FRM Part II Exam

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Study Notes - Credit Risk Measurement and Management

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Reading 1: Fundamentals of Credit Risk

After completing this reading, you should be able to*:*

- Define credit risk and explain how it arises using examples.
- Explain the distinctions between insolvency, default, and bankruptcy.
- Identify and describe transactions that generate credit risk.
- Describe the entities that are exposed to credit risk and explain circumstances under which exposure occurs.
- Discuss the motivations for managing or taking on credit risk.

What is Credit Risk?

Credit risk is defined as the probability of a financial loss resulting from a counterparty's failure to fulfill its financial obligations. This risk is inherent in any transaction where there's a possibility that the other party, known as an obligor, may be unable or unwilling to make payments as promised or on time. Credit risk arises from various contractual obligations, which may not always be formalized in writing; verbal contracts can also be legally binding in many jurisdictions.

The following are examples illustrating how credit risk emerges:

- **Defaulting on borrowed funds**: A company may resort to borrowing for various reasons such as expansion or operational needs. However, when the anticipated cash flows are not realized due to factors like lower-than-expected revenues or higher operational costs, the company may face difficulties in repaying the borrowed funds. This scenario, often a result of insufficient operational cash flows, leads to defaulting on financial obligations. A case in point involves a tech company borrowing for R&D; if the new product fails to meet market expectations, the revenue generated might not suffice to cover the loan repayments, resulting in default.

- **Obsolete services**: In the dynamic business environment, services or products can quickly become outdated, leading to a steep decline in demand. Companies that fail to innovate or adapt to market changes might see their revenues plummet, making it challenging to cover operational and financial costs. An illustrative example is a company specializing in physical media entertainment (like DVDs or CDs) which, due to the proliferation of digital streaming services, finds itself struggling to generate sufficient revenue to sustain its business operations.

- **Uninsured catastrophic events**: Entities might face substantial setbacks due to catastrophic events such as natural disasters, pandemics, or large-scale industrial accidents. If such incidents are not covered by adequate insurance, the financial burden of recovery falls entirely on the entity, potentially leading to financial distress. For example, an agriculture-based business severely affected by unexpected and uninsured climatic events may find it extremely challenging to recover due to the high costs of rebuilding and the loss of crops, leading to financial instability.

- **Governmental interference**: The financial well-being of businesses, especially those engaged in international transactions, can be heavily influenced by governmental actions. Policies enforcing sudden currency conversion or unexpected regulatory changes can significantly disrupt financial stability. A case in point is the "pesification" in Argentina in 2002, where the government mandated the conversion of dollar-denominated accounts into Argentine pesos at unfavorable rates. This move led to a substantial reduction in the value of US dollar-denominated assets and an increase in the local currency cost of foreign debts, severely affecting the financial health of companies operating in Argentina.

Insolvency, Default, and Bankruptcy

Credit risk management necessitates a comprehensive understanding of the terms and conditions associated with financial distress. Insolvency, default, and bankruptcy are three pivotal concepts that represent various stages or facets of financial difficulty.

Insolvency: The Starting Point of Financial Distress

Insolvency marks the initial phase of financial distress. It is a condition where an obligor's liabilities surpass its assets, rendering them incapable of meeting their financial obligations. It's crucial to note that while insolvency often precedes bankruptcy, the two terms are not interchangeable. Insolvency refers to a financial state, a precursor that may or may not lead to the legal proceedings of bankruptcy. This condition can be triggered by various factors, including poor cash flow management, rapid business expansion without adequate returns, or a significant drop in market demand for products or services.

Default: The Failure to Meet Obligations

Default occurs when an obligor fails to fulfill their contractual commitments. This could be a result of not making a scheduled payment, breaching a covenant, or violating other terms set within a financial agreement. Default is often associated with insolvency, where the entity does not possess sufficient resources to honor its debts. However, it's important to acknowledge that default can also arise from illiquidity issues, where the obligor holds assets but cannot liquidate them swiftly enough to meet immediate financial demands. This distinction underscores the complexity of default, where factors beyond mere asset deficiency come into play.

