

Mr. Jakob Lund
Mr. Toshio Tsuki
Co-Chairs, Task Force on Interest Rate Risk in the Banking Book (TFIR)
Basel Committee on Banking Supervision (BCBS)
Centralbahnplatz 2
Basel, Switzerland

Re: BCBS Consultative Document on Interest Rate Risk in the Banking Book (IRRBB)

Dear Messrs. Lund and Tsuki:

Citigroup (Citi) appreciate the opportunity to comment on the Basel Committee on Banking Supervision's (the "**Basel Committee**") consultative document entitled *Interest Rate Risk in the Banking Book* (the "**Proposal**").¹

Citi supports the Basel Committee's principal underlying policy objective of ensuring "that banks have appropriate capital to cover potential losses from exposures to changes in interest rates."² Interest rate risk in the banking book ("**IRRBB**") is inherent in the maturity transformation service banks perform and, more broadly, in banks role as financial intermediaries. However, we believe that the standardized method ("**proposed Standardized Method**") of measuring IRRBB that is defined in the Proposal is conceptually flawed as a measure of economic capital and, in addition, is not useful because of the inaccuracies created by its simplifying assumptions. Consequently we believe that the proposed Standardized Method is not suitable for use either as a Pillar I measure of RWA or a Pillar II measure of capital adequacy.

In the United States, the Federal bank regulatory agencies (the "**U.S. Agencies**") have emphasized the necessity of each bank having "...effective corporate governance, policies and procedures, risk measuring and monitoring systems, stress testing, and internal controls related to the IRR exposures ..." of the bank, which are subject to extensive internal validation and review through the supervisory process. Thus the US implementation of the existing Pillar 2 IRRBB framework has ensured that U.S. banks establish rigorous IRRBB risk management programs that are specifically tailored to the particular interest rate risks that they respectively face given the products they offer and markets they serve.

Citi does business in 160 countries and jurisdictions around the world and, as a consequence, has banking book balance sheets in the local currencies of a large number of host countries. Citi measures, limits, monitors, and actively manages its IRRBB in each currency it has such risk. Citi has implemented and continues to enhance many internal processes to measure, report, and manage IRRBB from several different perspectives: a) Economic Capital, b) Risk Appetite, c) firm-wide systemic global stress scenarios measuring potential economic loss and d) country specific stress scenarios measuring potential economic loss. Citi has

¹ Basel Committee, Consultative Document: Interest Rate Risk in the Banking Book (June 2015), [available at](http://www.bis.org/bcbs/publ/d319.htm) <http://www.bis.org/bcbs/publ/d319.htm>.

² Id. at 1.

³ See Interagency Advisory on Interest Rate Risk Management (Jan. 6, 2010), [available at](http://www.federalreserve.gov/boarddocs/srletters/2010/sr1001.htm) <http://www.federalreserve.gov/boarddocs/srletters/2010/sr1001.htm>. The comment letter of the American Bankers Association lists other relevant publications of the US Agencies on this topic.

also implemented methods to measure the potential changes in NII and EVE for static and dynamic stress scenarios. We discuss some of these different internal measures in more detail below. In addition, the dynamic measurement of IRRBB is a key component of US Federal Reserve Board's CCAR (Comprehensive Capital Analysis and Review).

Citi believes the proposed Standardized Method is conceptually flawed as a measure of Economic Capital and is also materially less accurate and sophisticated than the internal methods for measuring IRRBB that Citi uses. In summary:

- The proposed Standardized Method defines Pillar I RWA in terms the potential decrease in Net Interest Income ("NII") or the Economic Value of Equity ("EVE"). Both NII and EVE, as defined in the proposal, are in essence static measures of expected future net interest income. Thus the Proposal has defined RWA in terms of an opportunity cost (the potential decrease from expectations of a future revenue stream) rather than in terms of potential loss.

Since the adoption of the Market Risk Amendment in the mid-1990s, the Basel Committee has defined RWA as the Basel measurement of economic capital multiplied by 12.5. Until the current IRRBB proposal, the Basel Committee has defined economic capital for each risk type (i.e. market, credit, and operational risk) as the potential loss, over a one-year horizon, measured at a nominal 99.9% confidence level. It is a conceptual flaw, and it is inconsistent with the larger Basel framework, to define economic capital as an opportunity cost. Consequently, implementation of this flawed method in Pillar I would cause a material mismeasurement of a bank's capital adequacy. We discuss this in more detail below.

