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Chapter-5 Basics of Credit Risk

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Chapter – 5 Basics of Credit Risk

Introduction

This chapter helps in understanding the basics of credit risk. This chapter provides framework for credit risk management with examples. It also discusses the measurement methodologies of credit risk.

Learning Objective

After reading this chapter you will:

- To understand the basics of major financial risks i.e. credit risk
- To explain the various management process for risk management
- To understand the risk management framework

5.1 CREDIT RISK

It is the risk of loss of capital or any benefits from a borrower's failure to repay a loan. Credit risk represents the major risk faced by the banks and it arises from their lending activities. As defined by RBI, credit risk is defined as the possibility of losses associated with diminution in the credit quality of borrowers or counter parties. It arises when a borrower doesn't pay interest or/and installments as and when it falls due or in case where a loan is repayable on demand, the borrower fails to make the payment as and when demanded.

In addition banks also face risks caused by the concentration of their credit portfolio in certain type of loan facilities like- overdrafts, cash credit, term loans, lease/hire purchase and their heavy non-fund exposures related to letter of credit etc. For overcoming such risks banks may have to diversify their credit portfolio by fixing exposure limits and effective systems to monitor exposures periodically for initiating timely corrective actions.

The management of credit risk process should broadly cover the following:

(a) Designing a comprehensive system of risk scoring and rating of individual borrowers.

(b) Evolving procedure for measuring portfolio risk by making use of scoring/rating systems. Also measuring credit concentration under various segments of credit portfolio.

(c) Having systems of pre-sanction appraisal and post-sanction monitoring of loan accounts.

(d) Evaluating and managing credit policies and procedures which are well-defined, sensitive and responsive to changes.

Board and Senior Management's Oversight

- Board Oversight

The Board of directors has a critical role to play in overseeing the credit-granting and credit risk management functions of a banking institution. It is the overall responsibility of a banking institution's Board to approve credit risk strategy and significant policies relating to credit risk and its management which should be based on the overall business strategy. To keep it current, the overall strategy as well as significant policies has to be reviewed by the Board, preferably annually. The responsibilities of the Board with regard to credit risk management shall include to:

- Delineate banking institution's overall risk tolerance in relation to credit risk;
- Ensure that banking institution's significant credit risk exposure is maintained at prudent levels and consistent with the available capital;
- Ensure that top management as well as individuals responsible for credit risk management possess sound expertise and knowledge to accomplish the risk management function;
- Ensure that the banking institution implements sound fundamental policies that facilitate the identification, measurement, monitoring and control of credit risk;
- Ensure that appropriate plans and procedures for credit risk management are in place;
- Ensure that internal audit reviews the credit operations to assess whether or not the Institution's policies and procedures are adequate and being adhered to;
- Review exposures to insiders and their related parties, including policies related thereto;
- Ratify exposures exceeding the level of the management authority delegated to management and be aware of exposures that, while worthy of consideration, are not within the ambits of existing credit policies of the institution;
- Review trends in portfolio quality and the adequacy of institution's provision for credit losses; and
- Outline the content and frequency of management report to the Board on credit risk management.

- Delegation of Authority

Institutions are required to establish responsibility for credit sanctions and delegate authority to approve credits or changes in credit terms. It is the responsibility of institution's Board to approve the overall lending authority structure, and explicitly delegate credit sanctioning authority to senior management and the credit committee. Lending authority assigned to officers should be commensurate with the experience, ability and personal character. It would be better if institutions develop risk-based authority structure where lending power is tied to the risk ratings of the borrower. Large institutions may adopt multiple credit approvers for sanctioning such as credit ratings, risk approvals etc. to institute a more effective system of check and balance. The credit policy should spell out the escalation process to ensure appropriate reporting and approval of credit extension beyond prescribed limits. The policy should also spell out authorities for unsecured credit (while remaining within Reserve Bank of Malawi limits), approvals of disbursements of excess over limits, and other exceptions to credit policy.

In cases where lending authority is assigned to the loan originating function, there should be compensating processes and measures to ensure adherence to lending standards. There should also be periodic review of lending authority assigned to officers.

