

Risk Based Financial Planning Beyond Basel 2

By

Roy Choudhury

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Roy Choudhury is Senior Manager at Ernst & Young - Financial Services – Risk in London and specialises in Enterprise Risk Management, Capital Management, and International Regulation. Roy holds a MBA – Melbourne Business School, and is an Associate Member of The Institute of Chartered Accountants of India.

Email t.roychoudhury@gmail.com Telephone +44 7768 325 456

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Abstract

International banks have made significant investments in risk infrastructure, measurement, and database, in compliance with Basel 2 regulations. In this paper, we discuss use of risk based financial planning to leverage this compliance investment to aid business decision making and active portfolio management. Some of the main advantages of a multidimensional risk based financial planning model include alignment with business strategy, managing credit concentration risk, capital allocation and management, stress testing and scenario analysis, and risk-adjusted performance management.

Keywords: risk-based financial planning, planning, financial planning, budgeting, forecasting, risk management, business risk, earnings-at-risk, earnings sensitivity, stress testing, scenario analysis, risk-adjusted performance management.

Background

One of the main objectives of financial planning is to translate long-term strategic objectives into medium-term performance targets subject to financial, operational and organisation constraints. Financial planning is a delicate balancing act, often orchestrated by the Finance function, to manage a range of conflicting goals. In the context of banking, financial planning has traditionally focussed on earning-per-share (EPS) and return-on-equity (ROE) targets; subject to availability of capital as the main constraint. In the past, role of risk management in financial planning has been limited, due to lack of strong metrics, methodology and data.

In June 2004, Basel Committee on Banking Supervision published the revised capital adequacy framework, widely known as 'Basel 2'. The main objective of the framework was to ensure a better alignment between risk management and capital, and enable a proactive approach to risk management. In compliance with Basel 2, the banking industry has made significant investments in improving their risk measurement and management capabilities, especially in credit and operational risk. In this paper, we discuss the role risk based financial planning in proactive risk management, and leveraging Basel 2 infrastructure investment, to ensure strong alignment between risk, return, capital and shareholder value.

Risk Based Financial Planning

Risk Based Financial Planning (RBFP) is a transformation of the traditional financial planning process, with an explicit consideration of financial and non-financial risks and economic capital as main constraints. Lending is the primary activity in a typical bank – the capital charge for credit risk far outweighs the capital for any other risk class. Hence, in this paper, we focus on the integration of credit risk in the financial planning process. The integration of other risks, such as market, operational and business risk, though different in terms of methodology, will follow a similar thought process.

Some of the main benefits of implementing Risk Based Financial Planning process are:

1. To transform the role of risk management as a proactive strategic function with close alignment to business objectives and macroeconomic environment;
2. To position risk management as a source of competitive advantage using tools such as risk-based pricing, active portfolio management, and risk-based growth strategy;
3. To test the resilience of financial plans by using stress testing, scenario and sensitivity analysis across a range of plausible macroeconomic scenarios;

4. To enrich the understanding of underlying projections by using a multidimensional planning model including risk dimensions such as, sector, tenure, and asset class;
5. To ensure consistent approach to financial planning across different business units to facilitate group-wide portfolio aggregation and drill-down capabilities;
6. To facilitate explicit consideration of credit concentration risk and risk parameters (PD, LGD, CCF and Correlation) in the credit strategy & financial planning process;
7. To foster a risk-return framework by advocating risk-sensitive performance metrics such as EVA and RAROC, using economic capital allocation.

Multidimensional Model

In this paper, we are recommending a multidimensional financial planning model, which comprises of four components i.e. financial metrics (interest and non-interest income), business dimensions (legal entity, business unit, product, and customer segment), risk metrics (PD, LGD, EAD and Correlation) and risk dimensions (sector, region, tenure, and asset class). The components in the traditional financial planning model are limited to financial metrics and business dimensions. Risk dimensions and metrics will facilitate a better understanding of the risk profile and testing the resilience of the financial plans.

