

Basel Implementation for Specialized Lending Assets

Introduction

This document has two main sections. The first section describes how the Risk Integrated Specialized Finance System (SFS) is used in risk management. It covers the use of the system to minimize capital, structure and price new deals, and manage provisions and reserves. The second section describes, in specific, how the SFS assesses the risk for commercial real estate assets. It explains just how simulations of market conditions are used to calculate the range of possible losses for each deal.

Use of the Risk Integrated SFS in Risk Management

Calculation of Regulatory Capital

The Basel Capital Accords of 1988 (Basel I) required banks to hold capital against all customer loans equal to 8% of the balance. The New Capital Accords (Basel II), due to come into effect in 2007, differentiates the amount of capital according to the risk of individual assets. More capital is required for assets that are riskier or whose risk is not soundly measured by the bank. According to the regulations, the capital held against an asset may be calculated using one of three approaches:

- Standardized approach - banks must slot their assets into buckets of credit quality and a capital percentage is applied to each bucket
- Internal ratings based approach (foundation) - banks can hold capital according to an asset's probability of default, as estimated by the bank, assuming a 35% loss given default
- Internal ratings based approach - (advanced) - banks can hold capital according to an asset's probability of default and loss given default as estimated by the bank

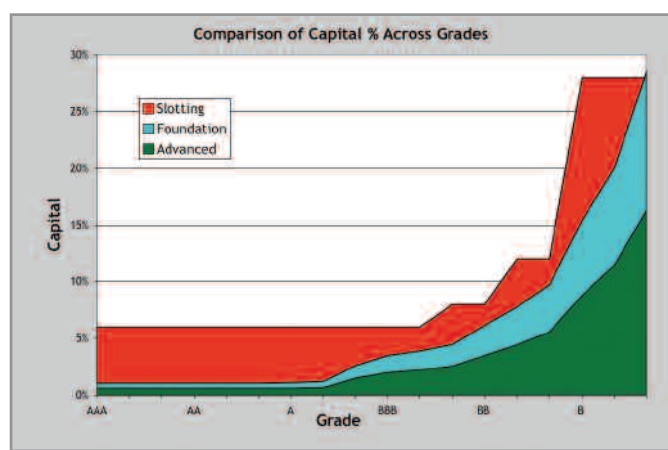


Figure 1: Comparison of Capital Required by the Capital Accords

The Basel committee states they intend to reward banks that adopt the more advanced approaches with a reduction in the amount of required capital. The graph in Figure 1 illustrates the amount of capital required under the different approaches according to the asset's risk of defaulting. Along the x-axis there is a range of probabilities of default (PD) for assets of different credit quality. Up the y-axis there is the amount of capital to be held under Basel I (8%), the Basel II standardized approach (a series of steps), and the Basel II internal ratings based (IRB) approach (the smooth, low curve). The graph shows the difference between the capital amounts and the amount of capital that can be saved by qualifying for the IRB approach.

The graph shows that on a portfolio of 10 Bn BB loans, adoption of the Foundation IRB approach saves around 200 M in capital, or around 20 M per year in capital costs. Further savings are possible with the IRB Advanced approach, if the loss given default can be shown to be less than 35%. The Risk Integrated Specialized Finance System is designed to give compliance at the advanced level.

Structuring and Approval of Assets

On a day-to-day basis, the SFS can be used to guide the structuring and risk-pricing of new loans. The SFS provides a grade and capital based on the economics of the deal. The lender can test different deal structures and prices and once satisfied, can present the deal to the credit committee.

For approaching the credit committee, the standard economic grade from the SFS can be combined with ownership and management scores and guarantee reports to enable the lender to recommend a combined grade. Under policy guidelines, the credit committee will consider the recommendation and decide on a final grade. This final grade will drive the provisions and capital to be set aside for the asset, and should be linked to the risk component of the price. Figure 2 illustrates the flow of a deal through the approvals process at the average bank.