- Senior Management Oversight

Senior Management is responsible for implementing the institution's credit risk management strategies and policies and ensuring that procedures are put in place to manage and control credit risk and the quality of credit portfolio in accordance with these policies. The responsibilities of Senior Management with regard to credit risk management shall include:

- developing and establishing credit policies and credit administration procedures as a part of overall credit risk management framework for approval by the Board;
- implementing credit risk management policies;
- ensuring the development and implementation of appropriate reporting system with respect to the content, format, and frequency of information concerning the credit portfolio and the credit risk to permit effective analysis and sound and prudent management and control of existing and potential credit risk exposure;
- monitoring and controlling the nature and composition of the institution's portfolio;
- monitoring the quality of credit portfolio and ensuring that the portfolio is soundly and conservatively valued, uncollectible exposure is written off and probable losses are adequately provided for;
- establishing internal controls including putting in place clear lines of accountability and authority to ensure effective credit risk management process; and
- developing lines of communication to ensure timely dissemination of credit risk management policies, procedures and other credit risk.

Credit Strategy, Policies, Procedures and Limits

- Credit Strategy

The primary purpose of banking institution's credit strategy is to determine the risk appetite. Once it is determined, the banking institution could develop a plan to optimize return while keeping credit risk within predetermined limits. The credit risk strategy thus should spell out:

- The institution's plan to grant credit based on various client segments and products, economic sectors, geographical location, currency and maturity;
- Target market within each lending segment and level of diversification/concentration;
- Pricing strategy.

It is essential that institutions give due consideration to their target market while devising credit risk strategy. The credit procedures should aim to obtain an in depth understanding of the banking institution's clients, their credentials and their businesses in order to fully know their customers.

The strategy should provide continuity in approach and take into account cyclic aspect of country's economy and the resulting shifts in composition and quality of overall credit portfolio. While the strategy would be reviewed periodically and amended, as deemed necessary, it should be viable in long term and through various economic cycles.

- Policies

Credit policies establish framework for making investment and lending decisions and reflect an institution's tolerance for credit risk. To be effective, policies should be communicated in a timely fashion, and should be implemented through all levels of the institution by appropriate procedures. Any significant deviation/exception to these policies must be communicated to the Senior Management/Board and corrective measures should be taken. At a minimum, credit policies should include:

- General areas of credit in which the institution is prepared to engage or is restricted from engaging such as type of credit facilities, type of collateral security, types of borrowers, or geographic sectors on which the institution may focus;
- Detailed and formalized credit evaluation/ appraisal process, administration and documentation;
- Credit approval authority at various hierarchy levels including authority for approving exceptions;
- Clear guidelines for each of the various types of credits, such as loans, overdrafts, mortgages, leases, etc4.
- Concentration limits on single counterparties and groups of connected counterparties, particular industries or economic sectors, geographic regions and specific products.

Banking institutions should ensure that their own internal exposure limits comply with any prudential limits or restrictions set by the Reserve Bank of Malawi;

- Authority for approval of allowance for probable losses and write-offs;
- Credit pricing;
- Roles and responsibilities of units/staff involved in origination and management of credit;
- Guidelines on management of problem loans; and

In order to be effective, credit policies must be communicated throughout the institution, implemented through appropriate procedures, and periodically revised to take into account changing internal and external circumstances.

- Limits

An important element of credit risk management is to establish exposure limits covering on-balance sheet and off-balance sheet credit exposures for single counterparties and group of connected counterparties. The objective being to prevent institutions from relying excessively on a large borrower or group of borrowers. The size of the limits should be based on the credit strength of the counterparty, genuine requirement of credit, economic conditions and the institution's risk appetite. Limits should also be set for respective products, activities, specific industry, economic sectors and/or geographic regions to avoid concentration risk.

Credit limits should be reviewed regularly at least annually or more frequently if counterparty's credit quality deteriorates. All requests of increase in credit limits should be substantiated.