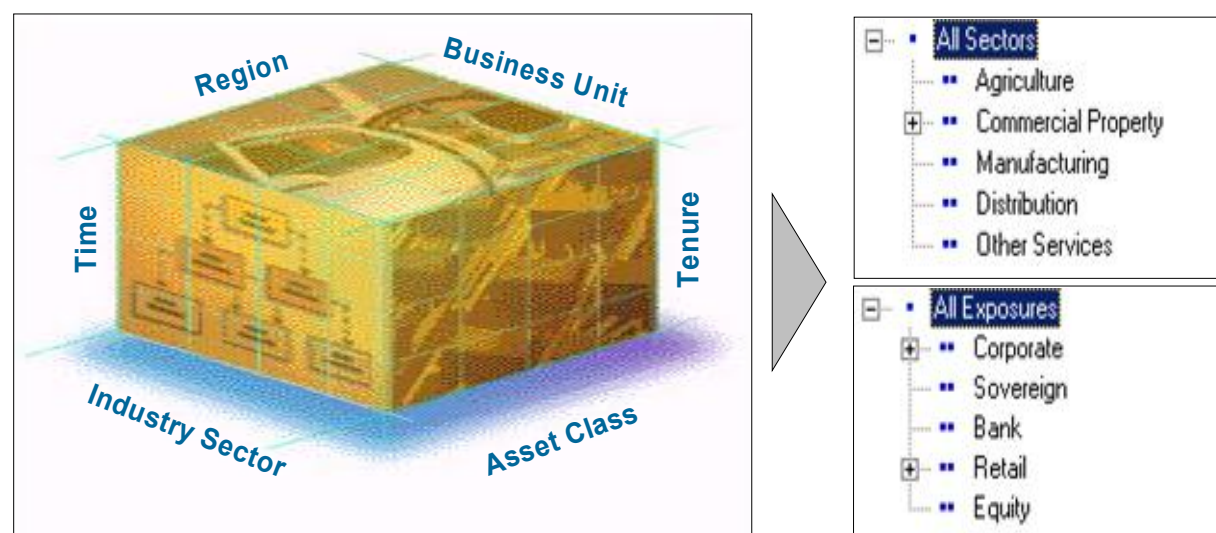


Illustration: Multidimensional Risk Based Financial Planning Model

Each dimension is made up of elements arranged in logical hierarchies; this facilitates consistent approach, aggregation, and drill-down. For example: *Sector* dimension comprises of a parent element of *Commercial Property*, which is made up on *Residential Investment*, *Commercial Investment*, *Development*, and *Land*.

Logical portfolio is defined as grouping of exposures that exhibit similar risk characteristics and high degree of positive correlation. Exposures within a logical portfolio are assumed to react similarly to changes in systematic risk factors i.e. macroeconomic or financial market indicators. Though, logical portfolios may share similar risk characteristics, the degree of sensitivity may differ for each portfolio. The concept of logical portfolio is fundamental to credit concentration risk, stress testing, scenario analysis, bottom-up risk appetite, and ultimately active portfolio management. The structure of logical portfolios should evolve with business requirements and should be reassessed on an annual basis.

Each lowest element is referred to as a Logical Portfolio; for example: if *Development* is a lowest-level element then we are assuming that *Residential Development* and *Commercial Development* exposures exhibit high correlation. Logical definition of dimensions, hierarchies, and elements is the most fundamental component of a multi-dimensional RBF model. We recommend, this definition be co-ordinated by Group Risk, with significant participation from business units, namely risk, credit experts, and sales. The structure of logical portfolios should evolve with business requirements and should be reassessed on an annual basis.

Risk Based Financial Planning Model

Risk Dimensions	
Sector	Manufacturing
Region	Northern Ireland
Asset Class	Corporate

Risk Parameters	
LGD	0.45
CCF	0.75
Correlation	0.18

Business Dimensions	
Business Unit	Corporate Banking
Customer Segment	Global Accounts
Product Category	Unsecured Term Loan

Portfolio Results	
Expected Loss	18.21
Unexpected Loss	0.75
RAROC	0.1296

PD	EUR mil	Forecast FY07				Actual FY06				
		Rating	Exposure		Income		Exposure		Income	
			Drawn	Undrawn	Interest	Non-Interest	Drawn	Undrawn	Interest	Non-Interest
0.09%	1A	16.16	0.89	0.16	0.01	12.93	0.65	0.13	0.00	
0.25%	1B	95.48	5.25	1.05	0.07	76.39	3.82	0.84	0.03	
0.35%	1C	132.99	7.31	1.73	0.11	106.39	5.32	1.38	0.05	
0.55%	2A	188.65	10.38	3.21	0.20	150.92	7.55	2.57	0.10	
0.80%	2B	513.32	28.23	9.75	0.61	410.66	20.53	7.80	0.29	
1.50%	2C	294.30	16.19	6.03	0.38	235.44	11.77	4.83	0.18	
2.50%	2D	224.71	12.36	4.83	0.30	179.77	8.99	3.87	0.14	
4.00%	3A	68.67	3.78	1.72	0.11	54.93	2.75	1.37	0.05	
6.00%	3B	49.40	2.72	1.36	0.08	39.52	1.98	1.09	0.04	
10.00%	4	64.96	3.57	1.95	0.12	51.97	2.60	1.80	0.07	
100.00%	5 Default	11.21				8.96				
	Total	1659.85	90.68	31.79	1.99	1327.88	65.95	25.67	0.96	
	Growth	0.25	0.38	0.24	1.06					

