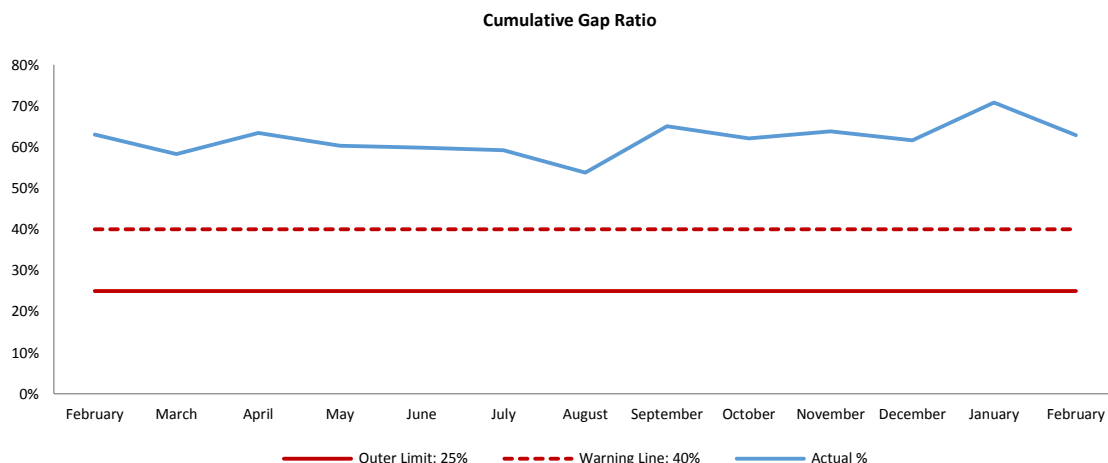
Currently all the liquidity buffer consists of Level 1 Assets, which includes cash, US Treasuries and government agency bonds. However, according to the Bank's asset and liability strategy, the Bank may move towards the direction of expanding the liquidity buffer sources. The current limit is deemed at an appropriate level for the Bank's risk profile. The Bank will continue monitoring the limit.

3.4 Cumulative Gap Ratio (ratio of assets to liabilities maturing within 90 days)

$$\text{Sum (Total Assets1m, Total Assets 2-3m)} / \text{sum (Total Liabilities1m, Total Liabilities 2-3m)}$$

This KRI measures the difference between maturing assets and maturing liabilities for different time buckets. The cumulative gap ratio measures maturing assets to maturing liabilities in the next 90 days as a sum of the incremental gaps for time periods 0-30 days, 31-60 days and so on.

Historical Trend (From Feb-2017 to Feb-2018)



BOCNY: Cumulative Gap Ratio													
	February	March	April	May	June	July	August	September	October	November	December	January	February
Actual %	63.05%	58.30%	63.41%	60.34%	59.82%	59.23%	53.76%	65.08%	62.13%	63.85%	61.66%	70.82%	62.88%

For the past 12 months, the range for cumulative gap ratio is from 53.76% to 70.82% and the average is 61.87%. The ratio has never breached the limit or the warning line for the period.

Limit Rationale

The Bank concerns to deal with a surplus of longer-term assets over short-term liabilities and thus continuously to finance the assets with the risk that required funds will not be available. The contractual maturity mismatch profile (reported in ALCO package) identifies the gaps between the inflows and outflows of liquidity position arising from long-term asset and liabilities. Such mismatches are inherent to banks given their fundamental role in the wider economy of transforming deposits into longer-term loans. These maturity gaps indicate how much liquidity a bank would potentially need to raise if all cash flows occurred at the earliest possible date. Despite the Bank hold an adequate amount of highly liquid buffer, if the gap between the maturities of assets and liabilities is too large, the Bank may be forced to seek relatively expensive “money at call” borrowings.

Unlike the Bank’s liquidity risk appetite “Cushion above the Monthly Stress Test Defined Buffer” under liquidity stress testing model, the cash flows used here are not weighted by factors reflecting customer behavior and market scenarios. As such, maturity gaps give a bank a sense of how much liquidity it would potentially need to raise over time if all outflows were to take place at the earliest date.

To fully capture and monitor the Bank’s longer-term liquidity risk exposure, the Bank adopts 90-day as maturing bucket for cumulative gap ratio. The limit was set beyond the risk appetite statement to measure the funding availabilities for longer period. The current

thresholds were set based on peer bank practices and external experts. They might be subject to adjustment and calibration according to the Bank's asset and liability strategies: increasing customer loans and security investments; and more mid or long term funding. The Bank is in the process of accumulating more internal historical data points to observe an appropriate level of thresholds that are appropriate for the Bank's business structure.

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