Implementation challenges in credit risk

Cost of implementation - Even though a cost-benefit assessment of the framework's implementation will vary by country, the operational requirements (especially for the IRB Approach) will likely be prohibitively expensive for many smaller developing countries. Large international banks are already closer to the adoption of Basel II - compatible risk management systems and can spread the costs over a larger asset base.

Inadequate supervisory capacity- The greater burden and wide discretion placed on them by Pillars 1 (e.g. model validation) and 2 (e.g. treatment of other risks) will stretch scarce

supervisory resources and will require a step-up improvement in available skills and information technology. Even when supervisors build up required skills, it is likely that many of them will be poached by domestic banks that are eager to adopt these new risk management tools and able to provide them with higher salaries–an unfortunate consequence of the fact that regulators often drive (rather than respond to) change in many developing countries.

Impact on domestic banking systems is not fully understood - Firstly, there will likely be a redistribution of capital requirements within and across banks depending on their individual customer, product, and portfolio mixes; the dislocation in bank behavior that may result from this redistribution has not generally been sufficiently studied or considered. Secondly, smaller domestic banks will likely be at a competitive disadvantage since they will only afford to adopt less sophisticated (and more capital-onerous) approaches to credit risk and will probably be subject to moral hazard (attracting riskier assets) because of their inability to properly differentiate and price for risk. Thirdly, to the extent that they are not already operating under an economic capital framework, a few less sophisticated foreign banks may cut back/refocus their exposures to some developing countries in response to the revised capital requirements

Home-host supervisory coordination - Given the significant presence of G-10 banks in developing countries and the considerable discretion given to national supervisory authorities, a significant degree of home – host cooperation is essential to ensure consistency across jurisdictions. Alternatively, a concerted approach could be established whereby the two regulators agree on a single set of supervisory adopt the IRB Advanced Approach.

5.2 Credit Risk Management

a) As in case of market risk management, credit risk management also involves finding answers to four key questions:

b) What are the risks?

c) Which, when and how much risk to accept that will result in improving the bottom-line?

d) How can we monitor and control credit risk?

e) Can we reduce risk? If so, how?

Accordingly, credit risk management processes are sub-divided into following four parts:

i. Credit Risk Identification

Credit risk arises from potential changes in the credit quality of a borrower. It has two Components:

Default Risk: Default risk is driven by the potential failure of a borrower to make promised payments, either partly or wholly. In the event of default, a fraction of the obligations will normally be paid. This is known as recovery rate.

Credit Spread Risk/ Downgrade Risk*:* If a borrower does not default, there is still risk due to worsening in credit quality. This results in the possible widening of the credit-spread. This is credit-spread risk. These may arise from a rating change (upgrade or degrade). It will usually be firm specific.

Default risk and credit-spread risk are transaction level risks. Risks associated with credit portfolio as a whole is termed as *Portfolio Risk.* Portfolio risk has two components:

- *Systematic or Intrinsic Risk*
- *Concentration Risk*

ii. Credit Risk Measurement

Measurement of Credit risk consists of:

- Measurement of risk through credit rating/scoring;
- Quantifying the risk through estimating expected losses i.e. the amount of loan losses that a bank would experience over a chosen time horizon and unexpected loan losses i.e. the amount by which actual losses exceed the expected losses.

Credit Rating

Credit rating of an account is done with primary objective to determine whether the account, after the expiry of a given period, would remain a performing asset i.e. it will continue to meet its obligation to its creditors, including Bank and would not be in default. There is no mathematical/economic/empirical model, which can predict the future capability of a borrower to meet its financial obligations accurately. Regulatory authority i.e. RBI has also issued necessary instructions and guidance notes emphasizing upon banks to apply credit rating to their borrowers and classify them category wise. The banks are also advised to maintain necessary data on defaults of borrowers rating category wise. This would help to manage credit portfolio in a proactive manner.

To enable the banks to manage credit portfolio, they must have a Credit Rating Model. A firm where there is a reasonable level of security, as being classified with a credit rating of triple B (BBB) or above is defined as 'Investment grade'. The best rated credit are defines as Triple A (AAA). Firm credit below triple B that is double B (BB) or below is defined as 'Speculative grade'.

