

## RETAIL BANKS & ECONOMIC CAPITAL: SPECIAL ISSUES AND OPPORTUNITIES

Many commentators fear a consumer slowdown in the wake of rising interest rates and energy prices, inflation fears, and cooling house prices. They believe that the best bankers can hope for is a soft landing for the economy.

However, even a soft landing might have a severe effect on retail banking businesses in terms of sharply rising credit losses and sharply falling business volumes.

**Strategy, tactics, and specialization are three reasons why more retail bankers are using economic capital.**

Historically, economic capital has been slow to take hold in retail banking because losses have been perceived as less volatile than in commercial lending. However, three considerations are now turning greater numbers of retail bankers toward using economic capital:

- 1. Strategy.** Amid expanding retail product lines, banks are realizing that conventional measures of risk and profitability make it difficult to compare the long-run performances of various businesses. For example, how can the bank compare the profitability of a credit card business with that of fee based businesses after taking long term loss volatilities into account?
- 2. Tactics.** Banks continue to seek a wider spectrum of customers, including non-prime customers, across a range of products. As these markets expand and margins compress due to competitive pressures, it is becoming imperative that banks take into account economic capital costs in their profitability and pricing decisions. Which risk segments are making risk-adjusted profits? And how can the bank drive up long-run profitability through risk-adjusted pricing?

- 3. Focus.** Retail banks that specialize in products (e.g., monolines) or geographical regions have prospered over the last decade, but ratings agencies and regulators are concerned about the effect of concentration risks on capital adequacy in the event of a downturn. What is the capital cost of preserving business focus?

These questions will take on a sharper edge over the next couple of years. Let's look at how economic capital can help provide some answers, and consider the issues that retail banks must overcome to develop best-practice economic capital calculations.

### IDENTIFYING STRATEGIC OPPORTUNITIES

Comparing the long-run performance of retail businesses using traditional measures, such as return on assets or return on equity, can be complicated and misleading. Different businesses and products attract various types and levels of risks:

- Variable levels of credit risk – e.g., non-prime credit cards are riskier than non-prime mortgages, which in turn are riskier than prime mortgages with low loan-to-value ratios.
- Different kinds of risk – e.g., asset management attracts no credit risk but lots of business risk.
- Hidden risks – e.g., the impact of higher interest rates and lower property prices on non mortgage consumer products.
- Correlated risks – e.g., the risk of significantly lower than-expected mortgage recoveries in a downturn due to the correlation between mortgage defaults and property prices.

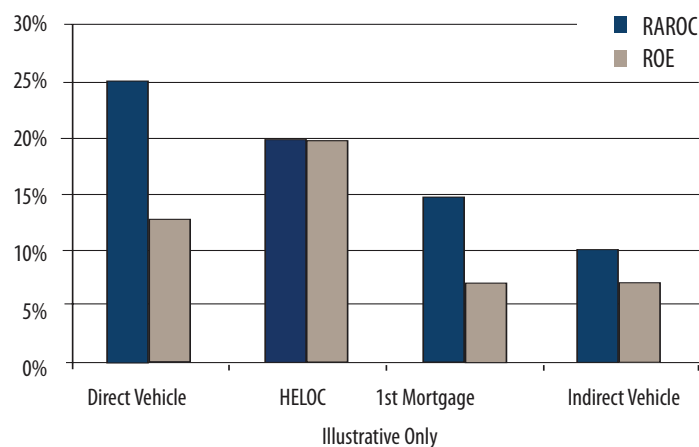
Economic capital attempts to solve this problem by providing a risk-adjusted common currency of risk so that banks can compare the (risk-adjusted) profitability of different activities over the whole economic cycle and see more clearly which are the most deserving of further investment.

To be accurate, economic capital analyses must be based on estimates of the particular risk factors that drive risk in each retail portfolio. Banks must not be tempted to use simplistic proxies for risk, such as the cost of regulatory capital or generalized capital factors based on information from other banks. These rule-of-thumb approaches fail to measure borrower risk (i.e., probability of default) in an accurate manner, but in retail there are many additional complicating factors. For example, the credit risk in property-linked lending is driven by risk factors that include loan-to-value ratios, as well as factors such as mortgage indemnity insurance and whether the customer's business was originated by the bank or through a thirdparty broker.

Figure 1 shows the kind of gap that typically exists between accurate risk-adjusted return on capital (RAROC) numbers based on economic capital, and traditional return-on-equity calculations where risk cost estimates are based on a mix of regulatory capital costs and management judgment. Although included here only for illustrative purposes, Figure 1 demonstrates some general truths that have become evident during our client studies.

