

Active Portfolio Credit Risk Management



Financial Risk Management

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The credit markets have experienced phenomenal growth and change in the 1980's and 1990's, and there is every reason to expect that this trend will continue in the next decade. As a result, the concept of "active portfolio credit risk management" has become important in recent years. The concept is feasible due to the increasing liquidity of the credit markets, the emergence of credit derivatives and new quantitative models that provide the essential analytics. This paper advises on the transformation from a traditional buy-and-hold approach to active portfolio credit risk management thereby improving the use of economic capital.

An active portfolio approach to credit risk has been the focus of innumerable articles, speeches, conferences and books over the past few years. Numerous alternative solutions and models have been proposed, but many are only in the early stages of development or rely on questionable assumptions. All this is compounded further by the appearance of research that is primarily based on liquid, investment-grade markets. Significant questions remain to be answered about less liquid asset classes and to a certain extent about the real depth of liquidity in the secondary loan trading and credit derivative markets. There are no easy answers, nor is there any one solution for the management of credit risk.

But it is not necessary for an institution to wait for all the pieces of the puzzle to fall into place. Instead, it is possible to use tools and products today to begin the transition toward active portfolio credit risk management. Although quantitative models and risk-mitigation techniques are available; the most significant challenge facing financial institutions lies in creating the organisational structures and management processes to take advantage of these new tools. Assembling the necessary data is also a key issue although it must be addressed individually by each institution based on the completeness of its historical information.

This paper is organised in three sections. The first reviews some of the main objectives of an active portfolio credit risk management programme and describes the evolutionary process underway at many institutions.

The second section describes the importance of a phased transition to portfolio credit risk management, given the complexities of the financial services industry and the multiple issues that must be resolved regarding organisational structures, business models, risk management analytics and data requirements. Recognising that many structures are possible, we offer our thoughts on a business model that could be used or modified to implement an active programme of portfolio credit risk management.

The paper closes with a review of implementation issues confronting institutions, along with some possible solutions. This review covers the business transformation plan, the responsibilities of portfolio managers, portfolio risk management models and the evaluation of portfolio performance.

Portfolio Risk Management Objectives

The main objective of active portfolio credit risk management is to improve risk-adjusted returns.

Each institution embarking on a programme to actively manage portfolio credit risk has its own strategic rationale and critical objectives, but "increasing shareholder value" has become the mantra of the financial services industry. Virtually every segment of the industry, from financial Goliaths to individual mutual funds, is on a quest to contribute to shareholder value by improving its skills in risk-adjusted performance management

and by linking risk to business strategy. Three other common objectives of portfolio credit risk management include managing concentration risk, meeting regulatory requirements and enhancing revenues.

One of the major lessons of almost every economic downturn or capital market disruption is that an excessive concentration of credit in any one name or industry can lead to catastrophic results for individual institutions or even entire banking sectors. Real estate lending in Asia, Europe and the U.S. in the late 1980's is a prime example, as are the events from the oil and gas sector in the U.S. in the early 1980's. In 1998, the emerging markets produced myriad examples of the dangers of concentration risk.

Yet major clients demand that their house banks make serious lending commitments, even though fulfilling those commitments may run counter to the concept of avoiding large concentrations of credit. Active portfolio management offers innovative approaches that permit an institution to serve its clients' needs while reducing the risk of concentration.

Active portfolio risk management also allows institutions to continuously evaluate transactions and portfolios against regulatory guidelines, balancing the various trade-offs among client demands, regulatory capital requirements and risk-adjusted returns.

An ancillary benefit of active portfolio management is the opportunity to generate additional revenues through new activities such as loan trading, credit derivatives or securitisation. This is becoming an important part of the equation for transforming an institution from a buy-and-hold investor to a credit-risk trader.

Portfolio management is evolving from a monitoring and reporting function to an active function responsible for return on the portfolio.

