

# Credit Risk Strategy and the Sustainable Profitability and Risk Appetite in

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## Background

The complexity of consumer lending has increased significantly over the past few years, affecting institutions of all sizes. Among the causes of this complexity are:

- The adverse market environment.
- Intensifying competition that exposes banks to increasing risks and decreasing return margins.
- Shareholders' demand for higher risk premiums for their invested capital.

Moreover, the recent subprime crisis reflects the weakness of the originate-to-distribute model, although this approach doesn't mean "giving a pass" to indiscriminate and unlimited growth of the high-risk population and consequently letting up on credit approval constraints.

There is also a crisis in the classic "decision models" that are based on the rationality of consumer behavior, particularly the expected utility model, which offers an explanation of consumer behavior. These crises open the way for wide applications in the offering approach and over-indebtedness modeling.

From a regulatory standpoint, the Basel II framework represents a major change. In general terms, Basel II links the use of capital to the risk assumed in the business strategy. But the strategic importance of Basel II is not only in the regulation of the risk measurement phase (Pillar 1). It is also in what the risk measurement with symmetric and codified rules allows: a transparent relationship be-

tween business strategy and the risk/reward function of the stakeholders involved (Pillar 2).

Consequently, the strategic planning processes have become very stressed, and banks must adopt an integrated approach involving risk, volume, and value in the same forward-looking perspective. This vision requires the development of an adequate defense system to resist a possible "attack" on the part of the stakeholders.

## The Role of Credit Risk Management

The risk measurement phase once was the first and sufficient objective (together with a robust management information system) of risk management. Today, it is an essential prerequisite of advanced origination strategies for managing credit risk.

Credit risk strategy is more complex because it relates not only to the development of credit policy, but also to the planning of the risk position. This phase determines the sustainability of profits in the medium to long term. This article introduces a frame of reference for the risk strategy, considering goals, assumptions, and constraints.

## Basel II and the Strategic Planning Processes

The "unscrupulous diner's dilemma" (otherwise known as the problem of splitting the bill) serves as a metaphor for the impact of the Basel regulatory framework on strategic planning processes. Diners' splitting of the bill at a res-

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# Consumer Lending

restaurant is “economically inefficient.”<sup>1</sup> Equally dividing the bill induces the diners to consume more than they would if they were paying individually, thus resulting in a more expensive bill. Conversely, if all diners paid their own individual portions of the bill, they likely would consume less and the result would be a cheaper bill.

Now, think of the restaurant bill as the capital that a bank is required to hold and each diner as a business unit (e.g., mortgages, personal loans, small business, revolving, auto loans). The restaurateur is the stakeholder. Continuing with the metaphor, the shift from the Basel I to the Basel II environment is equivalent to moving from an indiscriminate payment modality to a scheme in which all diners pay for their own consumption only, and the restaurateur knows the value of the ingredients of each plate ordered by each diner. The main stakeholders of these processes are the regulatory authorities, debt holders, rating agencies, and shareholders.

The first three stakeholders will take into account the bank’s risk capacity, represented by the quantity of risk that the bank is able to take. The institution’s risk capacity is determined by its ability to meet its minimum capital requirement, subject to stress testing on the basis of deeply negative macroeconomic scenarios (e.g., severe recession) and then on the quantification of possible extreme losses.

The shareholders certainly will take into account the bank’s risk appetite, represented by the quantity of risk

that the bank is willing to take to maximize their interests and, at the same time, balance the interests of the debt holders, regulators, and rating agencies. For example, regulatory authorities manage the effects of pro-cyclicality so as to avoid a credit crunch caused by negative macroeconomic events. They will allow a greater distance between risk capacity and risk appetite, while shareholders will look for the higher convergence, if this convergence is able to grant them a higher return in the short term.

The new Basel Capital Accord (viewed as an individual payment scheme) reduces the informative asymmetries of Basel I and allows shareholders to evaluate more adequately the coherence between their own risk/return function and the one underlying the business strategy.

## Credit Risk Strategy

Risk strategy represents the operational deployment of risk appetite or, seen from another standpoint, the convergence point of an integrated approach to risk capacity, commercial development policies, and capital allocation.

Risk strategy serves as the “drive belt” between general strategic principles and daily business activities, providing information for the optimization of the credit decision drivers.