Bankruptcy: Legal Intervention and Outcomes

Bankruptcy represents the legal culmination of financial distress. It ensues when an obligor, unable to fulfill its obligations, seeks legal protection under specific bankruptcy laws, such as Chapter 11 or Chapter 7 in the United States. This process involves a court reviewing the financial situation of the defaulting entity and initiating negotiations among stakeholders, including management, creditors, and sometimes shareholders. The primary aim is to devise a viable recovery plan, which may involve asset liquidation or restructuring of financial arrangements. The court's intervention is a critical juncture, seeking to balance the interests of all parties involved and, wherever possible, to salvage the business by reorganizing its debts and operations.

Transactions that Generate Credit Risk

Understanding the evolution and variety of transactions that generate credit risk is pivotal for modern credit risk management. Historically, the identification of credit risk was relatively straightforward, involving direct exchanges of cash or products. However, the landscape of credit risk has significantly diversified, especially with the advent of modern banking products.

- **Traditional credit risk transactions:** In the past, credit risk was predominantly associated with direct financial transactions, such as lending money or selling products on credit. The primary focus was on the subsequent payment obligations. The risk was explicit and apparent: there was a chance that loans would not be repaid or products would not be paid for. Credit risk management revolved around monitoring and managing these direct exchanges.

- **Modern credit risk transactions:** Contemporary banking products have revolutionized the spectrum of transactions that create credit risk, often without the traditional exchange of goods or cash. Notably, derivative transactions like interest-rate swaps or foreign-exchange futures do not involve an upfront cash outflow but entail future financial commitments based on the market value of an underlying product, such as exchange rates. These sophisticated transactions can generate substantial credit exposure, mirroring the outcomes of a traditional loan in terms of potential financial loss due to counterparty distress.

Let’s now look at some of the most common transactions that generate credit risk, in greater detail:

Loan Commitments and Financial Guarantees

Loan commitments and financial guarantees entail a promise to lend funds in the future, contingent upon certain conditions. The primary risk arises if the borrower's financial situation deteriorates, increasing the likelihood of default. For instance, a bank may extend a line of credit to a company based on its current financial health. If the company's operations subsequently suffer, impacting its revenue and cash flow, the bank faces increased credit risk should the company draw on the line of credit.

Leasing Arrangements

Leasing involves an entity (the lessor) making an asset available to another (the lessee), who commits to regular future payments. The lessor often finances the leased asset and relies on the lessee's payments to service this debt. The credit risk materializes if the lessee fails to make timely payments, potentially due to business downturns or inefficient management, impacting the lessor's ability to meet its financial obligations.

Trade Receivables

This type of transaction occurs when a seller provides goods or services without immediate payment, sending an invoice to be paid within a set period. The risk lies in the buyer failing to fulfill the payment, affecting the seller's cash flow and financial planning. An example could be a manufacturing company shipping goods to a retailer with a 30-day payment term, during which the retailer experiences a significant drop in sales and struggles to pay the invoice.

Bank Deposits

Depositors face credit risk when they place their money in a bank. If the bank encounters financial difficulties and becomes unable to return the deposited funds, depositors bear the loss. The credit risk is particularly pronounced during financial crises, where even large and seemingly stable financial institutions may become insolvent.

Insurance Policies

Policyholders face credit risk if the insurer becomes unable to meet its claim obligations. This can happen if the insurer has underpriced its policies or has not managed its investment portfolio effectively, leading to insufficient reserves to cover the claims. A real-world example is the failure of insurance companies during natural disasters when the volume and value of claims can far exceed the insurer's expectations and reserves.

Securities Lending and Repurchase Agreements

These transactions involve the exchange of cash or securities with a commitment for a future reversal. Credit risk arises if one party fails to comply with the terms, for instance, by not returning the securities, or not paying the agreed amount of cash at the end of the agreement. The risk is amplified if the value of the securities fluctuates significantly during the term of the agreement.

