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| **Date** | 10/30/2017 |
| **MRA Project Manager** | Charlie Peng |

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| **MRA #** | FRB-March2017-2 |

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| **FED MRA#2** | |
| **Description of MRA** | **MRA #2: Improve support for and transparency of assumptions**  **Issue**: *Bank of China should utilize multiple data sources, both internal and external, in order to develop runoff rates for the internal stress-test. In addition, management should document and clearly describe how final runoff rates were derived including the linkage from data sources influencing runoff rates and final runoff rates utilized.*  *While Bank of China assumes an 18 percent runoff from its commercial paper backstop facility based on the high credit ratings of counterparties using the facility, Management does not utilize additional data sources in the development of their runoff rates or adequately document and support the transparency for the process utilized to establish runoff rates for commercial paper backstops. Furthermore, haircuts on assets should be developed and supported to illustrate the possible loss of value of the assets during a time of stress.*  ***Required Action*:** *By September 15, 2017, Management is required to enhance the support and transparency for the process utilized to establish runoff rates for commercial paper backstops and asset haircuts. Specifically, management should provide a clear description of how the final runoff rates were derived and establish an enhanced linkage from factors, data, and studies influencing runoff rates and how the final runoff rates and asset haircuts are determined.* |

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| **Action Plan** | |
| **Description of Action Item(s) and Detailed Step(s)** | **BOC USA Response**: Although both internal and external data sources were analyzed during the model development stage, Management acknowledges that the Bank ultimately applied LCR runoff rates for commercial paper backstop facilities. The Management concurs with the findings regarding asset haircuts and will develop haircut estimates for high liquid assets to illustrate the possible loss of value during a stress scenario in accordance with the action plan below.  **BOC USA Action Plan and Timeline**: The Management will consider and analyze both the Bank’s internal historical data and any available external data sources, and develop a framework regarding commercial paper backstop runoff rates. It will also clearly delineate the process by which the final runoff rate was derived and describe any influences from internal and external data sources. Moreover, the Management will collect and analyze liquidity buffer haircut data from multiple sources to develop haircut estimates for high liquid assets to illustrate the potential loss of value during a stress period. Both the asset haircuts and runoff rates, along with its respective framework and analysis will be well-documented with sufficient details. Furthermore, the Bank will demonstrate linkages to the data sources that were utilized.  IRM functions will review and validate both the data analysis methodology and framework to ensure that they are well-supported, well-documented, and based on sound rationale.  The Management will then assess the impact on the Bank’s liquidity buffer and obtain the appropriate levels of approval.  The Management will implement the changes of run-off rates and haircuts by September 15, 2017.  After the discussion meeting with FRB-NY on August 2nd, the Management committed to completing the internal auditing validation by October 31. |

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| **Part 1 – Evidence of Project Execution from the First Line of Defense** |

Description of artifacts proving execution of the remediation action: list and describe each individual document.

| **Number** | **Department** | **Description** | **Evidence** |
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| First Line of Defense Involved: Financial Management Department (“FMD”), Treasury Department (“TRD”), Corporate Banking Department (“CBD”) | | | |
| 1 | FMD | The Bank’s Front Line Unit (“FLU”) Financial Management Department (“FMD”) has established an internal methodology to develop runoff rates to replace LCR runoff rates that were applied initially to commercial paper backstop facilities.  During the journey of developing the run-off estimates, the Bank conducted a thorough research process and interviewed multiple business units to gain comprehensive knowledge of the business and products, as well as its impact on the nature of its cash flow. In summary, FMD developed the run-off rates considering both qualitative and quantitative perspectives. The approaches were designed to fit the specific products of the Bank.  In order to estimate runoff rates under stress scenarios, the Bank employed multiple data sources, both internal and external. Based on the different types of products and their cash flow nature, the portfolio was segmented into two products: the commercial paper direct pay letter of credit (CPDP) and the 80/20 credit enhancement facility. For the CPDP, an internal empirical data based approach was applied to estimate their run-off rates. The run-off rates under the three stressed scenarios were estimated using historical data corresponding to different percentages. For the 80/20 Credit Enhancement Facility, the Bank adopted a probability of default based approach. The credit enhancement of a SPV was reduced under different stressed scenarios and the expected cash outflows were estimated using the probability of default under stressed credit ratings.  Attached is the latest version of FLU (Front Line Unit)’s remediation documentation. FMD has assessed internal audit's observations and taken immediate actions to enhance the documentation. The actions taken are reflected in the attached documentation. |  |
| 2 | TRD | Treasury Department (“TRD”) collected and analyzed liquidity buffer haircut data from multiple sources to develop haircut estimates for high liquid assets to illustrate the potential loss of value during a stress period. The asset haircuts, along with the respective framework and analysis are well-documented with sufficient details. The linkage to the data sources that were utilized was clearly demonstrated in the documentation. The methodology consists of two steps: Step one utilized Treasuries and Swaps historical yield changes to illustrate the potential loss of value applied to all the stress scenarios. Step two applied an additional REPO haircut specific to each scenario to the market value loss after step one.  Attached is the latest version of FLU (Front Line Unit)’s remediation documentation. TRD has assessed internal audit's observations and taken immediate actions to enhance the documentation. The actions taken are reflected in the attached documentation. |  |

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| **Part 2 – Second Line of Defense Review Results** |

| **Number** | **Description** | **Evidence** |
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| 1 | As an Independent Risk Management (“IRM”) function, the Bank’s Market Risk Management Department (“MRD”) has conducted the independent review and effective challenge on the two FLUs’ proposal of Commercial Paper Backstop facilities, Runoff rates and Asset Haircuts. MRD’s review scope covered the data source and quality, theory and assumption, analysis and calculations, results and documentation.  Commercial Paper Backstop Runoff Rates  The Commercial Paper Backstop products CPDP and 8020 runoff methodology and assumptions are developed primarily based on the historical observations, management judgment, industrial practice, and regulatory guidance. The runoff rates have incorporated outliers, variance of time horizons, counterparty behaviors, and seasonality. After the review and challenge, MRD concludes this CPDP and 8020 Runoff methodology and assumptions are acceptable.  Asset Haircuts  The asset haircuts calculation methodology and assumptions are developed primarily based on empirical data, management judgment, industrial practice and statistical analysis. After rounds of review and challenge, MRD concludes this asset haircuts calculation methodology and assumptions are acceptable and the analysis is conservative and reliable.  Attached are the latest versions of IRM (Independent Risk Management)’s independent review documentation. MRD has assessed internal audit's observations and taken immediate actions to enhance the documentation. The actions taken are reflected in the attached documentation. |  |

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| **Part 3 – IAD Validation Review Results** |

| **Description** | **Evidence** |
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| Internal Audit Department (IAD) conducted independent validation on the Bank’s remediation for the MRA by assessing management’s controls around data gathering for data required to determine how asset haircuts and CP backstop draw runoff rates were derived, assessing whether the resulting assumptions were supported with documentation and analysis and assessing the 2nd line of defense’s challenge of the assumptions.  **Overall conclusion**: The aggregated tasks evaluated address in a sustainable manner the letter and spirit of the recommendations as stipulated in the MRA in general. However, some tasks are not complete but the impact for the overall MRA remediation is not significant. Based on the test work performed, and in accordance with Bank of China New York Internal Audit rating methodology, IAD has assigned an overall rating of Partially Pass.  Attached is the internal audit validation report and supporting work papers. |  |