In most institutions, front offices or middle offices specialise in certain industries or geographic areas. Managers responsible for client relationships or corporate credit usually make the final decision on asset selection, while portfolio managers play an advisory role. With each industry or geographic group focused solely on the performance of their sub-portfolios, it is difficult to provide the proper incentives to optimise portfolio performance as a whole and therefore maximise the institution's returns.

World-class financial institutions are breaking this mold by using a multitude of techniques, products and services to manage credit risk actively and even aggressively. While each institution is crafting its own approach by employing its particular strengths, today's portfolio manager is usually involved in the origination and acquisition of assets as well as the execution of secondary market sales, asset securitization or hedges.

The skills necessary for active portfolio risk management already exist in many discrete business units of large financial institutions.

The transition from traditional to active management of portfolio credit risk is not as overwhelming as it might seem. The essential skills are already practiced in one fashion or another in various business units of large financial institutions today. While asset classes may differ, all the businesses below engage in portfolio management to some extent and share common portfolio risk management principles.

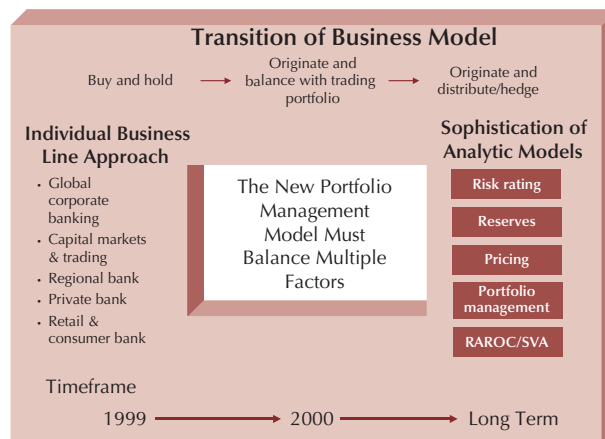
- Syndicated and bilateral lending
- Credit derivatives
- Structured finance (CMOs/CLOs)

The challenge in moving to active portfolio credit risk management is to realign the various roles and responsibilities of the institution's existing portfolio and credit risk management infrastructure, using price discovery mechanisms and the skill sets mentioned above to manage the credit risk in the entire portfolio.

Moving to an Active Portfolio Management Business Model

Each business line may have a different business model for credit risk. These could range from a traditional buy-and-hold mentality to an aggressive origination and distribution strategy akin to a broker/dealer or an actively managed fund. Balancing the various considerations of business lines and business models requires clear decision-making about the proper analytical tools to be used. Issues such as organisational design, data availability and personnel resources dictate that the integration of these analytical tools be carefully planned and staged over time (figure 1).

1. Complex organisations require different approaches



The model in figure 2 suggests one possible way of implementing active portfolio credit risk management at either the corporate or business unit level. The model pre-supposes the institution has already agreed on target markets, core competencies, such as industry or geographic expertise, and an analytical model for managing portfolio risk.

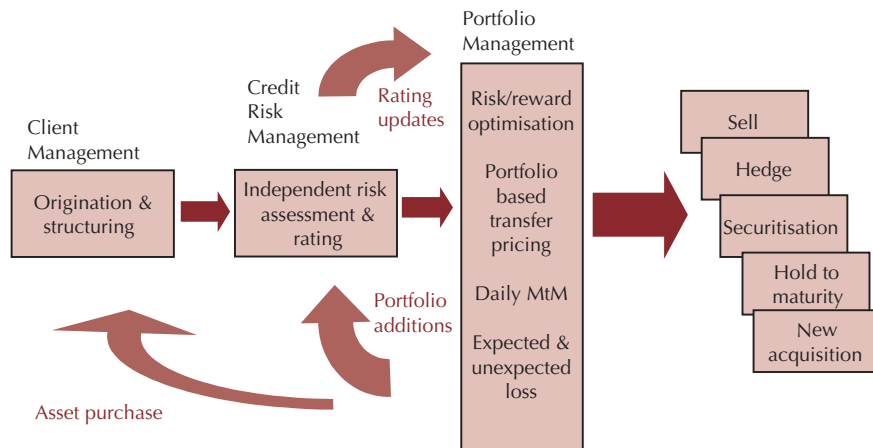
In this business model, client management is still responsible for originating and structuring transactions, while credit risk management retains responsibility for risk assessment, risk rating and transaction approval. Risk ratings are the fundamental building blocks of a risk-adjusted performance measurement or risk-adjusted return on capital calculations. Separating the risk assessment and rating processes from the origination and/or portfolio management process removes an inherent conflict between those charged with managing risk-adjusted returns and those assigned responsibility for the very definition of risk. The independence of the risk assessment process is absolutely critical for successfully implementing portfolio credit risk management.