Derivative Exposures

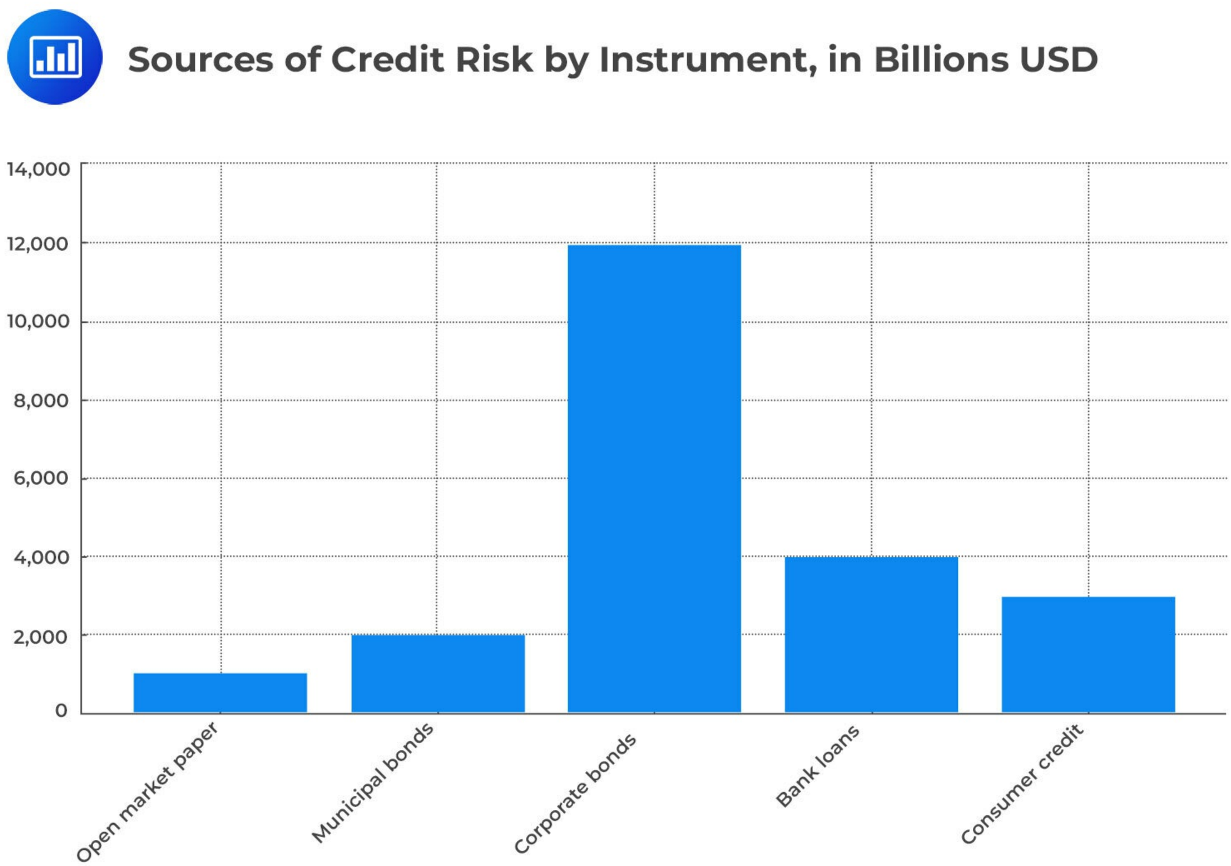
Derivatives such as interest rate swaps, foreign exchange futures, or credit default swaps, involve commitments based on future market conditions. The credit risk lies in one party failing to honor their financial obligation, which can be influenced by changes in market rates, currency exchange rates, or the creditworthiness of referenced entities. A notorious example is the 2008 financial crisis, where the collapse of the housing market led to massive losses for holders of mortgage-backed securities and related derivatives.

In each of these transactions, the common element is the uncertainty regarding the counterparty's ability to fulfill its obligations, underlining the multifaceted nature of credit risk. Effective credit risk management, therefore, requires a deep understanding of the specific risks associated with each type of transaction, combined with rigorous assessment and monitoring practices.