Credit Rating Model*:* Credit rating model essentially differentiates the borrowers based on degree of stability in terms of top line (e.g. sales) and bottom-line (net profit) revenue generation. There are various credit rating models in the market. Some of them are explained in brief here under:

a) **Credit Metrics:** J P Morgan developed this tool in 1997. They proposed a rating system where the ratings of the various firms (investment options) are expected to change in the specified time period. It is the tool for assessing portfolio risk due to changes in debt value caused by changes in obligor credit quality. The probability that they will change is also given, for each rating transition (i.e., if a firm is now rated A, the probabilities of it changing to AA, AAA, BBB, BB, B and lower are all given). Credit Risk is then calculated based on these probabilities and the total exposure. Credit Metrics will be useful to all companies worldwide that carry credit risk in the course of their business. It provides a methodology to quantify credit risk across a broad range of instruments, including traditional loans, commitments and letters of credit; fixed income instruments; commercial contracts such as trade credits and receivables; and market-driven instruments such as swaps, forwards and other derivatives.

It evaluates credit risk by predicting movements in the credit ratings of the individual investments in a portfolio. Credit Metrics consists of three main components:

i. Historical data sets

ii. A methodology for measuring portfolio Value at Risk (VAR)

iii. A software package known as Credit Manager.

Credit Metrics™ measures changes in portfolio value by predicting movements in a debtor's credit ratings and accordingly the values of individual portfolio investments. After the values of the individual portfolio investments have been determined, Credit Metrics™ can then calculate the credit risk.

b) **Credit Risk+:** First Boston Credit Suisse developed it in 1997. In this approach, the only states considered are default and no default. In this methodology the distribution of possible credit losses from a portfolio is calculated. The format of the methodology is a spreadsheet that is fast and easy to use. Data requirements for the calculation are: loss given default for each asset, estimated default probabilities and the volatilities of the asset values. The portfolio is divided into sectors, and the correlation between the sectors is found. The volatility of the default rate is calculated based on the correlation between these sectors.

When estimating credit risk, Credit Risk+ considers:

- credit quality and systematic risk of the debtor
- size and maturity of each exposure
- concentrations of exposures within a portfolio

Credit Risk+ accounts for the correlation between different default events by analyzing default volatilities across different sectors, such as different industries or countries. This method works because default is often related to the same background factors, such as economic downturn.

The severity of losses is modeled by sorting assets by severity bands. For example, loans around USD 2,000 would be the first band; loans around USD 40,000 would be the second

band. A distribution of losses would be obtained for each band. Both Risk Metrics and Credit Risk + assume that there is no market risk faced by the investment.

c) **KMV:** Moody's KMV developed the Expected Default Frequencies (EDF), which is based on Merton's option pricing model. The firm defaults when the value of assets falls below a certain level. But as an end product, it comes up with the expected default frequency (EDF) (i.e. the probability of default). Much of the workings of the KMV approach are proprietary and available only to KMV customers. This model generates an estimated default frequency based on the distance between the current value of assets and the default point. This distance represents the deviation from the mean. The model assumes that the corporation is financed through single zero-coupon debt maturing at time t and single equity paying no dividends. This model has been extensively used by financial institutions and institutional investors for modeling and estimating credit risk.

Default happens when the value of assets falls below a certain value, called the 'default point'. (The 'default point' under KMV is not the same as the point where the value of the assets falls below the value of the total debt.) Over time, the assets of the firm will earn a certain return and trend with a given mean and volatility. Under KMV, the value of the firm's assets is assumed to be log-normally distributed, i.e. the returns on the assets are normally distributed

View: McKinsey developed credit Portfolio View in 1997. It considers the state of the economy as a part of the assessment model; the assumption is that the default rates increase during recessions. The recovery rates for each borrower are calculated based on the factors like country, industry and rating. Then the portfolio loss distribution is constructed (the frequency table of the possible losses), from which the exposure of the firm is estimated.