The development of a credit strategy involves two steps:

1. Define the target credit risk appetite.
2. Identify actions for risk appetite optimization.

Figure 1

Dimensions of Risk Strategy			
Credit Strategy Assessment Areas	Risk Appetite Directives	Tools	Constraints
Vulnerability	Target credit risk appetite	VaR	Regulatory constraints: <ul style="list-style-type: none"> <li>• Capital adequacy</li> <li>• Risk concentration management</li> </ul>
Value creation	Risk appetite optimization	VaR + Constrained optimization models	Business constraints: <ul style="list-style-type: none"> <li>• Budget</li> <li>• Capital allocation</li> <li>• Single loan constraints</li> </ul>

The definition of the target risk appetite considers two dimensions.

Once the target risk appetite perimeters are defined, the credit strategy will identify actions able to guarantee the maximum convergence between the “target” and “real” risk appetite in daily business activities (risk appetite optimization).

Credit strategy could be developed using various data, not all under the control of Risk Management. The entities that could be particularly involved are:

- Capital Management—Provides data of allocated capital and identifies macro-logics for EVA and RAROC multi-period calculation; also defines calculation rules for cost of capital.

- Planning—Provides data related to operative costs, other revenues, and cost of funding; works out prepayment models.
- Marketing—Provides take-up data.
- IT—Develops and implements software for deploying the desired credit action.
- Risk Management—Develops measurement models of expected risk (scoring, rating) and unexpected risk (value at risk); will be responsible for RWA calculation; and will develop constrained optimization models for risk strategies with input coming from the other functions described above.

From an operational standpoint, risk strategy should be developed once a year, during the planning processes, with input from the sales, capital management, and planning functions.

### Vulnerability and Diversification

The portfolio vulnerability dimension comes from the stress-testing process, required by Basel II's Pillar 2 within ICAAP processes.

From a risk capacity standpoint, its aim is to understand changes in economic capital caused by exceptional but plausible negative macroeconomic events and then to evaluate the resistance of the buffer represented by available capital.

From the risk appetite standpoint, the vulnerability indicator, coming from the credit VaR model, has to be used to set the target risk appetite.

Vulnerability analysis allows us to understand changes in portfolio default probability caused by negative macroeconomic scenarios.

Given the vulnerability indicators in terms of default probability migration, the portfolio, segmented by product, industry, and geographical cluster, will be divided into at least three macro-categories:

Figure 2

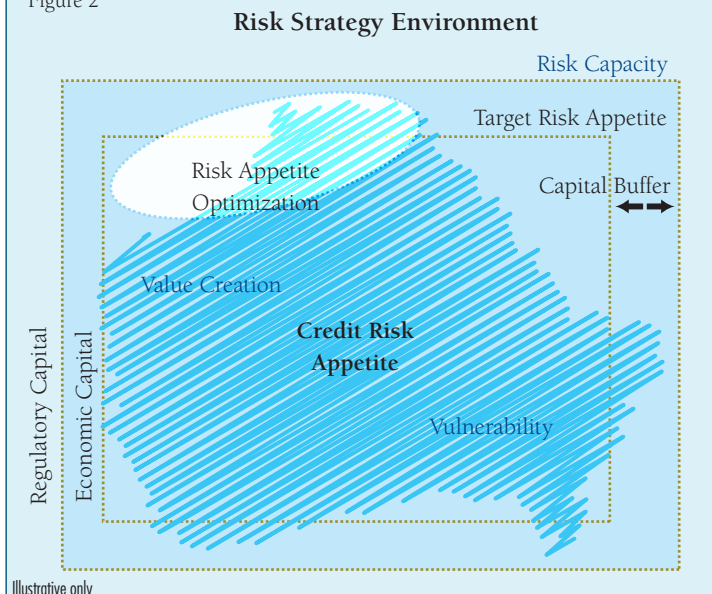


Figure 3

### Differences Between Risk Strategy and Value Management

	Temporal Horizon (views)	Object of Calculation
Value-based management objectives	One year	Stock (total portfolio at calculation date)
Credit risk strategy	For fixed maturity without revisable pricing, the time horizon will be the maturity of the asset	Flow (recent production of the last 6 to 12 months)

- High vulnerability.
- Medium vulnerability.
- Low vulnerability.

Vulnerability also has to be taken into consideration in terms of concentration risk.

It's possible to define concentration risk as an excess exposure allocation to a single name, to a single industry, or to a specific segmentation variable such as the geographical area or the rating distribution.

Moreover, the correlation among borrowers under various economic conditions has to be considered as concentration risk, even if the importance of this aspect for the retail business is not very significant.

#### Value and Lifetime Risk-Adjusted Return

Under a credit strategy perspective, the value creation

analysis has to be objective to verify the sustainability of the risk-adjusted return in the medium to long term.

For this reason, it is important to understand the difference between credit risk strategy and value-based management objectives. The numbers will likely be different, and these differences will be emphasized, especially at the beginning or end of an economic cycle.