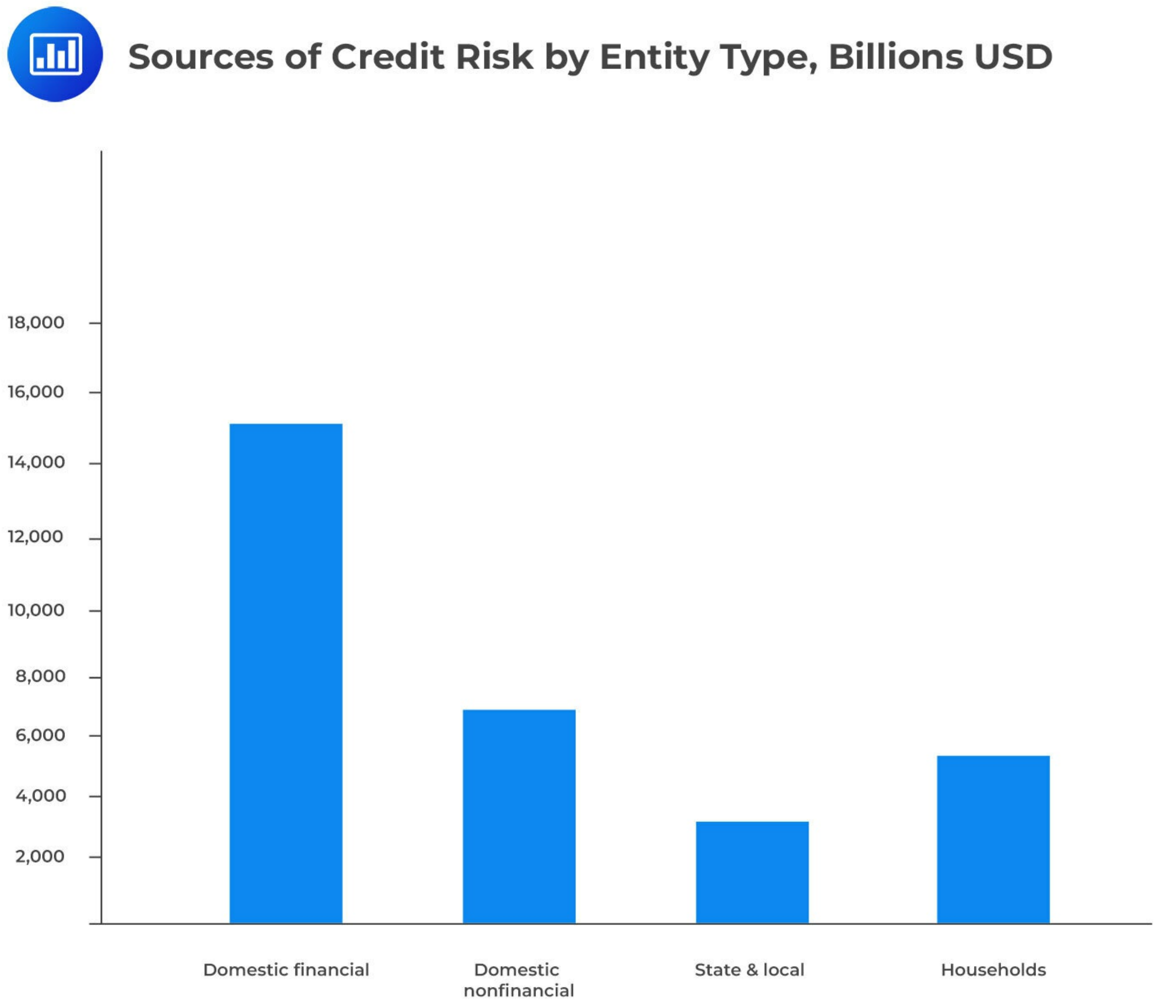
Entities Subject to Credit Risk

Credit risk exposure affects all institutions and individuals, either by choice or circumstance. Banks and hedge funds actively engage in and profit from managing credit risk, while individuals may invest in fixed income bond funds for higher returns compared to U.S. Treasury bonds. For industrial corporations and service companies, credit risk is an inevitable result of selling goods or services without upfront payments, making it a by-product of their core operations.

The credit risk exposure in U.S. borrowing instruments as of September 30, 2020, was primarily dominated by corporate obligations, despite the presence of roughly $55.5 trillion in debt outstanding in the markets. This figure encompasses instruments typically not associated with credit risk, such as U.S. Treasury obligations and government-sponsored enterprise (GSE) securities. When considering credit risk, the majority is rooted in the corporate sector, specifically in corporate bonds, bank loans, and commercial paper. These instruments reflect the extensive role of corporations in the credit market, underscoring the significance of understanding these elements for comprehensive credit risk assessment.



The next graph shows the sources of credit risk exposure by entity type, highlighting that financial corporations contribute substantially more to credit risk than nonfinancial corporations and households combined. This demarcation is significant, especially considering that forms of borrowing like federal government debt and majority of household-mortgage debt (mainly agency-backed) are not included in this categorization, owing to their perceived low or negligible credit risk exposure. This distinction accentuates the pivotal role of financial corporations in the credit market landscape and underlines the need for nuanced understanding and management of credit risk within this sector.



