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Counterparty Credit Risk (CCR) Management under BASEL III Accord: An Overview

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Abstract:

Banks in the process of financial intermediation are confronted with various types of financial and non-financial risks and Counterparty Credit Risk or CCR is one of the crucial financial risks. Aptitude to estimate the CCR and take appropriate position will be the key to success. The financial sector especially the banking industry in most emerging economies is passing through a process of change in the world today including India. Rising global competition, increasing deregulation, introduction of innovative products and delivery channels have pushed CCR management to the forefront of today's financial landscape. Effective CCR management is critical for any banking institution for achieving financial soundness. In view of this, aligning CCR management to bank's organisational structure and business strategy has become integral in banking business. This paper attempts to discuss in depth, the importance of CCR management process and make a comparative analysis between Basel II and Basel III accord on the same issue in the context of Indian Banking sector.

Keywords: Banking industry, Basel III, counterparty credit risk, emerging economies, financial soundness

1. Prelude

Financial institutions in the process of financial intermediation are confronted with various types of financial and non-financial risks related with credit, liquidity, legal, regulatory, reputational, operational, equity price, interest rate, commodity price and foreign exchange rate etc. These risks are highly interdependent and events that affect one area of risk can have ramifications for a range of other risk categories. In present days Counterparty Credit Risk (hence CCR) is increasingly faced by banks in their product assortment (not only lending) and can be considered as the oldest and largest risk in the banking industry; CCR is the most common cause of bank failures. It is the possibility of losses associated with the diminution in the credit quality of borrowers or counterparties. CCR is inherent to the business of lending funds to the operations linked closely to market risk variables. The effective management of CCR is a critical component of a comprehensive approach to risk management and crucial to the long-term success of any financial institution. Effective CCR management process is a way to manage portfolio of credit facilities and it includes identification, measurement, monitoring and control of the credit risk exposures. Regarding to international banking rule (Basel Committee Accords) and RBI guidelines the CCR management in banking sector is now becoming most important.

2. Objectives and Methodology of the Study

The present study aspires to make a comparative analysis between Basel II and Basel III recommendations on CCR management. To be specific, the main objectives of the study are:

- To explain the conceptual aspect of CCR management and need for the same.
- To make a comparison between Basel II and Basel III on the area of CCR management.
- To highlight some of the factors those are necessary for any banking institution while implementing CCR management according to Basel III accord.

This paper is theoretical model based on the extensive research for which the secondary source of information has gathered. The sources include online publications, books and journals.

3. What is Credit Risk?

Credit risk refers to the risk that a borrower will default on any type of debt by failing to make required payments. The risk is primarily that of the lender and includes lost principal and interest, disruption to cash flows, and increased collection costs. The loss may be complete or partial and can arise in a number of circumstances, viz. a consumer may fail to make a payment due on a mortgage loan, credit card, line of credit, or other loan or a company is unable to repay asset-secured fixed or floating charge debt or a business or consumer does not pay a trade invoice when due or a business does not pay an employee's earned wages when due etc. Credit risk can be three types, for example Credit default risk or CCR, Concentration risk and Country or Sovereign risk.

4. Conceptual Aspect on CCR

4.1. What is CCR?

A CCR, also known as a default risk, is a risk that counterparty will not pay as obligated on a bond, credit derivative, trade credit insurance or payment protection insurance contract, or other trade or transaction. Basel II accord (BIS, 2005) defines CCR as “the risk that the counterparty to a transaction could default before the final settlement of the transaction’s cash flows. An economic loss would occur if the transactions or portfolio of transactions with the counterparty has a positive economic value at the time of default”.

4.1.1. Nature of CCR

- CCR is an inevitable by-product of privately negotiated derivatives transactions; instruments concerned include Securities Financing Transactions (SFTs) and OTC derivatives.
- CCR exposure is the potential exposure at the time of default.
- CCR increases due to positively correlated risk factors. Accounting for correlation between portfolio risk factors and counterparty default in risk management methodology is not trivial.
- Since CCR is a future exposure it is not known with certainty, but depends on the value, at the time of default, of the market factors driving the valuation of the instrument or portfolio under consideration.
- Financial institutions may hedge or take out credit insurance.
- Offsetting CCR is not always possible because of temporary liquidity issues or longer term systemic reasons. It creates a chain of dependencies among derivatives counterparties. It may lead to exposures that must be measured and managed.

4.2. Components of CCR

CCR consists of primarily two components viz. quantity of risk, which is nothing but the outstanding loan balance as on the date of default and the quality of risk viz. the severity of loss defined by both probability of default as reduced by the recoveries that could be made in the event of default. Thus CCR is a combined outcome of Default Risk and Exposure Risk.