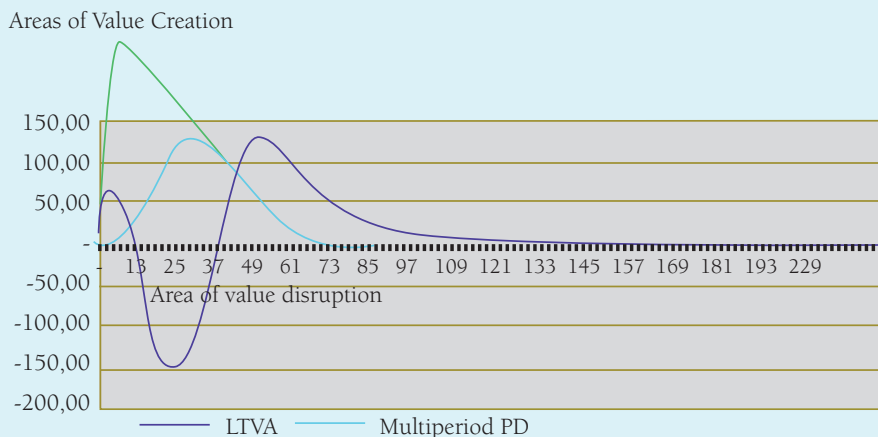
Asset maturity should be taken into account for mortgages, personal loans, medium-term small business loans, and auto loans. For credit cards and revolving exposures, one-year data can be used.

Loan profitability, calculated over a multi-period horizon, could be positive on the whole, but it can show negative values in one or more periods.

All the economic profit components will be calculated under a multi-period perspective.

Figure 4

### Example of LTVA Dynamic



With data concerning recent production, the following will be calculated for each position:

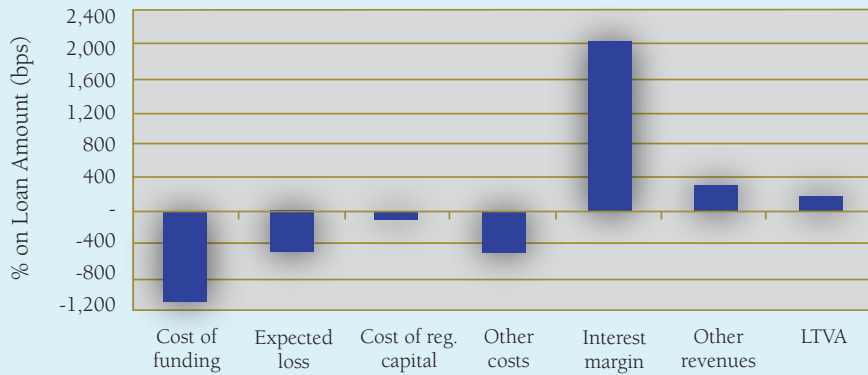
$$\text{Lifetime Rorac} = \text{NPV (NOPAT)} / \text{NPV (Economic Capital)}$$

$$\text{Lifetime Economic Value Added (LTVA)} = \text{NPV (NOPAT)} - \text{NPV(Cost of Economic Capital)}$$

Illustrative only

Figure 5

### Actual LTVA Composition, Accepted Loans (Booked Volume July 2006-June 2007)



Illustrative only

This calculation allows the bank to value the quality of the portfolio originated in terms of profitability in the long term, rating/scoring level, geographical area, and other segmentation variables.

This analysis represents the starting assessment because it analyzes the business conditions really applied by the bank. It will result in an understanding of how much and where value creation is (or is not) achieved. This representation will be the focus of the origination strategies.

### Target Risk Appetite

The assessment analysis helps in defining the metric of the target credit risk appetite.

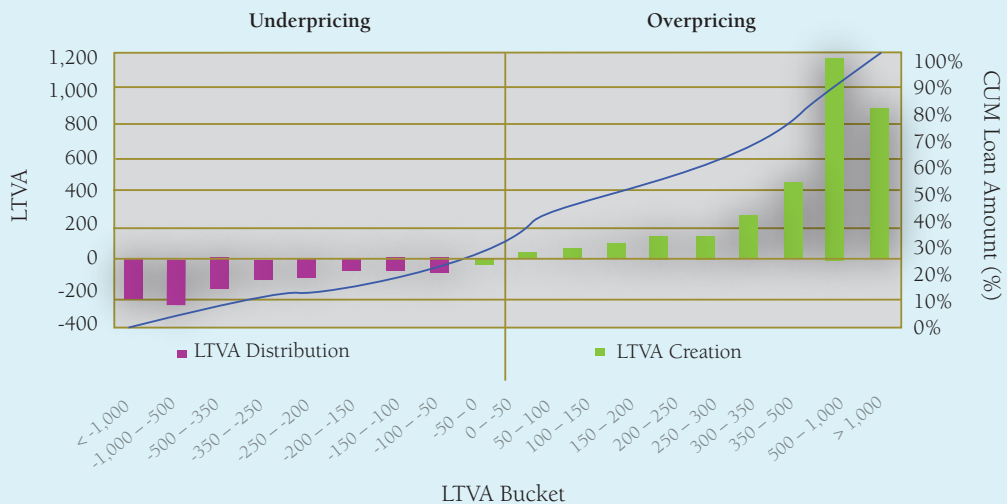
The objective is to define the maximum limit that certain risk classes could reach in the bank portfolio, independent of their expected profitability. The limits system is intended not to ration credit, but to avoid an excessive increase in riskiness that could diverge from the bank's risk appetite.