Business and Risk Dimensions, including elements and hierarchies, are defined by Group Finance / Risk, in consultation with business units. Business units have the option of defining more granular local elements, which are mapped to global elements.

Risk Parameters

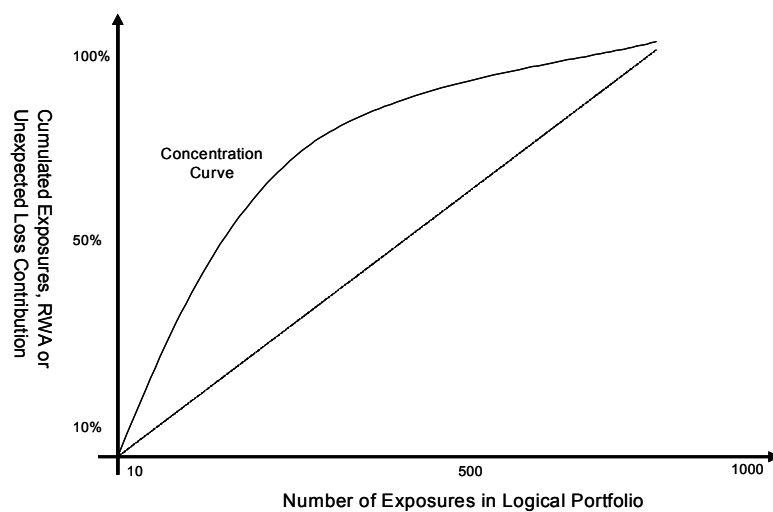
Risk Parameters (PD, LGD, CCF, and Correlation) are derived based on the elements in business and risk dimension selected by the business units; for example: PD is derived based on historical experience for a combination of sector, region, and asset class. If historical PD is point-in-time then business units should assess the suitability of the same for the forecast period, factoring in the expected macroeconomic environment. Also, business units will also need to assess the impact of change in business / credit strategy and competitive factors on Expected PD profile. For example: Business Unit B is planning to rapid expansion in the Corporate SME portfolio – this will result a change in its conservative risk appetite (limited to Tier 1 Corporate SME) – it will target Tier 2 and 3 Corporate SME clients. Though, Business Unit B can charge a higher margin to this Group, it will also result in an increase in its EL and UL. This can be built into the RBFP using the exposure distribution by rating buckets.

LGD and CCF are derived based on the Product and Asset Class dimension – the LGD value is exposure-weighted average LGD. For example: Business Unit A, which did not offer any 100% Mortgages in FY06, is planning to introduce this offering due to competitive pressures. Though, this decision will increase the projected revenues (higher margins on 100% Mortgages), it will also increase the EL and UL of the Residential Mortgages portfolio. For example: this new offering will result in higher loan-to-value (LTV) and macroeconomic sensitivities – this needs to be factored in projected exposure weighted average LGD.

Credit Concentration Risk

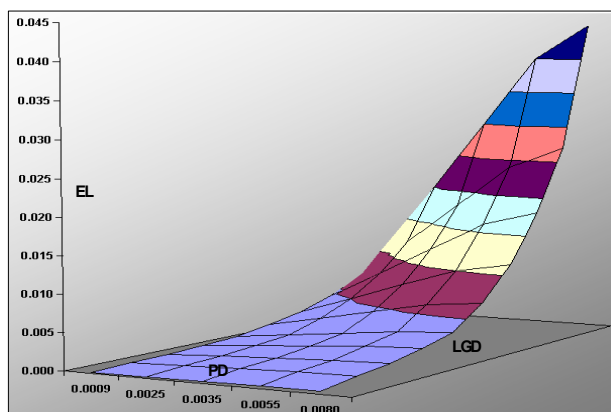
Risk concentration is any single exposure or group of exposures (based on common risk characteristics) with the potential to produce losses large enough (relative to banks capital, total assets, earnings, or overall risk level) to threaten banks health or ability to maintain its core operations. In this model, we use the asset correlation parameter (similar to Basel 2) to assess the marginal risk of the portfolio - in this example it represents asset correlation based on the sensitivities to a systematic risk factor. Instead, of looking at notional exposure concentration, we recommend using more risk sensitive metrics such as Portfolio EL / Total EL, Portfolio UL / Total UL, Stressed EL or UL / Earnings.