Banks

Banks are primary players in the credit risk landscape due to their central role in providing loans and other credit facilities. They are exposed to credit risk through various activities, such as direct lending, issuing letters of credit, and even through off-balance-sheet activities like loan commitments and financial guarantees.

The traditional banking model relies heavily on understanding and managing this type of risk. Banks earn their income predominantly through the interest they charge on loans, which compensates them for the credit risk they assume. If a borrower defaults, it can lead to a direct financial loss for the bank. Therefore, they employ rigorous credit assessment procedures when deciding to grant credit and continuously monitor the creditworthiness of their borrowers.

Moreover, banks are required to hold a certain level of capital reserves as part of regulatory requirements like the Basel Accords, which provide a buffer in case of loan defaults. Advanced risk management teams within banks use various measures, including credit scoring models and risk ratings, to manage their portfolio exposure. The health of a banking institution is often tightly linked to its ability to manage credit risk effectively.

Asset Managers

Asset managers handle the mobilization and investment of funds on behalf of individuals and institutions, aiming to fulfill specific investment goals and risk-return preferences. For instance, conservative investors may choose money-market funds that have minimal credit risk exposure, while other investors might be inclined toward mutual funds specializing in equities or high-yield debt instruments.

Due to the sheer volume of assets under management, firms like Blackrock and Vanguard Group are exposed to significant credit risk on behalf of their clients. The investment choices made by asset managers must carefully consider the creditworthiness of corporate and sovereign entities to protect the performance of the funds they manage. Asset managers’ ability to gauge and manage credit risk is integral to maintaining investor confidence and ensuring the sustainability of their investment strategies.

Hedge Funds

Hedge funds, with their large investment pools, face substantial credit exposure daily. Their investors typically have a higher risk appetite, looking for aggressive returns, and therefore, hedge funds are known to invest in a range of riskier financial instruments, often beyond the traditional asset manager's reach.

They contribute to the liquidity of the financial markets by partaking in a variety of transactions that enable the transfer of risk. For example, hedge funds might engage in buying distressed loans or selling credit protection, activities that require sophisticated risk management measures. Given their role in financial markets, hedge funds must maintain a robust credit risk management practice to safeguard investor capital against potential losses.

Insurance Companies

For an insurance company, managing credit risk is about balancing the expected return, which might favor shareholders, and maintaining a low-risk profile to reassure policyholders. They have to manage portfolios comprising a mix of safe, low-yield investments, like Treasury bonds, and riskier, higher-yielding assets.

Insurance companies use dedicated teams to handle their credit risk management, assessing and monitoring the credit positions they hold, even when these assets are managed by third-party asset managers. For life insurance companies, in particular, they also manage policyholder money in separate accounts, which requires a fiduciary duty of care similar to that of asset managers.

Corporates

Corporations outside the financial sector also face credit risk, mainly through their receivables — the money owed by customers who buy goods or services on credit. Companies must continually assess the creditworthiness of their clients and manage the risk that customers might not pay their invoices.

Additionally, corporates may hold deposits across multiple banks to reduce their exposure to any one institution's failure. And for some industries, engaging in derivative trading, such as commodity futures, introduces an additional layer of credit risk. This necessitates a strategic approach to credit risk management to safeguard the firm’s financial health.

Individuals

Credit risk also impacts individuals, especially those who invest in various financial instruments seeking higher returns than those offered by risk-free government bonds. Those investing in corporate bonds, for example, bear the credit risk that the issuing company may face financial difficulties and possibly default on their obligations.

Individual investors must be keenly aware of the credit quality of the instruments they invest in and depend on credit rating agencies, market analyses, and perhaps their own due diligence to manage the credit risk inherent in their investment portfolios. The management of credit risk for individual investors is often about balancing the pursuit of higher returns against the potential for financial loss.

Acknowledging the wide range of transactions that generate credit risk is critical for risk management practices. Awareness of these transactions is necessary as financial landscapes evolve, leading to the development of new products and services that carry inherent credit risks. This expansive view ensures that institutions are better equipped to identify, measure, and manage the risks arising from their business activities.

Motivations for Managing or Taking on Credit Risk

Controllability of Credit Risk

An essential characteristic of credit risk is that it is controllable; it is not a random force that impacts a company without warning. Credit risk can often be anticipated when its fundamental sources are well understood. Therefore, actively managing credit risk is of paramount importance, and to ignore such management would be unjustifiable. This implies that there must be proactive engagement in understanding, measuring, and mitigating credit risk.