There are essentially three steps to the credit risk assessment process under the KMV approach

- Determine the value of assets (V) and their volatility (σ).
- Calculate the 'distance to default' (DD)
- Determination of the EDFs

Rating Migration*:* Rating migration is the change in the rating of a borrower over a period of time when rated on the same standard or model. For example, say a borrower X is rated as B+ based on its position as on 31-3-07. the same company is again rated as on 31-3-08 based on its position as on that date, its rating say comes to B. then we say that the rating of the account has migrated from B+ to B over one year period.

iv. Credit Risk Monitoring and Control

Risk taking through lending activities needs to be supported by a very effective control and monitoring mechanism, firstly because this activity is widespread, and secondly, because of very high share of credit risk in the total risk taking activity of a bank. This is also important to achieve the desired portfolio. Consequently, credit risk controlling and monitoring is directed both at transaction level and portfolio level.

v. Credit Risk Mitigates

Credit risk mitigation means reduction of credit risk in an exposure by a safety net of tangible and reliable securities including third-party approved guarantees/insurance. Banks use a number of techniques to mitigate the credit risks to which they are exposed. Exposures may be collaterized by first priority claims, in whole or in part with cash or securities, a loan exposure may be guaranteed by a third-party, or a bank may buy a credit derivative to offset various forms of credit risk.

The various credit risks mitigates laid down by Basel Committee are as follows:

1) Collateral (tangible, marketable) securities
2) Guarantees
3) Credit derivatives™
4) On-balance-sheet netting

The extent to which a particular credit risk mitigant helps depends on the quantum of exposure, or the strength of the mitigant. There are certain conditions to be met for the use of credit risk mitigants, which are as follows:

- All documentation used in collateralized transactions and for documenting on-balance-sheet netting, guarantees, and credit derivative must be binding on all parties and must be legally enforceable in all relevant jurisdictions.

- Banks must have properly reviewed all the documents and should have appropriate legal opinions to verify such, and ensure its enforceability.

Credit Risk Framework under Basel II

In contrast to Basel I that applies a "one size fits all" approach to all bank, Basel II offers a menu of options under Pillar 1 for calculating the credit capital requirements of banking book exposures.

In particular, two main methodologies can be used for most exposures: the Standardized Approach and the Internal Ratings Based (IRB) Approach; securitization exposures are subject to a separate (but similar) capital treatment. Each approach has different characteristics and requirements that are briefly described below.

1) Standardized Approach

This approach measures credit risk similar to Basel I, but has greater risk sensitivity because it uses the credit ratings of external credit assessment institutions (ECAIs) to define the weights used when calculating RWAs. National supervisors are responsible for recognizing ECAIs in accordance with specific eligibility criteria (e.g. objectivity, independence, disclosure of methodologies etc.) mentioned in the document, as well as for mapping their assessments to the risk weights available.

The minimum capital requirements for credit risk in Basel I and Basel II are set according to the following formulas:

$$\sum_{n} RW(i) \times A(i) = RWA \qquad (1)$$

$$RWA \times 0.08 = RC \qquad (2)$$

Where

RW (I) = risk-weight attached to asset "i" A

A (i) = asset "I" (i= 1, 2,)

RWA = Risk weighted Assets

RC = Regulatory capital

As shown in formula (2), the minimum amount of regulatory capital that a bank must hold for credit risk is equal to 8% of its risk-weighted assets. The key difference between Basel I and the standardized approach to credit risk in Basel II is the choice of the risk-weights (RW) in formula (1). While Basel I only recognizes a simple.

- Credit exposures to be categorized based on observable characteristics of the exposures (e.g. whether the exposure is a corporate loan or a residential mortgage loan).
- Fixed risk weights corresponding to each supervisory category
- Differentiated risk weights for supervisory categories - sovereign, interbank, and corporate exposures - based on external credit assessments.
- For sovereign exposures, these credit assessments may include those developed by OECD export credit agencies, as well as those published by private rating agencies.
- National supervisors to determine eligibility of a particular source of external ratings
- Where no external rating is applied, mostly a risk weighting of 100% be used, implying a capital requirement of 8%
- Past-due Loans not specifically provided to be risk weighted at 150%
- Banks may recognize the expanded range of "credit risk mitigates" (collateral, guarantees, and credit derivatives)
- Specific treatment for retail exposures. Lower risk weights for residential mortgage and other retail exposures than for unrated corporate exposures. Subject to meeting various criteria some loans to small and medium sized enterprises (SMEs) to be included within the retail treatment.
- Distinctions between exposures and transactions in an effort to improve the risk sensitivity of the resulting capital ratios.