Concentration curve, also referred to as Gini curve, shows the cumulated exposure or any alternative risk metric, such as capital, as a function of the number of exposure. The curve cumulates the risk metric (Gross Exposure, RWA or Unexpected Loss Contribution) sorted by descending values. A uniform exposure profile would have a straight line concentration curve – the height and the steepness of the curve are key determinants of the credit concentration risk. Concentration curve can be plotted for different metrics and logical portfolios and can be used as a powerful management reporting tool.



Asset & Income Forecast

Business units will forecast exposures (drawn and undrawn) and income (interest and non-interest) by rating category for each combination of business and risk dimension selected - actual values will be pre-populated into the model based on the dimension selection. In the advanced approach, assets & income forecasts can be based on EL bands ($PD \times LGD$) – this will allow for more risk-differentiated pricing forecasts. This information is crucial to assess the resilience of the financial plans – as higher risk grades are more prone to migration or default in stress macroeconomic conditions.



The diagram represents risk-based pricing bands based on EL bands ($PD \times LGD \times CCF$)

Stress Testing / Sensitivity Analysis

Financial plans are probabilistic expected values of earnings, assets, liabilities, capital, funding and liquidity, based on a given baseline scenario. Financial plans can be adversely impacted by a range of factors including macroeconomic, competitive, technological, strategic and operational. Sensitivity analysis is a tool that helps management in the identification, assessment and mitigation of such volatilities.

Sensitivity analysis can provide insight into questions such as: what will be in the impact on projected earnings in residential mortgages portfolio if housing prices declined by 35% in the next 12 months? Such questions can be easily answered by shocking the input risk parameters, such as PD (shift in PD profile) and LGD (decline in Loan-to-Value), as well as computing the revised level of EL and UL. If the resulting impact is material relative to risk appetite, then appropriate management action such as diversification or hedging, can be planned well in advance. Sensitivity analysis is also a tool which enables management to effectively communicate the resilience of the financial plans to internal and external stakeholders.

EUR mils	06 Baseline	Scenario 1	Scenario 2
Interest Income	3,003	2,787	2,587
Non-Interest Income	1,076	1,013	955
Total Income	4,079	3,800	3,542
General Provisions	754	948	1,053
Specific Provisions	449	674	1,127
Total Provisions	1,203	1,622	2,180
Credit Risk Capital	7,125	7,075	7,115
Non-Performing Loans	1,468	1,793	3,479
Exposures (Drawn + Undrawn)	137,398	128,734	122,347
Weighted Average PD	1.49%	1.72%	2.13%
NPL / Exposures	1.07%	1.39%	2.84%
Capital / Exposures	5.19%	5.50%	5.82%

Example x: Tabulated results of Group Dynamic B/S Financial Plan Stress Test

Based on Table X it can be concluded that, though the Bank in question is well capitalised under both hypothetical stress scenarios, it will not be able to meet its earnings target, as Total Income declines from EUR4bn to EUR3.5bn (12.5% decline). Decline in income can be attributed to two factors i.e. decline in growth rates, loss of income from defaulted assets and increase in level of specific / general provisions.

In the above example, we have used Dynamic Balance Sheet approach, which factors in projected growth rates (income and assets), and hence is more forward looking. An alternate approach will be to use static balance sheet approach, which concentrates on the deterioration of credit quality of the exposures at a point-in-time. It does not assess the impact of adverse macroeconomic conditions on asset and income growth rates. Though, for capital assessment regulators recommend the static approach, we recommend using the dynamic approach for financial planning.

Conclusion

International banks have made significant investments in risk infrastructure, measurement, and database, in compliance with Basel 2 regulations. In this paper, we discussed the use of risk based financial planning to leverage this compliance investment to aid business decision making and active portfolio management. Multidimensional financial planning fosters a strong understanding of the underlying risk profile and aids the assessing the resilience of the financial plans. Banks can use RBFP in embedding internal risk parameters (PD, LGD and CCF) in business decision making and demonstrate use test to regulators.