- We can see that the gap tends to be widest for business lines such as mortgage lending and direct vehicle lending, where economic capital is usually much lower than regulatory capital.
- Conversely, the risk of drawdown and higher loss given default on HELOCs, and the higher default risk for indirect vehicle, often pushes the economic capital figures for these business lines up (and therefore closer to the rule-of thumb numbers).
- As the figure suggests, the economic capital number for most retail lines of business tends to be lower than the regulatory capital requirement for that business.

**Figure 1: How might retail RAROC numbers typically compare to ROE numbers?**



If economic capital analyses are to support strategic decisions, banks must take into account a range of risk types – not just credit risk. This is especially important for retail banking because, unlike commercial lending, some retail activities attract virtually no credit risk but do attract other kinds of risk, such as business risk, operating risk, and embedded financial risk (e.g., non-trading interest rate risk). Approaches that focus overly on credit risk ignore the capital costs of these other risks and therefore exaggerate the returns from these businesses.

Table 1 offers some examples of the kind of noncredit risks that can substantially affect economic capital calculations for various retail business lines. For example, as banks have discovered over the last few years, interest rate risk can be a significant and complex driver of risk in mortgage origination and servicing. A rise in interest rates tends to drive business volumes down (as prepayments fall) while driving up the value of mortgage servicing rights (as mortgages stick around longer). In our experience, interest rate sensitivities in mortgage businesses often account for more economic capital than operational risks, despite the attention paid to the latter risk source over the last few years.

Figure 2 illustrates the kind of interest rate sensitivity analysis that should underpin economic capital calculations for mortgage and other interest-rate-driven bank activities. In this example, the mortgage origination unit's sensitivity to interest rate rises is partially offset by gains in the value of the servicing rights retained by the bank.

**Table 1: Which non credit risks do various retail banking activities attract?**

Line of Business	Business Risk	Embedded Financial Risk	Event Risk
Checking & savings	<ul style="list-style-type: none"> <li>· Competition</li> <li>· Disintermediation</li> <li>· Operating leverage</li> </ul>		<ul style="list-style-type: none"> <li>· Fraud</li> <li>· Robbery</li> <li>· Employees</li> </ul>
Credit cards	<ul style="list-style-type: none"> <li>· Attrition/inactivity</li> <li>· Competition</li> <li>· Strategic</li> <li>· Regulation</li> </ul>		<ul style="list-style-type: none"> <li>· Consumer litigation</li> <li>· Fraud</li> <li>· Employees</li> </ul>
Mortgage	<ul style="list-style-type: none"> <li>· Competition</li> <li>· GSEs</li> <li>· Unbundled value chain</li> <li>· Technology costs</li> </ul>	<ul style="list-style-type: none"> <li>· Originations fluctuate with rates</li> <li>· LTVs fluctuate with real estate market</li> <li>· Pipeline fallout</li> </ul>	<ul style="list-style-type: none"> <li>· Consumer litigation</li> <li>· Systems</li> <li>· Models</li> <li>· Compliance risks</li> </ul>
Auto lending/leasing	<ul style="list-style-type: none"> <li>· Competition/adverse selection</li> </ul>	<ul style="list-style-type: none"> <li>· Residual value</li> </ul>	<ul style="list-style-type: none"> <li>· Consumer litigation</li> <li>· Systems</li> <li>· Models</li> <li>· Compliance risks</li> <li>· Fiduciary risks</li> </ul>
Asset management	<ul style="list-style-type: none"> <li>· Brand costs</li> <li>· Expense ratio</li> <li>· Net funds flow</li> </ul>	<ul style="list-style-type: none"> <li>· Revenues as % of assets under management</li> </ul>	<ul style="list-style-type: none"> <li>· Fiduciary risks</li> </ul>
Brokerage	<ul style="list-style-type: none"> <li>· Competition</li> </ul>	<ul style="list-style-type: none"> <li>· Commissions and volumes vary with market</li> </ul>	<ul style="list-style-type: none"> <li>· Consumer litigation</li> <li>· Systems</li> </ul>

Not all retail businesses incur embedded financial risks, but most are affected, to some degree, by classic business risks. Business risk results from the volatility of revenues at a particular business and the way this interacts with the business’s operating leverage (defined as the balance between the fixed and variable components of a bank’s operating cost base).

The risk parameters for modeling business risks in retail operations can be estimated by looking at historical bank operating information (e.g., revenue and expense volatilities) and by factoring in expert judgments from business leaders. This is one of the key emerging areas in retail

economic capital analytics, not least because bank executives can manage their business risk profile to some degree through altering bank strategies (e.g., by reducing terms for leasing property or by increasing flexibility in employment and remuneration practices).