Pricing

The SFS can be used to direct the risk-pricing of new loans. The fees and margin for a given loan can be thought of as covering four components:

- Expected loss - the amount of general provisions to be held against the loan

- Cost of capital - the amount of capital to be held against the loan, multiplied by the blended margin that the bank has to pay to raise new Tier I and Tier II capital
- Operating costs - the cost of staff and overhead
- Premium - extra margin that the lender negotiates, e.g, for giving good service

The SFS provides an estimate of the minimum amount to be charged to cover the first two components which are the risk costs.

Monitoring the Performance of the Portfolio

The SFS can be rerun regularly every month or quarter to automatically review the economics of all the deals in the portfolio. It can reveal assets that have dropped significantly in grade to provide an early warning and focus efforts at credit reviews. The reports can also give a view of the portfolio’s risk and profitability profile.

The graphs in Figure 3 illustrate how three different market sectors contribute to outstandings, risk capital and profits. In this illustration, Sector 2 is consuming large amounts of capital for little profit and deserves further investigation. A strategic consequence may be to move new loan originations away from Sector 2 and towards Sector 1.

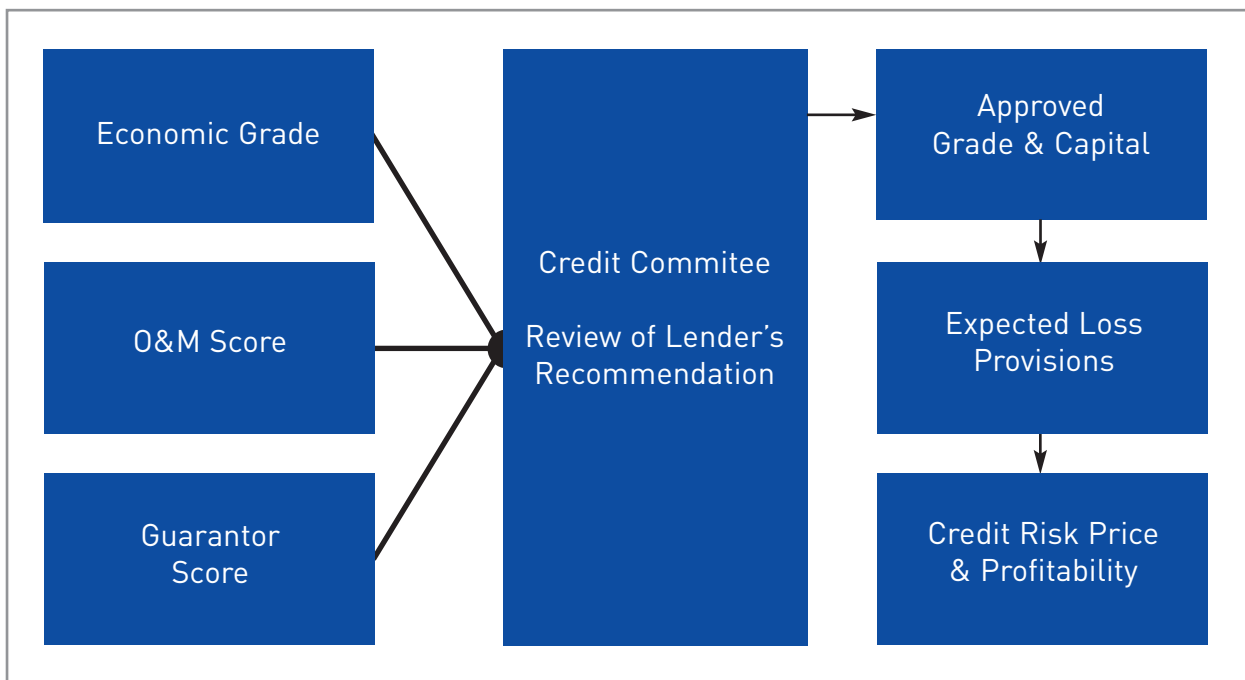