The new business model's ultimate goal is the creation of a portfolio management profit center to maximize the firm's risk-adjusted returns.

The portfolio manager is responsible for determining the transfer price at which the firm will buy the asset from the origination area. The portfolio manager should determine the price independently or in co-operation with client management. In what is a fine balancing act, client management should not be completely divorced from credit risk management, but should retain some residual responsibility and sense of partnership in managing the portfolio.

The portfolio manager is responsible for managing the portfolio and optimising the firm's risk/reward equation. The risk management tools available to the portfolio manager-besides holding the asset to maturity-include outright asset sales, credit derivatives, securitisation and targeting new assets for acquisition that will further diversify the portfolio's risk profile. The development of secondary markets and credit derivative capabilities provides additional inputs into the appropriate price for the credit risk of an individual transaction. Marking all assets to market, even if only for shadow accounting or management reports until such time as price coverage improves, creates the environment for a frank and businesslike discussion of the relative merits of individual assets.

2. A portfolio risk management model



Implementing Active Portfolio Management

The transition to this portfolio management model involves extensive organisational changes and will affect many people and processes.

Portfolio credit risk management requires that people use technology in new ways to achieve the institution's key objectives. The selection of an appropriate risk management analytical model is very important-but it is not the game itself. The old adage, "credit is an art, not a science" is still true, although in the future it may have to be rephrased as "portfolio credit risk management is an art with a heavy dose of science." Whether the business model suggested in figure 2, or another variation, is chosen, numerous decisions must be made during the planning stages to assure that the portfolio credit risk management framework is properly designed.

Business transformation plan

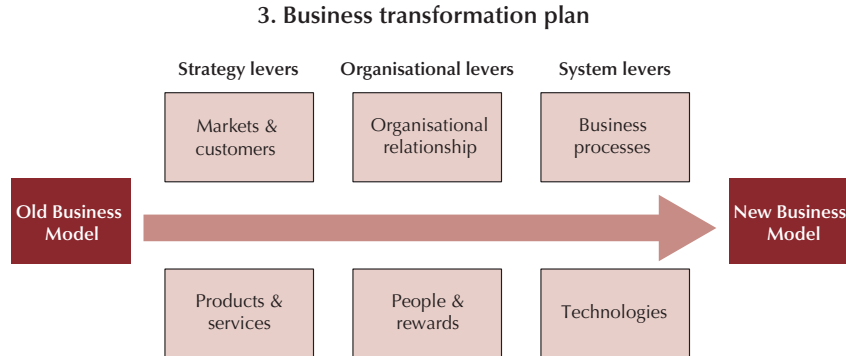
Successful implementation of a portfolio management framework calls for a well-articulated strategy supported by major cultural change and continuous refinement and improvement. There must be buy-in from client managers, credit/portfolio managers and product specialists. There must be clear understanding of the firm's markets and strategy. Clear definitions of roles and responsibilities are necessary, as is a commitment to teamwork and partnership values. This inevitably requires a co-ordinated product delivery capability driven by new business processes and the use of appropriate technology (figure 3).

Implementation of the chosen portfolio management model, then, is not just a matter of choosing a "black box," generating reams of analysis and maximising returns at the margin. It is a gradual process that requires

infrastructure and policy development, human resource training, careful system selection and maintenance and continuing testing and refinement.