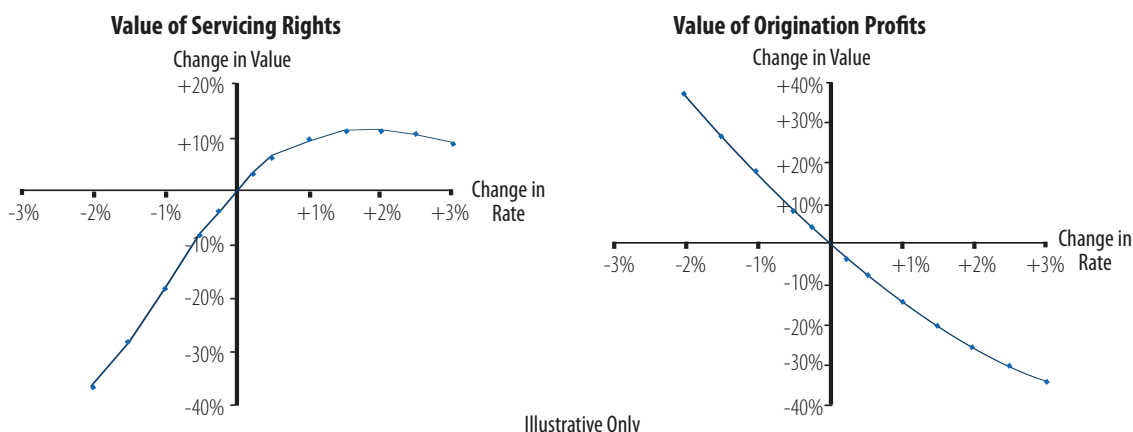
## IMPROVING COMPETITIVE TACTICS

Where economic capital numbers are robust, they can be applied to tactical and competitive decisions. Figure 3 illustrates how retail banks can use economic-capital-based analysis to explore the profitability of their portfolios in terms of credit bureau score bands. In this example, the bank is clearly finding it difficult to make returns above its hurdle rate (dotted line) in the competitive market for customers with good credit scores. The bank is also making low returns from borrowers with low credit scores – probably because it has underestimated the margins that it should be pricing into these offerings. However, the analysis reveals that the bank is making a very healthy risk-adjusted margin on customers with slightly below-average creditworthiness in the 735-660 range.

The bank in Figure 3 might use this analysis to alter its tactics in various ways. For example, it might:

- Compete more fiercely for customers in the 735-660 range.
- Attempt to build a wider relationship with high-credit-score customers so that

**Figure 2: How might changes in interest rates drive value changes in mortgage businesses?**

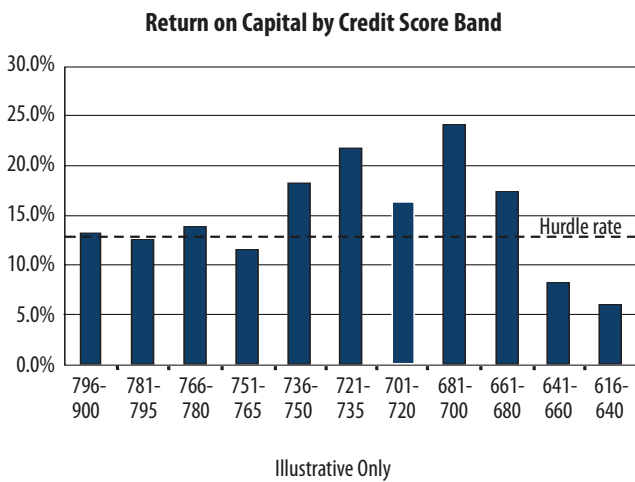


Illustrative Only

it makes money from these customers overall.

- Make quite subtle shifts in its offerings to low-credit-score customers in terms of reducing limits, reducing maturity, increasing collateral, securing guarantees, or improving pricing to tilt these relationships back into risk-adjusted profitability.

**Figure 3: Which of your consumer borrower credit score bands are creating – or destroying – risk-adjusted value?**



The great benefit of riskfactor-based economic capital analysis is that it tells the bank exactly how much it must alter each risk-and-return factor to turn a particular credit segment around. To make this kind of analysis, however, banks must accurately measure all the risks associated with a given portfolio, including default risks hitherto thought of in terms of relative credit scores and underwriting cutoff points.

The good news for retail banks is that the data-rich nature of retail credit markets and the wide use of standardized credit scores make it relatively easy for economic capital modelers to estimate borrower probability of default. Indeed, many banks should think of this as a problem with a silver lining:

1. Where banks do not have good internal data on borrower default, bureau score bands offer a decent proxy because they are easy to link to default rates using data published by the credit bureaus.
2. Where banks *do* have good internal data, they should consider building custom scoring models that outperform

bureau scores in terms of risk prediction. The bank can then use its risk-adjusted profitability analysis to identify and compete for customers that the market has overpriced in risk terms.