4.3. Objectives of CCR management

The objectives are to:

- Evolve an integrated framework for charting/categorising various types of loans and advances, and determine implications on quality of credit and risk.
- Draw up suitable strategies at the corporate level to attain the prescribed levels/quality of exposure and issue guidelines to Strategic Business Units (SBUs). Benchmarks could be in term of recovery percentages, NPA levels, volume of exposure, etc.
- Review the exposures and performance of credit portfolio periodically.
- Devise suitable control/monitoring mechanisms for Credit portfolio.
- Evolve and refine analytical tools to assess risk profiles, for ensuring healthy portfolios and guarding against sickness.

5. CCR Management under BASEL II

Basel II is intended to improve safety and soundness of the financial system in an economy by placing increased emphasis on bank's own internal control and risk management processes, the supervisory review process and market discipline. The Basel II accord introduced certain requirements related to counterparty risk on market transactions. These requirements detailed the capital calculation related to over-the-counter (OTC) and securities financing transactions (SFT) such as asset loans and repo, and reverse repo agreements, with exposures implied by the potential one-year horizon counterparty default. This risk takes into account the immediate replacement cost of the defective counterparty, as well as the risk of potential future variation of this exposure, reflecting the variability of its mark-to-market and therefore its possible drift.

Basel II provided two main approaches to estimate counterparty risks, which are explained below:

1. The fixed price version (current exposure method or CEM) which is based on a market price valuation, offering a hybrid measure between exposure to credit and volume of credit. Under Basel II accord EAD for assessing exposure to credit is calculated as follows –

$$EAD = [(RC + \text{add-on}) - \text{volatility adjusted collateral}]$$
 Where, EAD = Exposure at default
 RC = Current replacement cost;
 Add – on = estimated amount of potential future exposure under the 1988 accord as amended
 Volatility adjusted collateral = the value of collateral as specified in paragraphs 147 to 172 of the revised framework
2. The “internal models” version or IMM method which was created to enable banks to simulate mark-to-market future variations, with the objective of using such simulations both for their internal risk monitoring and for calculating regulatory capital. For finding out counterparty credit risk attached with the financial instrument, various approaches has been taken under IMM approach which are explained below:

Mark-to-Future which is calculated by valuing the instrument at each time step of a future one-year horizon Potential Positive Exposure which is calculated at each time step either as the corresponding Mark-to-Future or zero if the Mark- to-Future is negative.

Expected Exposure (EE) which is calculated at each time step as the mean of the Potential Positive Exposure profiles Expected Positive Experience (EPE) which is calculated as an average of EE throughout the one-year horizon Effective EE which is calculated at each time step as the maximum of all observed EE at each future time step between t_0 and t_i . Effective EPE which is calculated as an average of Effective EE throughout the one-year horizon.

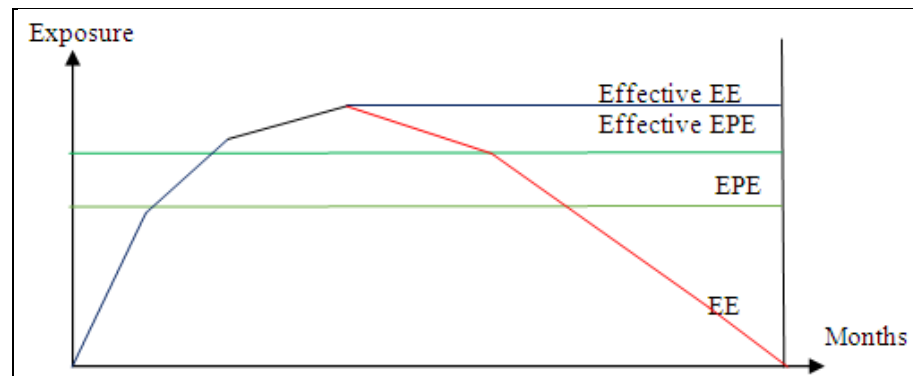


Figure 1: IMM approach of CCR measurement under Basel II accord

Source: 'Counterparty Credit risk and Basel III: A framework for successful implementation' by Accenture

IMM approach offers counterparty risk monitoring methods in a more precise, more dynamic, and closer to the economic reality of the exposures. Again the Basel II IMM approach may help provide regulatory capital savings opportunities compared to the CEM.