Profitability and Credit Risk Management

Profitability hinges on the basic principle that the less money lost due to defaults, the more profit retained. Especially for businesses with low-profit margins, effective credit risk management can significantly influence the bottom line. Minimizing losses associated with credit risk directly contributes to overall profitability and financial health.

Return on Equity and Risk Adjustment

Properly managing credit risk is also vital for maintaining an adequate return on equity. Companies cannot operate profitably if they hold excessive equity capital, which can dilute returns. On the other hand, relying too heavily on debt capital is not a viable approach either; debt carries its own risks and does not serve to absorb losses.

Long-Term Survival through Prudent Risk Management

The long-term sustainability of a company depends on managing credit risk effectively. Prudent risk management helps avoid large, unexpected losses that can be catastrophic, leading to bankruptcy even for non-financial corporations. During times of financial crisis, such as in 2007, certain organizations that wielded strong credit risk management principles fared far better than their peers, underscoring the value of a disciplined approach to credit risk.

Individual Investors and Credit Risk

Individuals also manage credit risk in their investment activities, such as when choosing between investment vehicles like high-yield versus investment-grade bond funds. The decision to invest in instruments with higher credit risk inherently seeks to achieve a larger return by accepting a greater risk of loss.

The motivations for managing credit risk go beyond the avoidance of negative events to the active cultivation of a stable and profitable enterprise. Both financial and non-financial firms—as well as individual investors—have significant reasons to prioritize robust credit risk management. This is the cornerstone of sustaining profitability, optimizing capital utilization, ensuring longevity, and achieving return objectives. This responsibility extends across the spectrum of financial activities, where credit risk is a factor, underscoring the need for ongoing vigilance and strategic risk management initiatives.

Practice Question

Hedge funds participate in various high-risk investment activities and are known for their aggressive investment strategies that include short-selling and dealing in distressed loans. Understanding how hedge funds operate and manage credit risk can provide crucial insights into the systemic risks present in the financial sector. In the context of credit risk, how do hedge fund strategies differ fundamentally from traditional financial institutions?

A. Hedge funds primarily invest in low-risk government securities to ensure principal protection.
B. Hedge funds seek out opportunities to profit from entities facing financial distress through short-selling or other means.
C. Hedge funds have less exposure to credit risk because they invest their capital in high-quality assets only.
D. Hedge funds mitigate their credit risk entirely by using derivative counterparty exposure as a hedge.

Correct Answer: B)

Some hedge funds employ strategies that find opportunities in the potential default of entities, in contrast to traditional financial institutions that focus on avoiding defaults to protect shareholder value. Hedge funds use instruments like credit default swaps and engage in short-selling to potentially profit from such scenarios.

A is incorrect: Investing in low-risk government securities is not the primary strategy described for hedge funds in the context of credit risk.

C is incorrect: Hedge funds do not limit themselves to high-quality assets; in fact, they often take on riskier positions not typically accessed by traditional asset management firms.

D is incorrect. While using derivatives can be part of a hedge fund's strategy, hedge funds do not completely eliminate their credit risk exposure through this method alone.

Reading 2: Governance

After completing this reading, you should be able to:

- Define risk management responsibilities in an organization and explain the three lines of defense framework for effective risk management and control.
- Explain the processes that lead to risk-taking, including credit origination, credit risk assessment, and credit approval processes.
- Discuss the following key principles underlying best practice for the governance system of credit risk: Guidelines, Skills, Limits, and Oversight.
- Describe the most common parameters of a credit-sensitive transaction.
- Describe the roles of the credit committee in an organization.

Risk Management Responsibilities in an Organization

Understanding risk management responsibilities within an organization is crucial for maintaining its stability and ensuring long-term success. Risk management encompasses a range of practices aimed at identifying, evaluating, and mitigating risks. An effective risk management framework is not just about having rules; it's about ensuring these rules are practical, understood, and followed by all members of the organization.

Understanding the consequences of poor risk management is crucial for any organization. The impact of individual decisions should not be underestimated, as even a single individual or a small group can make poor judgments that lead to significant financial losses, particularly in the case of sizable transactions. However, it is relatively rare for a single bad transaction to result in the bankruptcy of a company.

A more significant threat than isolated poor judgments is the systemic accumulation of risk. This occurs when portfolios of toxic transactions are built over time, often due to systemic failures in risk management and corporate governance. Such accumulations of risk are far more dangerous and can have severe consequences for the organization.