2) IRB Approach

The IRB Approach is a more sophisticated methodology, since it is primarily based upon the credit risk building blocks described in the previous section. Subject to certain minimum conditions and disclosure requirements, this approach relies on banks' own internal estimates of certain risk parameters to determine credit capital requirements. However, the

capital figure itself is still derived from a supervisory formula provided by the Basel Committee that has been calibrated to reflect the risk of specific asset types and to ensure that overall capital levels in G-10 countries remain broadly unchanged.

- Risk components – estimates of risk parameters (PD, LGD, EAD, effective maturity) that can be calculated by banks themselves or provided by supervisors.
- Risk-weight functions – the formulas by which risk components are transformed into risk-weighted assets and therefore capital requirements
- Minimum requirements – minimum standards for a bank to use the IRB approach for a given asset class.

Banks' internal assessments of key risk drivers serve as primary inputs to the capital calculation. Four quantitative inputs are:

I. Probability of default (PD), which measures the likelihood that the borrower will default over a given time horizon
II. Loss given default (LGD), which measures the proportion of the exposure that will be lost if a default occurs
III. Exposure at default (EAD), which for loan commitments measures the amount of the facility that is likely to be drawn if a default occurs
IV. Maturity (M), which measures the remaining economic maturity of the exposure.

Securitization

Securitization refers to a transaction where financial securities are issued against the cash flow generated from a pool of assets. Cash flow arising out of payment of interest and repayment of principal are used to service the interest and repayment of financial securities. Usually a SPV- Special Purpose Vehicle is created for the purpose. Originating bank i.e. the bank which has originated the assets transfers the ownership of such assets to the SPV. SPV issues financial securities and has the responsibility to service interest and repayments on such financial instruments.

The framework includes a Standardized and an IRB Approach for securitization exposures, depending on the method by which the underlying exposures are treated. The former

approach applies ECAI assessments that are generally mapped to risk weights, with specific treatment applied to unrated securitization exposures, credit risk mitigates and early amortization features. The latter approach utilizes three different methods to derive regulatory capital requirements:

- **Ratings-Based Approach** (RBA) for rated exposures, or where a rating can be inferred (subject to specific operational requirements); the risk weights depend on the external/inferred rating, whether the rating is long-or short -term, the granularity of the underlying pool and the seniority of the position

- **Internal Assessment Approach for asset** - backed commercial paper – related exposures such as liquidity facilities and credit enhancements; banks can use (subject to specific operational requirements) their internal credit assessments of such exposures, which must be mapped to equivalent external credit rating agency ratings in order to determine the appropriate RBA risk weights to use.

- **Supervisory Formula** in all other instances; this is based on five bank – supplied inputs (IRB capital charge had the underlying exposures not been securitized, the tranche's credit enhancement level and thickness, and the pool's effective number of exposures and weighted average LGD).

For a bank using the IRB Approach, the maximum capital requirement for its securitization exposures is equal to the IRB capital requirement that would have been assessed against the underlying exposures had they not been securitized. In the process the originating bank transfers credit risk to the investors. A bank may also become an investor in a securitization transaction and may acquire credit risk.

Securitization exposures include Asset-backed securities, Mortgage-backed securities, credit enhancements, liquidity facilities, interest rate or currency swaps, credit derivatives and trenched cover.

5.3 Credit Derivatives

Credit derivatives are financial derivatives designed to transfer the credit risk of one counter party to another. Credit risk arises mainly due to the default of the debtor or due to the deterioration of the credit quality of the debtor. During the incidence of such risk the creditor only receives the amount that can be recovered from the debtor. Therefore it becomes essential for the investors to assess and mitigate credit risk through hedging strategies. Credit derivatives are the outcome of such efforts intended to dilute the effects of credit risk. The objective behind many credit derivatives is to separate market risk from credit risk. This effectively reduces a bank's exposure and its risk of loss. These are over-the-counter derivatives.