Portfolio Management Roles and Responsibilities

The portfolio manager's ultimate goal is to achieve the best possible risk/reward equation. But the concerns here are for the portfolio manager's day-to-day responsibilities and his or her working relationships with the rest of the organisation. Our suggested model assumes that a portfolio-based market-clearing price for credit exists within the firm.



The portfolio manager's interaction with line management on origination preferences should be on the basis of price. The pricing mechanism is based on portfolio concentration and diversification objectives that take asset correlation into account. Therefore it is fundamentally different from the new deal analysis and pricing decisions based on stand-alone risk factors and market conditions. The transfer of risk from those responsible for origination based on price clearly quantifies the “relationship management” cost of individual transactions. It avoids the introduction of softer models for quantifying the cost of relationship management such as “promises registers” or IOUs.

Price is the clearest signal of the desirability of holding particular assets.

In our new model, the portfolio manager should have business or credit authority in his or her own right, rather than occupy a purely advisory position. Here, the portfolio manager is able to approve asset sales or purchases in the secondary market to re-balance the portfolio. He or she may independently purchase protection in the credit derivatives market or acquire exposure subject to independent due diligence review by the credit department. He or she should be able to execute macroeconomic hedges.

The portfolio manager also should provide analytical support to the board's risk policy committee and/or the corporate credit committee. Portfolio risk management reporting is a critical but often overlooked element in this process. For risks to be understood, they must be acknowledged and communicated. A clear strategy for disseminating and using the information generated by a sophisticated portfolio risk management system is essential.

While the pricing of credit risk by the portfolio manager transfers the risk from originating business units to the portfolio manager, organisational structures are still required to ensure that acceptable risk/reward relationships are maintained during the business development process. This means it still will be necessary to manage businesses or “sub-portfolios” based on clear profit and loss criteria for the business units, whether they are configured on a product, industry or geographic basis. The exact nature of the new organisational structure depends on each firm's target markets, customers, products and services. Obviously, the new definition of the

portfolio manager's role and responsibilities will have an impact on the firm's existing structure and inter-departmental relationships.

Selecting the risk management model

Over the last decade, a number of sophisticated systems have been developed to model portfolio credit risk. Several have received a great deal of public attention, including the four listed in figure 4. Models such as these have assumed increasingly important roles in risk management and performance measurement. They have the potential not only to improve internal risk management but also to assist the supervisory oversight of banking organisations.

Although these models have different calculation techniques and parameters, studies have shown that they in fact represent a remarkable consensus in their underlying frameworks and financial intuition. However, before these models can deliver on their promise, they must not only prove to be conceptually sound and empirically valid; they must also be well integrated with the bank's day-to-day credit risk management. Merton-based models using asset correlation derived from equity data might be more accurate for publicly traded companies, while actuarial models using default-rate volatility based on historical experience might be more accurate for illiquid asset classes or small business portfolios.

Caution should be exercised when it comes to model selection. Other studies show that inconsistent parameters in different models yield significantly different risk results at both portfolio and contributory levels for identical portfolios. This produces differences in recommendations regarding risk management, pricing and portfolio optimisation.

Finally, the availability and quality of data used for input into these models is one of the more challenging facets of building and maintaining an active portfolio risk management system. Figure 4 summarizes the inputs and outputs of the four analytical models.