Often, the root cause of massive losses is not individual errors but a collective failure of the system. This situation arises when standard procedures are followed, but the outcomes are still detrimental. It highlights a critical aspect of risk management: the importance of not just having rules and guidelines in place but also ensuring that they are effectively implemented and properly managed. The effectiveness of these rules is key to preventing systemic failures and mitigating the risks of significant financial damage.

The Three Lines of Defense Framework

The Three Lines of Defense Framework in risk management is a strategic approach that delineates clear roles and responsibilities within an organization to ensure effective risk management and control. This framework divides the organizational structure into three distinct lines, each with specific duties and functions in managing and mitigating risks.

- **First Line - Business Owners and Risk Management:** The first line of defense is primarily the responsibility of business owners who manage and own the risks. They play a crucial role in the day-to-day management of risks as part of their operational activities. This line is responsible for identifying, assessing, and controlling the risks within their areas of operation. Business owners are accountable for ensuring that the risks are managed within the set risk appetite of the organization, making them an integral part of the risk management process.
- **Second Line - Oversight and Policy Development:** The second line of defense involves functions like enterprise risk management, compliance, and legal departments. Their role is to provide oversight over the first line and ensure that the risk management practices are aligned with the organization's policies and procedures. This line is tasked with monitoring the risks identified and managed by the first line, developing risk management frameworks, and implementing policies and procedures. They serve as a critical checkpoint in the risk management process, providing a safeguard to ensure that the risk-taking activities are consistent with the overall risk appetite and policy of the organization.

- **Third Line - Independent Assurance:** The third line of defense is characterized by its independence, primarily comprising internal and external audit functions and special audit committees. This line is responsible for providing an independent assurance on the effectiveness of risk management and monitoring practices implemented by the first and second lines of defense. The third line ensures that the organization's risk management practices are functioning as intended and identifies areas where these practices can be improved. Their independent perspective is vital in ensuring the integrity and effectiveness of the organization's risk management framework.

Credit Origination, Credit Risk Assessment, and Credit Approval Processes

Credit risk management in financial institutions involves several critical processes that lead to risk-taking. These include credit origination, where credit transactions are initiated; credit risk assessment, which involves evaluating the risk associated with these transactions; and credit approval processes, where decisions on proceeding with credit transactions are made. Understanding these processes is vital for managing and mitigating the risks inherent in credit operations.

Credit Origination

The process of credit origination is crucial as it sets the stage for the performance of credit portfolios. It involves the initial step of creating or proposing a credit transaction. The origination process is often influenced by the corporation's incentive systems, which might prioritize top-line growth or return on risk-adjusted capital. This can impact the nature and volume of transactions originated. It's vital for risk managers to control the quality of transactions during the origination process. This involves ensuring that transactions meet certain risk management standards and do not expose the organization to undue risk.

Credit Risk Assessment

Credit risk assessment is the process of evaluating the risk profile of a potential credit transaction. This includes analyzing the creditworthiness of the counterparty and the risk characteristics of the transaction. The risk assessment process involves defining the fundamental parameters of each transaction, such as the amount of exposure, the credit quality of the counterparty, and the tenor (duration) of the credit exposure.

Credit Approval Processes

The approval of credit transactions follows a structured process. Authority is delegated based on the risk parameters of the transaction, with riskier transactions requiring higher-level approval. For transactions with high exposure, low credit quality, or long tenure, approval from senior-level committees, such as credit committees, is required. These committees comprise senior management and are responsible for making informed decisions on high-stake transactions.

Transactions that do not fit into predefined guidelines due to their complexity or uniqueness are often subjected to a higher level of scrutiny and may require approval from top executive boards.

Importance of Comprehensive Risk Management in Credit Processes

- **Holistic approach**: Effective management of credit processes involves a holistic approach, considering not just the potential profitability but also the associated risks of each transaction.
- **Coordination between departments**: Successful credit risk management requires coordination between various departments such as risk management, legal, compliance, and the business units involved in origination.
- **Continuous monitoring and adaptation**: The credit processes, including origination, risk assessment, and approval, must be continuously monitored and adapted to align with the evolving market conditions and the organization's risk appetite.

By understanding these processes and their interdependencies, organizations can better manage the risks associated with credit transactions, thereby enhancing the overall stability and profitability of their credit portfolios.