- Another important problem with the proposed Standardized Method is that its implementation would result in a materially inaccurate measurement of the quantities it is designed to measure. The principal cause of the inaccuracies are the simplifying assumptions underlying the treatment of the banking book assets and liabilities that the Proposal categorizes as "not amenable to standardization", such as non-maturity deposits ("NMDs") and the pre-payment risk on mortgages.

While we acknowledge that the Proposal includes limited flexibility for NMDs and a supervisory discretion to allow firms to establish baseline scenarios for other positions with behavioral options, the proposed categorization, fixed parameters, and specified caps and floors are too coarse and risk insensitive. We discuss specific examples of these problems below.

In addition to the above shortcomings, the Proposal also requires banks to measure IRRBB under the assumption of a static portfolio that runs off over time. In contrast, US Agencies have mandated that US banks measure and report their IRRBB by the dynamic modeling of their balance sheet – i.e. by means of forecasting the balance sheet amounts of banking book assets and liabilities at a set of future dates as a function of stress scenarios. The method used to forecast balance sheet amounts must be based on historical behavior. The stress scenarios used to measure IRRBB need to specify a sufficient set of macroeconomic variables, at a set of future dates, to model potential changes in the balance sheet of all interest rate sensitive products, within each jurisdiction for which the bank has material IRRBB risk. The balance sheet simulation has to be sufficiently granular to take into account different asset and liability products, and needs to model how each would respond to changes in macroeconomic conditions in each jurisdiction.

- Consequently, given the above criticisms of the proposed Standardized Method, a) its conceptual flaw, b) the inaccuracies caused by its simplifying assumptions, and c) its lack of dynamic modeling,

we believe that the proposed Standardized Method should not be used as a basis for calculating Pillar I RWA.

- We also believe that the proposed Standardized Method should not be a mandatory component, across all jurisdictions, for a Pillar II calculation of IRRBB nor should it be a mandatory component of Pillar III regulatory reporting or public disclosure. We believe that US banks already have richer, more sophisticated methods of measuring, reporting, and disclosing their IRRBB to their national supervisors. We believe national supervisors in each jurisdiction should have the option, but not be mandated by the BCBC, to require the banks in its jurisdiction to calculate, report and/or publicly disclose its IRRBB using the proposed Standardized Method, taking into account the quality, comprehensiveness, and accuracy of the current measurement, reporting, and supervision of IRRBB in their country.
- Citi recognizes the value to regulators and investors of having some comparable measures of IRRBB. Accordingly, we support the use of internal models of IRRBB to measure the sensitivities of a specified quantity (e.g. NII, EVE) to standardized interest rate stress scenarios, defined for each currency for which a bank has material IRRBB. For this to work efficiently for those banks that have balance sheets in many currencies, the national supervisor in each jurisdiction would have to be responsible for defining an appropriate set of interest rate stress scenarios for their specific currency. The set of all such interest rate scenarios so defined could then be used by each multinational bank, as applicable, no matter the home country of the bank.
- To enable banks to dynamically simulate their balance sheet amounts in each currency for which they had material IRRBB, each national supervisor would have to material expand the interest rate scenarios they defined to include the specification of macro-economic variables and the shape of the yield curve over a set of specified future dates for each stress scenario.
- The use of validated internal models of IRRBB in such reporting would increase the accuracy of the risk measurement by allowing each bank to take into account the specific features of each of its banking book products, the particular markets the bank operates in, and the specific historical behavior of its wholesale and retail depositors and borrowers in each market, as a function of market interest rates and the interest rates on the bank's products.
- Although Citi sees the value of reporting such interest rate stress information to regulators, it also believes that the information it and other banks are required to publicly disclose needs to take into account the trade-off between the amount of detailed information about internal models and assumptions banks would be required to disclose to makes its measurements intelligible to outside parties and the proprietary nature of some of those assumptions and models.

Citi is a member of several trade associations. As such it has participated in the writing of and agrees with the essential points made in of the comment letters of these trade associations. Some of the comment letters will be sent the BCBS as an individual trade association response (e.g. The American Bankers Association), and some will be sent as a joint trade association response (e.g. The Clearing House/SIFMA/The Financial Services Roundtable response and the IIF/IBFed/GFMA/ISDA response). Instead of replicating each argument made in those comment letters, Citi has selectively focused on a few key issues below.

Specific Criticism of Certain Features of The Proposal

a) Conceptual Flaw of Proposed Standardized Method.