However, putting an absolute number against the probability of default and other key risk factors is not the only challenge when calculating risk-adjusted returns. Retail banks also must consider how to gather expense and return numbers at an appropriately granular level: We can see why in Table 2, which provides a simple calculation of the credit risk-adjusted return on capital of a one-year bullet loan. In the table, we've divided the calculation into two steps – the calculation of pretax income and the RAROC calculation itself – and added in some example numbers as well as providing the generic formulas. To specify the inputs in Table 2, many banks have to conduct some extra housekeeping, e.g., in terms of allocating expenses and understanding the cost of funds for each transaction.

## RETAIL CONCENTRATION RISKS

Regulators and ratings agencies increasingly ask banks with regional and product concentrations to explain how they assess the effect of these concentrations on their capital adequacy. Economic capital analysis is the natural answer because it is designed to relate a bank's whole portfolio of risk to the amount of capital the bank must hold if it is to achieve a particular solvency target.

**Table 2: Computing RAROC for a Loan**

<b>First — Calculate pre-tax income</b>	
Pre-tax Income = Yield + Fees - Expenses - Provision - Cost of Funds	
Pre-tax Income = 5.5% + 0% + 1% - 1% - 3% = 0.5%	
<b>Second — Calculate transaction RAROC</b>	
RAROC =	$\frac{[\text{Pre-tax} + \text{Provision} - \text{EL} + \underbrace{(\text{Cost of Funds} * \text{EC})}_{\text{Capital Credit}}] * (1 - \text{Tax})}{\text{Economic Capital}}$
RAROC =	$\frac{[0.5\% + 1\% - 0.8\% + (3\% * 3.9\%)] * (1 - 35\%)}{3.9\%}$
RAROC = <b>13.6%</b>	
Illustrative Only	

However, implementing an economic capital model means estimating correlation numbers for each retail risk portfolio; to

do this, banks will likely have to turn to external data sources. This is more problematic for retail than for commercial lending, where researchers can to some degree depend on the analysis of correlations in the movement of equity prices on the public stock exchanges.

In the case of geographically dispersed retail portfolios, banks can estimate correlations using actual household bankruptcy or mortgage foreclosure data, which is usually available in the public domain. For most banks, a state-level breakdown is appropriate, though it is sometimes possible to capture subtle correlation effects within a state, e.g., between rural and urban areas. When looking at state-level data over the past 40-plus years, the highest correlations appear in states that are relatively small (e.g., Hawaii and Vermont) and in states where the economy is cycle sensitive due to industry concentrations (e.g., Pennsylvania and Michigan).

Taking the extra effort to identify retail correlation parameters is particularly worthwhile for certain kinds of banks. Banks with geographically diversified portfolios can gain benefits of up to 40% compared to the economic capital required for similar portfolios where the bank lacks any geographic diversification.

Conversely, banks that have portfolios concentrated in a particular geographical area must take special care to identify any common risk factors that might drive their retail credit risk. For example, the risk from mortgages to rural farmers can be significantly greater than that from traditional mortgages due to the underlying volatility of prices for crops and farm produce. Even within agriculture, there is a significant difference between the risk of stable commodities like dairy and more volatile ones like rice and wheat. Finally, banks with both commercial and retail lending portfolios should take care

to apply methodologies that accurately aggregate the capital from different portfolios and risk types. These banks often gain important diversification benefits from their retail portfolios at the enterprise level, so poor aggregation methodologies tend to significantly overestimate the bank's capital requirement.

## CONCLUSION: ECONOMIC CAPITAL AS A RETAIL RISK RADAR

When consumer credit quality deteriorates, it often brings to the surface a number of risks in retail banking. These range from the mispricing of non-prime credit, to such unexpected risks as repurchase risks in mortgage businesses, lower-than-expected real estate recoveries, and business risk driven by unused capacity.

The time to deal with these risks is before a consumer slowdown turns them into actual losses. But simply making a laundry list of the potential risks that the bank is exposed to across its retail activities is not enough. The size of the risk and its cost in terms of bank capital remain unclear, and so the risk identification process rarely turns into a properly prioritized risk management process.

By contrast, the process of building an economic capital framework obliges retail banks to consider their whole spectrum of risk in relation to capital costs. Banks can then compare the size of each risk and its capital costs to the cost of any potential risk mitigation to decide whether they prefer to live with an exposure or to manage it in a more active way.

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