Figure 2. Illustration of Credit Decisions Based on the SFS Grade

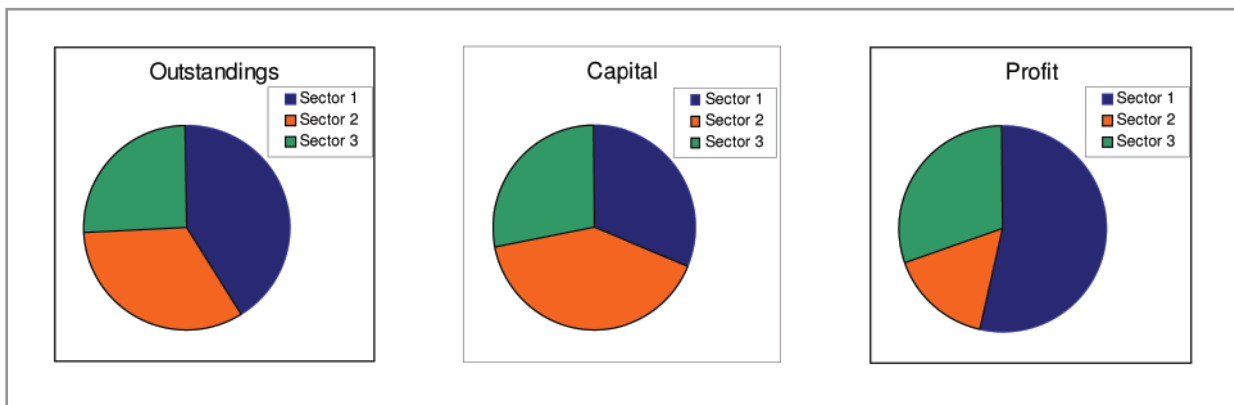


Figure 3. Illustration of Strategic Portfolio Risk and Profitability Reports

Functionality of the Specialized Finance System

The Risk Integrated Specialized Finance System (SFS) uses simulation and cashflow modeling to produce results that can be used to support structuring, pricing, and lending decisions. The SFS is the most complete solution available for pricing and structuring infrastructure and commercial real estate assets providing full Basel II compliance at the Advanced level. It can be used to rate individual credits, and to manage the full portfolio including sub-portfolios, such as asset-backed securities.

Overview

As illustrated in Figure 4, the SFS has three major components: creation of macroeconomic scenarios, calculation of a deal's cashflow in each scenario, and the statistical analysis of the results. The next sections will explain each of these steps.

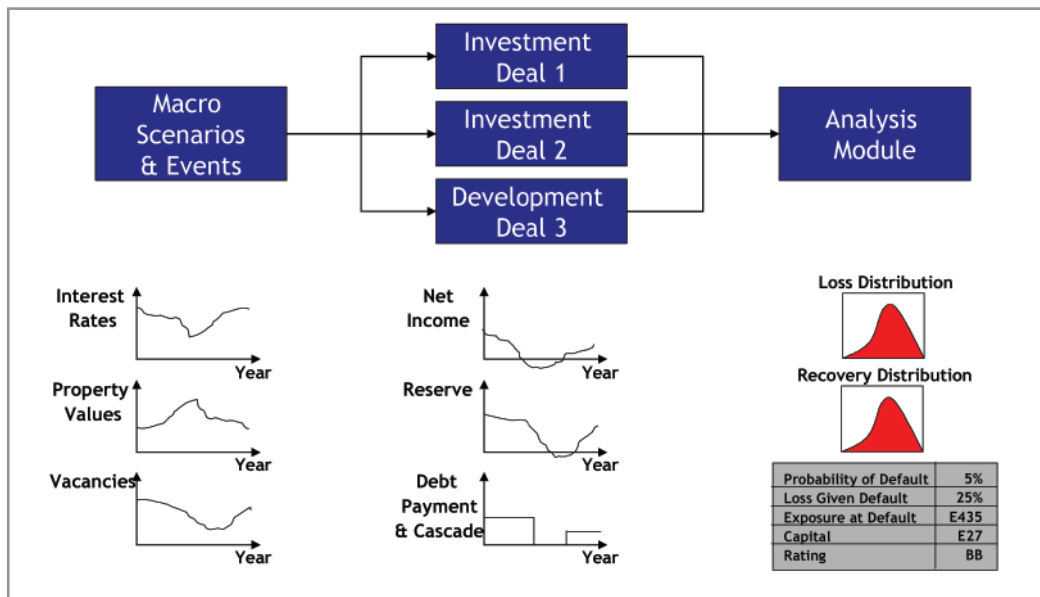


Figure 4. Overall Methodology: Cashflows with Macro Scenarios

Scenario Generator

By using external historical market and economic data, the SFS minimizes the reliance on internal historical default data, allowing the assessment of complex deals even if historical default data does not exist for that particular type of deal. The SFS uses simulation to create possible scenarios for macroeconomic and market conditions over 20 years.