The Proposal Standardized Method requires banks to build standardized models to measure NII and EVE. Under the Proposal a bank's Pillar I RWA for IRRBB would be based on the larger of the potential decrease of either NII or EVE, given specified interest rate scenarios. Thus the Proposal defines Pillar I RWA in terms of an opportunity cost – i.e. the potential decrease in the expected stream of accrual net interest income. This is a material conceptual flaw and a material break with how Pillar I RWA has previously been defined by the Basel Committee.

All measures of insolvency risk compare the potential losses a bank may have (over some specified period of time and some specified confidence level) to the bank's Available Financial Resources (“AFR”) to absorb losses and avoid insolvency.

The simplest method for measuring insolvency risk is to measure a point-in-time capital ratio – i.e. the ratio of a) a static measure of AFR (e.g. current Tangible Common Equity) to b) economic capital (“EC”), measured as the potential unexpected loss over one year, at a very high confidence level across all risk types. This in essence is the approach that the Basel Committee has taken in the past. In fact, ever since the BCBS Market Risk Amendment, which was issued in the mid-1990s, the BCBS has defined RWA for each risk type as the BCBS measurement of EC over one year at a nominal 99.9% confidence level multiplied by 12.5.

Thus the Proposal's definition of Pillar I RWA is inconsistent with solvency risk measured in terms of potential losses and with how the BCBS has defined RWA for all other risk types.

b) Two Perspectives on measuring EC and performing stress tests: Price Risk vs. Value Risk

At Citi we measure EC for each risk type. We calculate an integrated firm-wide total EC, across all risk types, on the basis of prudent, empirically-based correlation assumptions. A key component of our measurement of EC is the differentiation of two basic forms of risk, which internally we call Price Risk and Value Risk:

- **Price Risk** is the unexpected loss of the actual or imputed market value of a portfolio at a specified confidence level, over a specified period of time. The drivers of Price Risk are changes in all the market factors that determine the market value of the transactions in the portfolio.
- **Value Risk** is the unexpected loss of realized value of a portfolio at a specified confidence level over a specified period of time. The drivers of Value Risk are the level and the changes in the macroeconomic variable (e.g. GDP, Unemployment Rate, Housing Price Index, yield curves) that drive losses of realized value in the banking book.

Citi believes a Value Risk perspective should be used to perform stress tests and measure EC if the following conditions obtain:

- The assets are funded-to-maturity and will be held-to-maturity.
- The assets and liabilities are not subject to either mark-to-market accounting or AOCI accounting.

If any of these conditions do not obtain then a Price Risk perspective should be used to perform stress tests and to measure EC.

As an illustration of the difference in perspective, consider two credit sensitive portfolios:

- (i) A portfolio of loans in the banking book that are funded to maturity and held to maturity.
- (ii) A portfolio of equivalent bonds in a trading book.

Citi would measure the EC for the credit risk of portfolio (i) from a Value Risk perspective, in terms of the cumulative unexpected loss due to default in the loan portfolio over its remaining lifetime. This can be shown to be equivalent to the unexpected loss due to default over the next year plus the unexpected change in the (remaining lifetime) loan loss reserves at the end of the year.

In contrast, Citi would measure the EC for the credit risk component of portfolio (ii) from a Price Risk perspective, in terms of the potential decrease in the market value of the portfolio as determined by applying an integrated combination of annualized Monte Carlos simulation of changes in credit spreads (and jumps to default) along with a series of stress scenarios consisting of specified changes in credit spreads over a one year horizon.

The difference in the two perspectives is caused by the fact that changes in market credit spreads over a one year horizon reflect both a prudent estimate of the increased expected loss due to default in credit sensitive assets as well as an increase in the funding and trading liquidity risk premium of those assets. We believe that that increase in the funding and trading liquidity risk premium is irrelevant for assets that are held-to-maturity and funded-to-maturity. All that should matter in assessing the credit risk of those assets is their potential cumulative loss due to default.