Indeed, to enable the calculation of capital requirements under the new accord requires a bank to implement a comprehensive risk management framework. However, these changes will also have wide ranging effects on bank's information technology systems, processes, people and business, beyond the regulatory compliance, risk management and finance functions. Though every bank has to invest lot of time, manpower and energy in the implementations of Basel II, yet it helps the banks to assess the risks associated with the business effectively. More so, it facilitates the banks to produce quantified and more realistic measure of the risk. Basel II enables the banks to handle business with more confidence and make better business decisions.

6. CCR Management under Basel III

Basel III accord was agreed upon by the members of the Basel Committee on Banking Supervision in 2010–11, and was scheduled to be introduced from 2013 until 2015; however, changes from 1 April 2013 extended implementation until 31 March 2018 and again extended to 31 March 2019. Basel III accord was developed in response to the deficiencies in financial regulation revealed by the financial crisis of 2007–08. It builds on the Basel I and Basel II documents, and seeks to improve the banking sector's ability to deal with financial and economic stress, improve risk management and strengthen the banks' transparency. A focus of Basel III is to foster greater resilience at the individual bank level in order to reduce the risk of system wide shocks.

Where the Basel I accord laid down the basis for the prudential administration of risks, and the Basel II regulation tried to deepen the micro-prudential approach for each specific risk taken by each bank; on the other hand Basel III regulation focused on securing the financial system by addressing the challenges resulting from the crisis at their origin. Keeping in mind the counterparty risk, Basel III accord puts forward some major novelty designed to achieve the following key objectives –

- Improving the quality of equity capital
- Fixing additional provisions e.g. preservation of capital, countercyclical capital, systematically important financial institutions etc. for increasing the amount of equity capital.
- Cementing the requirements related to liquidity risk management.
- Increasing the weight age of the risk level resulting from several types of assets, such as securitized collateral or assets with exposure to major financial institutions.

Basel III also introduced major additional constraints for CCR management in the light of financial crisis in 2007. Basel committee opined that two-thirds of the losses innate from counterparty risk on market transactions during the period 2007-2010 were caused by valuation discrepancies resulting from counterparty credit rating downgrades. Only one-third of those losses were due to real defaults by counterparties (BCBS, 2011)

6.1. Recommendations of the Basel III accord regarding CCR management

The Basel III accord recommends a series of proposals for new measures and adjustments to existing Basel II requirements related to CCR management. These recommendations are discussed below –

- Calibration of diffusion parameters in stressed effective expected positive exposure (EEPE) computation -

Under Basel III, the EEPE measure is computed by a "stressed" EEPE calculation based on the calibration of diffusion model parameters over a period of three years including a period of fast increases in credit spreads. The parameters are then recalibrated and used in current market situations for calculating the mark-to-future and stressed EEPE. Again, the risk-weighted assets (RWA) calculation is made twice, using both non stressed and stressed parameters. The final measure appearing in the regulatory

report is the highest one observed between non stressed RWA and stressed RWA (Basel III Paragraph II.A.1.98 on effective EPE, December 2010.)

ii. Introduction of an additional capital charge to measure the risk of change in credit valuation adjustments of a trading portfolio –

The adjustment of credit valuation (CVA) computes the market value of counterparty credit risk on the market transactions of the trading portfolio. The variability of this market value and the associated heavy losses from the financial crisis of 2008 led the Basel Committee to introduce an additional capital charge to cover the risk of change in credit valuation adjustments of a trading portfolio (BCBS, 2011). The CVA charge represents a new capital add-on for possible mark-to-market losses associated with deterioration in the credit worthiness of counterparty. Under Basel III accord a bank is not required to include in its capital charge the items like Securities financing transactions (SFT), Transactions with a central counterparty (CCP) and a client's transaction with a clearing member, when the clearing member is acting as an intermediary between the client and a qualifying central counterparty, Transactions with non-financial counterparties (NFC) below the clearing threshold.

iii. Specific wrong way risk (WWR)

Specific WWR for unfavourable correlation measures the negative correlation between the risk exposure to counterparty and its credit quality. With the help of Basel III capital requirements regulation a transaction carrying specific WWR with unfavourable correlation will have to be identified, isolated from the overall compensation node of origin and then assigned to a particular computational processing to calculate their exposure at default (EAD) [Basel III Chapter II (Risk Coverage) Paragraph A (Counterparty Credit Risk) December 2010]

iv. General Wrong Way Risk

Total risk of unfavourable correlation quantifies a systemic risk coming from the positive correlation between risk factors and counterparty credit worthiness. For instance, higher oil prices can directly lead to an increase in the probability of default of transport companies, as the value of some of their exposures increase. with the Basel III requirements, banks will not have to apply a particular action or a differentiated capital allocation for this type of risk, but they also identify such exposures through scenario analysis of market tensions, in order to point out the risk factors correlated with the credit quality of the counterparties [Basel III - Paragraph II.A.1.100: Wrong way risk, December 2010].