The mechanism of credit derivative (CD) can be explained as follow:

Under a CD transaction, *Protection Buyer* (PB, generally the Originator of credit assets) enters into an agreement with the *Protection seller* (PS), whereby the PB transfers the *Credit Risks* with reference to a "*Notional Value*" of the *Reference Obligation* (credit asset) to the PS, by agreeing to pay regular *Premiums* to the PS. In the instance of a *Credit Event* (delinquencies, default, foreclosure, prepayments, etc. as agreed upon in the contract) taking place with respect to the reference obligation, there is a *Settlement* between them, whereby the PS compensates the PB for the losses incurred as a result of the event.

The settlement can be "Physical Settlement" or "Cash Settlement". Under a physical settlement, the PB delivers the reference asset to the PS and in return the PS pays the par value plus accrued interest of the reference asset. In a Cash settlement the PS pays the PB the loss suffered (i.e. the difference between the par value plus accrued interest and the market value of the defaulted reference obligation or the estimated recoveries).

There are many credit risk mitigation derivatives but the three main structures which are mostly used are:

i. Credit Default Swap

It is the swap used to transfer the credit of fixed income products between parties. CDS is the simplest and the most popular form of credit derivative under which the protection

buyer (PB) agrees to pay regular premium to the protection seller (PS) for buying protection against the reference obligation. The premium is based on certain basis points of the notional value for which the protection is bought the instance of the credit event. The reference obligation may be a single reference obligation or a portfolio of obligations. The portfolio can again be static or dynamic. In case of portfolio of obligations the swap is called as *Portfolio swap.* If the premiums under the CDS are paid in advance at the time of entering into the contract, the transaction takes the form of an option contract and is termed as Credit Default Options.

ii. Total Rate of Return Swap

These are the agreements where two parties exchange periodic payments based on some notional principal amount over the life of the agreement. One party of the agreement makes payments based upon the total return of a specified asset (which can be anything including indexed instruments) and the other makes fixed or floating payments.

In a TRS, the PB swaps with the PS, total actual return (coupon capital appreciation/depreciation) on an asset in return for a premium. The premium is arrived at by adding a spread to a reference rate like LIBOR. This in a TRS, protection seller is able to synthetically create an exposure to the reference asset without actually lending to it.

iii. Credit Linked Notes (CLN)

CDS are generally off balance sheet items and are unfounded. CLNs on the other hand are on balance sheet equivalents of a CDS which combines credit derivative to normal bond instruments. It thus converts credit derivatives (generally an OTC instrument) into a capital market instrument. Under it, the protection buyer is an SPV. These SPV raises money issuing CLNs in the market. The SPV also enters into a credit derivative with the protection buyer. If the credit event takes place, the proceeds from CLNs are used to make payments to the PB for the losses and the balance is paid back to the investors. In case, no credit event takes place then the yield that an investor gets is equal to the sum of the returns on collateral plus premium received by the PB.

Major exposures

- Corporate, interbank and sovereign exposures
- Retail Exposures
- Specialized lending
- Equity Exposures

1) **Corporate, interbank and sovereign exposures -** Relies on four quantitative inputs-

   PD Provided by bank based on own estimates

   LGD Supervisory values set by the Committee

   EAD Supervisory values set by the Committee

   M Supervisory values set by the Committee or at national discretion, provided by bank based on own estimates (with an allowance to exclude certain exposures).

2) **Retail Exposures-** The key inputs PD, LGD and EAD are all to be provided by the bank based on its internal estimates. Estimates for pools of similar exposures than for individual exposures. Retail exposures are divided into three primary categories:

   I. Exposures secured by residential mortgages
   II. Qualifying revolving retail exposures (QRRE) - unsecured revolving credits that exhibit appropriate loss characteristics, including credit card relationships
   III. 'Other retail' - other non-mortgage consumer lending including exposures to small businesses. A separate risk-weight formula for each of the three categories is provided.