This activity should be deployed at several levels:

- Business unit.

Figure 6

### LTVA Distribution, Accepted Loans (Booked Volume July 2006-June 2007)



Illustrative only

Figure 7

### Limits System Directives

	Low Vulnerability	Medium Vulnerability	High Vulnerability
Risk adverse	-	1.5	2
Risk neutral	3	3.5	4
Risk prone	5	6	7

- Product.
- Geo-sectorial cluster.
- Rating/scoring class.

With respect to geo-sectorial segmentation, it will be important to take into account information about vulnerability described above.<sup>2</sup>

With respect to risk class segmentation, it will be useful to break down the portfolio by at least three classes derived from the rating/scoring system:

- Risk adverse.
- Risk neutral.
- Risk prone.

The methodology used to define limits is strongly linked to the bank's and the portfolio's features. However, it could be useful to define limits in terms of odds—that is, the equilibrium between assets that has to be reached at the portfolio level.

This approach guarantees that sales functions maintain

a certain number of medium-to-high-risk assets in the portfolio.

In terms of capital allocation, the target risk appetite has to translate the objectives fixed at one year into multi-period objectives, consistent with the time horizon used in the lifetime value assessment described above.

### Risk Appetite Optimization

Considering medium-to-long-term profit sustainability, an optimization strategy aims to arrive at the optimal combination of the origination drivers.

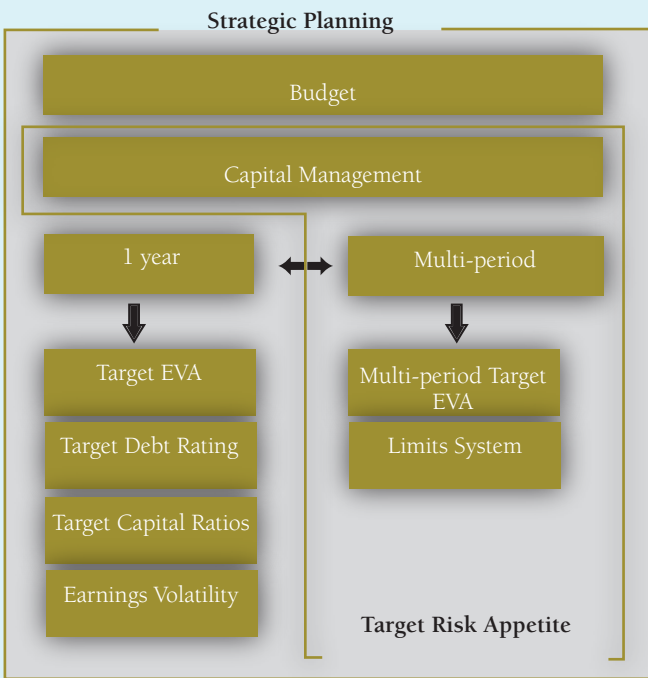
For example, the variables that affect LTVA can be represented by an influence diagram.

In order to set the values of these variables or what constraints they must respect, a constrained optimization model is needed to identify one or more combinations aligned to the value creation maximization.