This perspective has several important consequences that are relevant to our evaluation of the proper way to measure EC for Interest Rate Risk and Credit Spread Risk in the Banking Book:

- On the basis of the principles defined above, Citi believes that banks need to differentiate the measurement of EC for assets in Available For Sale (“AFS”) portfolios from the measurement of EC for all other banking book assets. Internally we believe AFS assets should have their EC measured from a Price Risk perspective – i.e. similar to how the EC is measured for trading book assets. This means that the loss of actual or imputed market value caused by changes in yield curves and (where applicable) credit spreads (and the inclusion of an estimate of jump to default) is an appropriate method for measuring the EC for the interest rate risk and credit risk of AFS portfolios.
- In contrast, EC for all other banking book portfolios, which meet the criteria necessary to be designated as having Value Risk, should be measured from the perspective of potential loss of accrued interest rate income over a specified time horizon. As explained above, Citi believes that the measurement of EC for banking book portfolios subject to Value Risk does not have credit spread sensitivity.

c) Material approximations in proposed Standardized Approach

High-level summary of treatment of NMDs (Non-Maturity Deposits)

Under the Proposal, a bank first assigns its all of its NMDs to one of three categories: Retail Transactional, Retail non-Transactional, or Wholesale. The Proposal does not differentiate between Transactional and non-Transactional Wholesale deposits, and in contrast to the Basel Committee’s own Liquidity Coverage Ratio document, does not have a separate category for Wholesale Operational Deposits (see below).

The Proposal then applies a two-step process to calculate core deposits. Banks are required to differentiate NMDs in each of the three categories into two components, stable and non-stable deposits, by means of observed volume changes over the prior 10 years. Stable NMDs are then further differentiated into core and

non-core components through the use of “pass-through” rate, under the stipulated assumption that “core deposits are the proportion of stable NMDs that do not reprice”.

The Proposal specifies Stability Caps, for each of the three categories, as the maximum percent of NMDs that can be stable, and also specifies Pass-Through Floors, for each of the three categories, as the minimum percent of Stable NMDs that are non-core (i.e. that are repriced). For each of the three categories, the combination of Stability Caps and Pass-Through Floors sets a maximum percent of the NMDs that can be core deposits.

Criticism

This is a crude method for categorizing and determining core NMDs.

One problem is the coarse treatment of wholesale NMDs. The Proposal does not allow the differentiation of wholesale NMDs into transactional and non-transactional deposits, even though a large percent of wholesale deposits may be transactional, particularly for a bank which has a large wholesale clearing, custody, and cash management business. The Basel Committee’s own Liquidity Coverage Ratio document⁴ defines a category, **operational deposits**, as: “Operational deposits include deposits from bank clients with a substantive dependency on the bank where deposits are required for certain activities (i.e. clearing, custody or cash management activities).” Consequently, the Proposal ignores a type of wholesale NMD (operational deposits) that may be a large component of some banks core wholesale deposits. This category is a large fraction of Citi’s wholesale deposits. The limited categorization structure of the Proposal unrealistically limits the full recognition of core wholesale deposits.

As we stated above, the stipulated Stability Caps and Pass-Through Floors combine to set a limit, for each of the three categories, on the maximum percent of NMDs that can be core deposits. The limits are set in a crude way which ignores the different features of specific deposit products and the different behavior of specific depositor customers in different geographic markets around the world. As noted above, the limits also ignore the characteristic of what the Basel Committee itself defines as Operational Deposits.

d) Treatment of Pre-Payment Options on Fixed Rate Loans

Pre-payment features are very common for many types of fixed rate retail loans in the US, including residential mortgages. They are also a common feature of wholesale deposits. Pre-payments are not as frequent a feature of retail loans in many other countries.

Because of the long history in the US of fixed rate residential mortgages with prepayment options, and the long history and very large volume of securitization of such mortgages, extensive research has been done over the years to analyze the drivers of prepayment risk and to build complex models of pre-payment behavior, conditional on the age of the mortgage, the relationship between the fixed rate and the market rate, the geographical location of the property, and other features.

The Proposal would allow an individual bank, or a national supervisor, to assign a conditional pre-payment rate (CPR) to various fixed rate loan products. However in the Proposal the change in the CPR, as a function of the regulatory specified interest rate shock, would be set by parameters specified by the Basel Committee across all currencies and products! This is an extremely crude approach which ignores differences in pre-payment behavior around the world and even ignores differences in pre-payment behavior on different pools of residential mortgages within a single country, such as the US.

⁴ Basel Committee on Banking Supervision, Liquidity coverage ratio disclosure standards - final document, January 2014 (rev. March 2014) available on the BIS website.



If individual banks (or their national supervisor) can specify initial CPRs, we do not see why they could not also specify the change in the CPR as a function of interest rate shocks in a more nuanced, granular way, which would take into account the relevant features of each pool of residential mortgages.

In closing, Citi would like to thank once again the Committee for the opportunity to provide feedback on the proposals for Interest Rate Risk in the Banking Book.

Respectfully yours,

Signed

Candida Wolff

EVP, Global Government Affairs