Currently the simulation engine in the SFS takes into account the following macroeconomic and market data for four economies (UK, Ireland, Eurozone and USA):

- Moneymarket interest rate
- Long term bond yield
- Stock market index
- Inflation
- Bankruptcy rate
- Real GDP
- Exchange Rates (£/\$, €/£, €/€)
- World oil \$/Barrel

To assess commercial real estate assets we also simulate property capital values and market rents. The system currently uses values and rents for the following sectors and geographies:

Sectors:

- Office
- Office Park
- Industrial
- Residential
- Retail
- Retail Warehouse
- Supermarket
- Shopping Centres

Geographies:

United Kingdom

- City of London
- Rest of Central London
- Outer London
- South East
- South West
- Eastern
- East Midlands
- West Midlands
- North West
- Yorks & Humber
- North East
- Scotland
- Wales
- Northern Ireland

Ireland

- Grafton St.
- Henry/Mary St.
- Rest of Dublin 1
- Rest of Central Dublin
- North Dublin
- South West Dublin
- South East Dublin
- Rest of Ireland

United States

- Boston
- Hartford
- Manhattan Downtown
- Manhattan Midtown
- Washington D.C.

The Simulation Engine

By calculating the cashflows and potential losses under thousands of potential scenarios, the SFS can estimate the risk profile for any given deal. With the simulation engine, a deal is tested in thousands of potential scenarios using a cashflow model to predict the resulting profitability of the deal in each scenario. The simulation engine includes automatic parameterization software so that analysts in the bank can quickly add variables for new markets, for example, if new data becomes available or the bank moves into a new geography.

The use of simulation minimizes the need for historical default data, but to the extent that such data is available, it can be used for calibration. The SFS also includes

correlated tenant defaults to show the effect across the whole portfolio if there were a default of a tenant who leases properties from several different bank customers.

The technology includes variance reduction and parallel processing to minimize run times. Individual assets and complete portfolios are quickly assessed within a practical timeframe.

Cashflow Model

The cashflow model used in the SFS takes the deal information (e.g., repayment structure) and combines it with the simulated scenario for the market (e.g., future prices and interest rates). From this, the cashflow model calculates the net operating income, debt servicing requirement, debt outstanding, and security value in any given scenario. The cashflow model contains the complete default and foreclosure cascade to calculate how much will be lost by the bank if a default occurs.

The SFS cashflow models are unique in that they capture the complex nature of commercial real estate assets. For example, the model for investment properties includes the effects of location, sector, current leases, step, market and upwards-only rent reviews, tenant quality, sweep accounts, planned sales, refinancing, profit-sharing and interest rate derivatives. Inputs to the model for development properties take into account planned equity contributions, planned costs, presales thresholds and tailored completions.

The model can also assess customers who simultaneously hold a combination of multiple investment development properties, providing a complete solution for real estate lending.

Results

The SFS provides the familiar risk metrics such as loan-to-value and debt-service-cover ratios for each year of the deal. It also provides risk statistics and reports that include the metrics required for calculating the new Basel regulatory capital. The main risk statistics produced are as follows:

- Probability of Default: the probability that a given asset will default over one year
- Exposure at Default: the balance at the time of default
- Loss Given Default: the average amount of loss as a percentage of Exposure at Default
- Expected Loss: the average expected write-offs for each type of loan (this provides the EL estimates required by the International Accounting Standards for provisioning)
- Regulatory Capital: the amount of capital required by Basel II
- The theoretical risk price: the minimum required margin required to cover risk, based on the net present value of losses and the cost of capital

Summary

The SFS provides the analytics to minimize regulatory capital, assess the risk of individual deals, provide strategic risk-and-profitability reports and give insights into capital management. ■