3) **Specialised lending -** It Refers to financing of individual projects where the repayment is highly dependent on the performance of the underlying pool or collateral as distinguished from other forms of corporate lending 'High volatility commercial real estate' (HVCRE), banks to use a more conservative risk weight formula Banks that cannot estimate the required inputs will classify their HVCRE exposures into five grades, for which the accord provides specific risk weights.

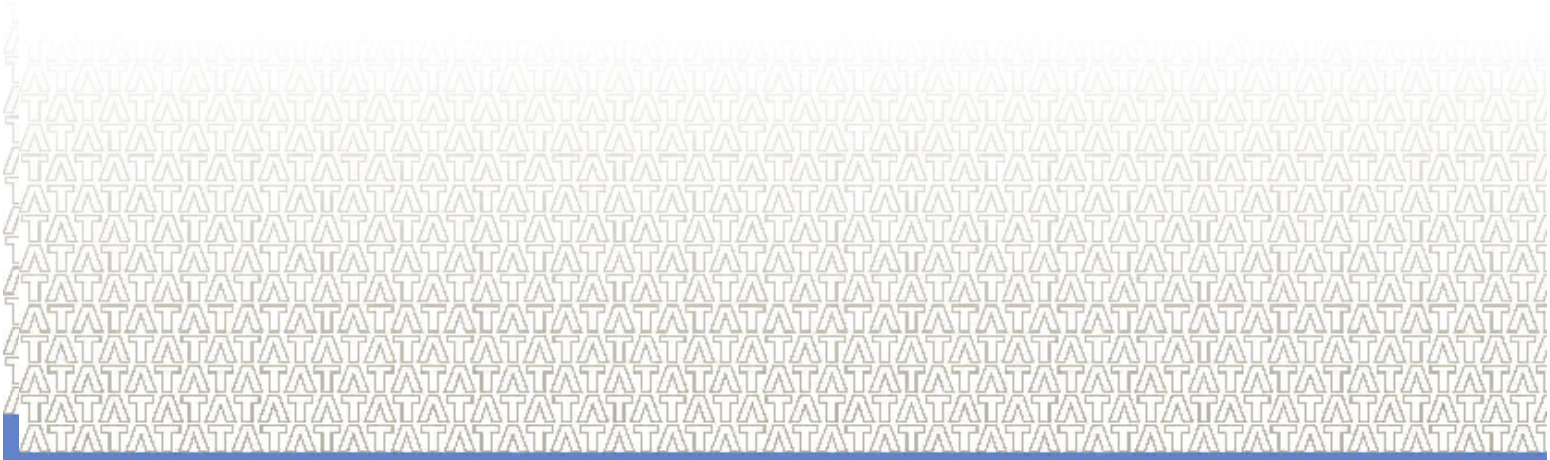
4) **Equity Exposures -** There are two distinct approaches. One approach builds on the PD/LGD approach for corporate exposures and requires banks to provide own PD estimates for the associated equity exposures. This approach, however, mandates the use of a 90% LGD value and also imposes various other limitations, including a

minimum risk weight of 100% in many circumstances. The other approach is intended to provide banks with the opportunity to model the potential decrease in the market value of their equity holdings over a quarterly holding period.

- Treatment of Credit Risk Mitigates
- Specific treatment of Securitisation

Summary

- Credit risk is defined as the possibility of losses associated with diminution in the credit quality of borrowers or counter parties.
- Credit has two components: Default risk and Credit Spread risk
- Default risk is driven by the potential failure of a borrower to make promised payments, either partly or wholly.
- Default risk and credit-spread risk are transaction level risks
- Risks associated with credit portfolio as a whole is termed as *Portfolio Risk.*
- Rating migration is the change in the rating of a borrower over a period of time when rated on the same standard or model.
- Credit risk mitigation refers to the process through which credit risk is reduced or it is transferred to a counter party.
- Securitization refers to a transaction where financial securities are issued against the cash flow generated from a pool of assets.
- Credit derivatives are financial derivatives designed to transfer the credit risk of one counter party to another.
- There are many credit risk mitigation derivatives but the three main structures which are mostly used are CDS, TRS and CLN.



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