v. Increase the margin period of risk

The margin period of risk (MPR) is the time period overseeing the last exchange of collateral used to cover netting transactions with a defaulting counterpart and the closing out of the counterparty and the resulting market risk is re- hedged. With this indicator it is possible to create a model for assessing the change in market value of the collateral exchanged during a theoretical date of collateral exchange and the calculation date of subsequent exposure. In some situations, notably for all “illiquid” netting sets, banks will have to move from 10 days (the Basel II requirement) to 20 days of the regulatory threshold (with the possible doubling of this threshold if at least two disputes on the same set of compensation have been observed over the last six months) [Basel III - Paragraph II.A.3.103: Increase the margin period of risk, December 2010].

vi. Collateral Management

Basel III requires the application of a strengthened operational control of collateral, through the creation of a “collateral management” unit who are responsible for monitoring, reporting and analyzing received and paid collateral, including categories of collateralized assets, the amount of margin calls exchanged and the concentration, disputes, re-hypothecations and other elements.

vii. Application of a coefficient of correlation between asset values for large financial institutions

Basel III requires the use of a correlation factor greater than 1.25 times the one used in calculating the Basel II regulatory capital for assessing the credit worthiness of the institutions of significant size (e.g., those with a trading book exposure over \$100 billion). [Basel III - Paragraph II.A.2.102: Asset value correlation multiplier for large financial institution, December, 2010].

viii. Central Counterparty Clearing (CCP) Houses

Basel III accord opined that a bank is required to use a minimum risk weighting of two percent of the exposure value of all its trade exposures with the CCP. (European Parliament legislative resolution, 2013) Even if this results in a new capital charge (when compared with Basel II) Basel III intends to enhance the role and the importance of central counterparties in the OTC market. These counterparties are to serve as intermediaries between buyers and sellers of products and thus help reduce counterparty risk. The Basel Committee has therefore designed the new CCP requirements to act as an incentive to this end by ensuring OTC transactions will be more demanding in terms of capital requirements, whereas cleared derivatives contracts will tend to augment liquidity needs through initial and variation margins callable by clearing houses.

ix. Back-testing credit counterparty risk models

Basel III recommends performing initial and ongoing validation of credit counterparty risk exposure models, with a focus on the carrying out back-testing at risk factor level, pricing model level and CCR exposure model level by taking into account a number of distinct prediction time horizons out to at least one year.

7. Key Factors Necessary for Successful Implementation CCR Management as Per Basel III Accord

The regulatory authority should consider the following factors for successful implementation of Basel III CCR management

i. Due to complexity of the process, the success CCR management depends on the performance capabilities of the information system. From the early stages of the project, banks may want to consider an information system that will allow sufficient

- flexibility, offer robustness and be able to meet the performance needs resulting from more and more constrained financial closing periods.
- ii. Comprehensiveness of the scope of transactions and comprehensiveness, integrity and accuracy of the transactional data in management systems.
 - iii. Correlations between different asset classes.
 - iv. Strict separation between model design teams and model validation teams.
 - v. Special treatment of exotic products.
 - vi. Implementation of a stress-testing framework to assess the general wrong way risk.
 - vii. Comprehensiveness and historical depth of market data; and also quality and depth of historical data used for the back-testing procedure.
 - viii. Comprehensiveness, integrity and accuracy of netting and collateral contracts data.
 - ix. Operational framework and organization deployed for the detection, diagnosis and correction of discrepancies.
 - x. The bank's inspection teams and the regulator may pay special attention to data quality issues as a whole.
 - xi. Accurate estimates of the financial and human resources needed for developing a detailed budget plan for CCR management.

8. Conclusion

CCR can adversely affect profitability and financial health of banking institution. Therefore CCR management has emerged as a new and challenging area in banking industry. Basel III intended to improve safety and soundness of the financial system by placing increased emphasis on bank's own internal control and risk management process and models. To fulfil the capital requirements under the new Basel III accord, a bank has to implement a comprehensive risk management framework. However, these changes will also have wide-ranging effects on a bank's information technology systems, process, people and business, beyond and regulatory compliance, risk management and finance function. Besides application of guidelines on CCR management as prescribed by Basel III accord, each bank has to plan action beyond regulatory framework. It may be beneficial to couple the alignment to regulatory requirements with the operational improvements that can help banks cope with more and more complex and interlinked types of CCR and reducing the overall impact of market transactions' capital requirements, in a context of scarce financial resources.

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