The optimal combinations must be translated into cred-

Figure 8

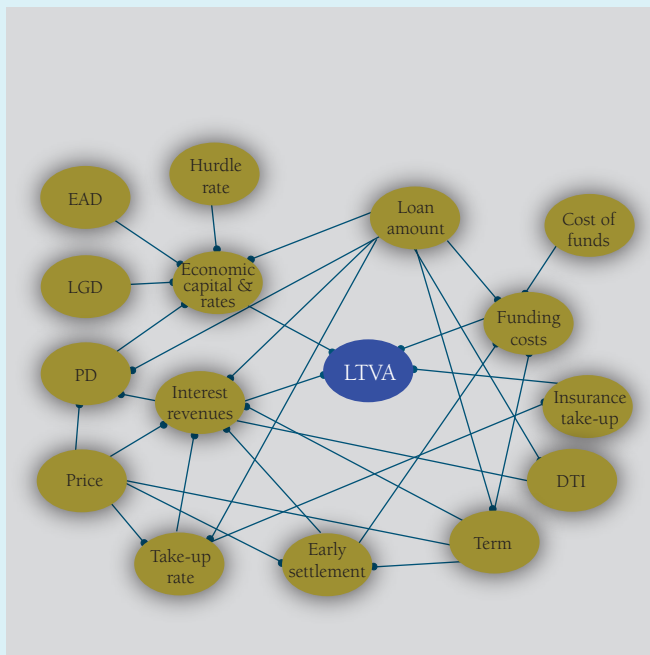
### Capital Management Time Horizon and Objectives



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Figure 9

### Influence Diagram of LTVA



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Figure 10

### Influence Diagram of LTVA

Single-Loan Constraints	Portfolio Constraints
Take-up Affordability Over-indebtedness Loan-to-value	Budget volume Allocated capital

it actions:

*Selection strategy of the client:*

- Cutoff strategy.
- Management strategy of credit lines.
- Retention strategy.

*Selection strategy of the loan:*

- Pricing.
- Loan amount size.
- Maturity.

### Summary

This article described the process that leads to the definition of risk strategy, which is strongly related to risk appetite. It is also a tool to maximize risk-adjusted returns and to manage capital efficiently.

Basel II requires banks to respect this approach and offers the advantage of guaranteeing the intense cooperation of different functions. This approach allows institutions to manage very complex processes, such as risk planning and commercial budgets, and to efficiently use allocated capital and to make offering actions. On the other hand, without the development of a risk strategy,

the contemporaneous achievement of the goals related to these processes would be subject to the “randomness law,” resulting in a competitive environment that doesn’t permit margins of rough errors.

But probably the main challenge of risk management is the ability of its practitioners to speak a clear and comprehensible language and to invest in the creation of a strong, independent risk culture open to communication and meaningful to all people involved in daily business activities. The next article in this three-part series will analyze the components of lifetime risk-adjusted returns and the calculation and reporting methods. The final article will analyze cutoff and pricing strategies for mortgages and personal loans, as well as the rules of the game for constrained optimization. ❖



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The content of this article reflects the opinions of the authors and not necessarily those of UniCredit Bank.

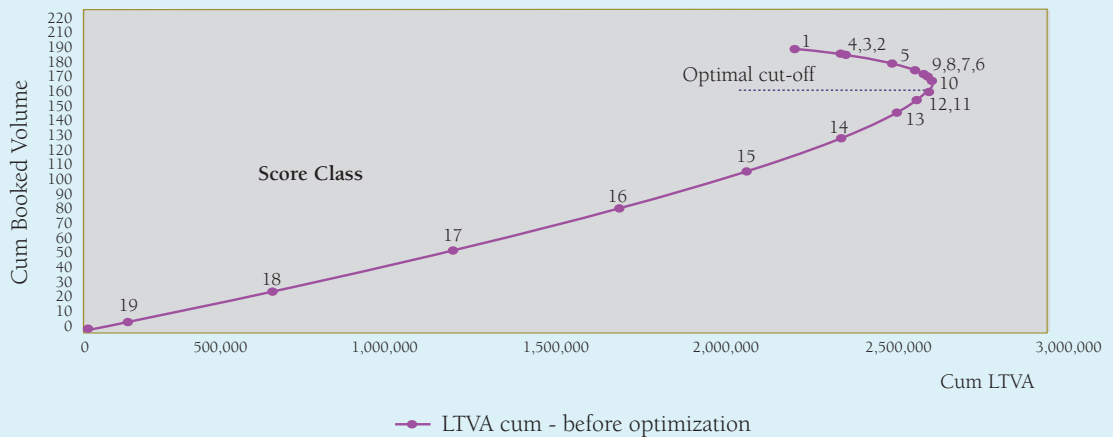
### Notes

1 Gneezy, U., E. Haruvy, and H. Yafe (2004), “The Inefficiency of Splitting the Bill: A Lesson in Institution Design,” *The Economic Journal* 114, no. 495 (April): 265-280.

2 Stress-testing processes are required by Basel II – Pillar 2 within ICAAP processes. The aim is to understand changes in capital equipment caused by exceptional, but plausible, negative macroeconomic events and then to evaluate the resistance of the buffer represented by available capital.

Figure 11

### Efficient Frontier by Score Class, Accepted Loans



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