4. Analytic model data requirements

Model	Input	Output
JP Morgan's CreditMetrics	<ul style="list-style-type: none"> • Default and migration probabilities (transition matrices) • Credit spreads and yield curves • Pair-wise correlation • Recovery rates • Credit exposures 	<ul style="list-style-type: none"> • Economic capital (both expected loss and unexpected loss) • Return distribution • Loss percentiles
CSFP's CreditRisk+	<ul style="list-style-type: none"> • Default rates • Default rate volatility • Recovery rates • Credit exposures 	<ul style="list-style-type: none"> • Economic capital (both expected loss and unexpected loss) • Loss distribution • Loss percentiles
KMV's PortfolioManager	<ul style="list-style-type: none"> • Expected default frequencies • Credit spreads • Pair-wise correlation • Credit exposures 	<ul style="list-style-type: none"> • Economic capital (both expected loss and unexpected loss) • RAROC • Sharp ratio • Mis -pricing • Optimisation benefits • Return distribution
McKinsey & Co.'s CreditPortfolioView	<ul style="list-style-type: none"> • Macroeconomic variables • Default and migration history (unconditional transition matrices) • Credit spreads • Recovery rates • Credit exposures 	<ul style="list-style-type: none"> • Economic capital (both expected loss and unexpected loss) • RAROC (calculated by a separate module) • Return distribution • Loss percentiles

As can be seen, regardless of the model chosen, fundamental decisions are required regarding the calculation of credit exposures. Other important data issues, depending on the model selected, include the conversion of: commitments and standby L/Cs to loan equivalents; default probabilities in the form of transition matrices, propriety or provided externally; loss factors and recovery rates; credit correlation by name, industry segment or country; and credit spreads.

While this discussion focuses on portfolio risk management models, other models are also required for credit scoring and risk rating, loan loss reserve calculations or marking to market illiquid securities or loans, pricing individual transactions on a risk-adjusted basis, and capital allocation.

Evaluating portfolio risk management performance

While transfer pricing may be the method for moving risk from the originating business unit to the portfolio manager, other portfolio metrics also must be employed. The overall performance of the portfolio manager, the performance of the credit department that provided the initial risk assessment and the performance of the business managers – all must be evaluated. The linkages between the portfolio manager and corporate strategic financial measures, such as risk-adjusted return on capital, must be defined.

Specific portfolio risk measurement indicators that can be employed include the Sharpe ratio, expected and unexpected loss ratios, credit VAR, RAROC, weighted average risk grades and “house limits” regarding concentration of large exposures. Other measures of portfolio performance must be integrated into the process to manage the lower end of the credit spectrum. Statistics or ratios for non-performing assets (NPA) or loans and past-due loans are all still appropriate, as are NPA forecasts and a watch list for marginal credits.

External ratings – Moody's, S&P, Fitch IBCA or other default indicators – KMV's expected default frequency or Altman's Z-score, should be factored into the process. These external benchmarks are necessary to either A) ensure that internally generated ratings are calibrated against appropriate default probability or expected loss ranges, or B) provide a reality check on an internally generated rating. The recent Basle committee pronouncement on the use of external ratings for risk-based regulatory capital calculations adds weight to the importance of calibrating internal ratings against external benchmarks.

Summary and Conclusions

The design and execution of an active portfolio risk management programme need not wait for all the pieces of the puzzle to fall into place. The critical issue identified in this paper is organisational in nature requiring new management processes. Portfolio management skills already reside in many business units and can be re-configured in a new business model. This new business model with the portfolio manager charged with maximising the institution's risk/return profile and pricing credit within the firm is one way forward. Centralising the portfolio management function may not be the optimal solution given the significant differences that exist among business lines. A successful implementation requires a careful, well-articulated plan to evaluate and address key issues across the entire spectrum of credit risk management. Data requirements, dictated by the analytical model selected, can be significant but establishing implementation priorities will avoid inertia on this front. Defining clear roles and responsibilities and selecting the appropriate risk adjusted performance measures are necessary ingredients for success. Finally, it is critically important to recognize the need for a gradual transition and the continual review and refinement of organisational structures and analytical tools as the credit markets continue to develop.

This article by Charles A. Andrews, Michael Haubenstein and James J. Vinci of PricewaterhouseCoopers LLP offers insight and direction on the major issues institutions face in designing and implementing a comprehensive approach to portfolio credit risk management. This relatively new discipline is rapidly evolving, and fresh approaches are continually emerging as PricewaterhouseCoopers's professionals work with clients in the field. Thus the opinions expressed here should not be considered definitive. Rather, they represent a general framework from which a successful portfolio risk management programme can be implemented.

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