Navigating Loan Pricing Model Implementation Roadblocks

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EXECUTIVE SUMMARY

Commercial loan pricing models have become more prevalent in the community banking landscape. Large regional and national banks have always used models, but community institutions are now turning towards pricing software in order to compete in today's lending environment. Commercial lenders who are accustomed to full autonomy in managing their relationships, sometimes resist adopting a new pricing model. This whitepaper tackles many of the roadblocks executives face as they assess the value of loan pricing systems.

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INTRODUCTION

Lender resistance often creates enough inertia to make loan pricing model implementations fall short of expectations. Executives need to establish a strong commitment to the use of a pricing tool and a comprehensive understanding of the assumptions and configuration of the model. There are many roadblocks that can derail a good implementation. This whitepaper explores many of the concepts used in pricing tools and what needs to be considered in order to successfully implement a model.

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Roadblock #1 – Perceived Accuracy of Assumptions and ROE Targets

Problem

One of the biggest hurdles during implementation of a loan pricing model is lender resistance. Lenders will argue that a pricing model takes away their independence, burdens them with additional bureaucracy, and hinders their ability to add new loan volume. They will ask tough questions regarding model assumptions and Return on Equity (ROE) targets. Usually the basis for their resistance is past experience with models that didn't work because they were perceived as onerous and inaccurate.

A model will price us out of the market and won't allow us to grow our loan portfolios.

Solution

Loan pricing models should have the flexibility to be configured with institution specific assumptions and ROE targets. Assumptions and targets should result from a detailed development process similar to the following:

1. ***Perform product profitability analysis on existing loans and deposits.***
2. ***Analyze results to determine existing product ROE.***
3. ***Segment loan portfolio into various tranches based on loan size.***
4. ***Set specific ROE targets for each product type and size tranche.***

Product Profitability Analysis

Most of the data needed to perform a product profitability analysis can be found in the core data system. Balances, interest income on loans, interest expense on deposits, and fee income can all be gathered at the account level directly from the core. Other key data such as credit for funding on deposits, cost of funding loans, provision expense allocation, cost allocation, and capital allocation, need to be applied to the account data using a similar methodology as is used in the pricing model.

The credit for funding on deposits and cost of funding on loans is assigned based on the desired funds transfer pricing (FTP) methodology. This process factors in the duration of the account and the origination date or last rate change date.

Provision expense is allocated to loans after considering the risk grade of the account and the general reserve allocation for the account's product type usually found in the Allowance for Loan and Lease Losses (ALLL).

The cost allocation process starts with a determination of which non-interest expenses should be assigned to loans, deposits, and treasury management products. Expenses are also designated as

either fixed or variable in nature. These general expense buckets are broken down further by assigning them to individual product types. At the end of the process, each account of a specific product type receives an origination, servicing and fixed overhead cost assignment. The cost allocation process should use a fully-allocated approach where the sum of all allocated costs reconciles with the general ledger.

Capital is allocated to products based on the perceived risk. A good approach is to initially use the risk-weightings of the asset accounts to assign capital with the remainder allocated to deposit accounts. Again, this process should fully reconcile to the general ledger.

Determining Current Product ROE

After completing these various allocations, a full income statement can be produced for each loan and deposit product according to the following tables.

Loan Income Statement	Source		Deposit Income Statement	Source
Interest Income (+)	Core System		Credit for Funding (+)	Calculated
Cost of Funding (-)	Calculated		Interest Expense (-)	Core System
Net Interest Margin			**Net Interest Margin**	
Fee Income (+)	Core System		Fee Income (+)	Core System
Provision Expense (-)	Calculated			
Expense Allocation (-)	Calculated		Expense Allocation (-)	Calculated
Taxes (-)	If applicable		Taxes (-)	If applicable
Net Income			**Net Income**	
Allocated Capital	Calculated			
ROE	Net Income / Allocated Capital			
ROA	Net Income / Average Balance			

Segment Loan Portfolio into Size Tranches and Adjust ROE Targets

After completing the detailed product profitability analysis and determining the current ROE levels, the results should be further broken down to determine the existing ROE levels of various loan size tranches. This allows ROE targets to be accurately set within the pricing model. The following is an example target ROE matrix.

	Loans < $200k		>$200k and < $750k		>$750k	
Product	Current ROE	Target ROE	Current ROE	Target ROE	Current ROE	Target ROE
Commercial Real Estate	6.0%	7.5%	9.0%	10.5%	12.0%	13.5%
Commercial Construction	5.0%	7.5%	8.0%	10.0%	11.0%	12.5%
Other Commercial	2.0%	5.0%	6.0%	7.5%	7.5%	10.0%

Roadblock #2 – Pricing Models don't Work with Small Loans

Problem

A significant complaint we hear from bankers regarding in-house and third party pricing models is that they don't work well on small loans. Bankers can become frustrated because no matter what rate assumption they put into their model, the loan never meets the bank's ROE target levels. Let's explore how loan profitability is calculated within a pricing model and how a properly calibrated system allows lenders to be competitive regardless of loan size.

Solution

First, look at how pricing models calculate the profitability of loans. Below is a typical income statement.

Loan Income Statement	Calculation
Interest Income (+)	Average Balance * Loan Rate
Cost of Funding (-)	Average Balance * Cost of Funding Rate (FTP Rate)
Net Interest Margin	Interest Income minus Cost of Funding
Fee Income (+)	Loan fees (% of loan amount or $ charge)
Provision Expense (-)	Average Balance * Provision % (adjusted for credit risk)
Expense Allocation (-)	Origination, Servicing, Overhead allocated as $/acct or % of loan amount
Taxes (-)	% of Pre-tax Profit, if applicable
Net Income	Net Interest Margin plus Fees minus Expenses and Taxes

An analysis of this income statement illustrates that the majority of line items have the same profitability impact for all loan sizes. In other words, these line items scale with loan size. This includes interest income, interest expense, fee income (in most cases), provision expense, and taxes. The only line item that has a different profitability impact for different loan sizes is the expense allocation. Most likely, it is this assumption that is causing the heartburn when analyzing small loans.

Expense Allocation

The best pricing model implementations generally include a detailed expense allocation study. In these studies, 100% of the institution's non-interest expenses are distributed among its product lines. A percentage of each expense is allocated to loan, deposit, and treasury management products and further divided into origination, variable servicing, and fixed overhead categories.

After all expenses are allocated, an average cost per account can be calculated based on the number of accounts serviced within each product line. The following table shows an example of the average costs per account.

Product	Origination Expense	Annual Servicing	Annual Overhead
Commercial Real Estate	$750	$650	$1,500
Commercial Construction	$1,000	$700	$1,500
Other Commercial	$400	$450	$1,500
Mortgage Loans	$250	$150	$750
Consumer Loans	$50	$50	$150
Non-Maturity Deposits	$100	$50	$200
Time Deposits	$50	$25	$100

After the expense allocation study is complete, the results can be loaded into your pricing model for use on all new loan analyses going forward. By allocating expense on a "dollar per account" basis, you will see an inversely proportional relationship between loan size and the profitability impact of the expense assumptions. The smaller the loan, the larger the profitability impact of expenses. The larger the loan, the smaller the impact of expenses.

Considerations should be made to determine if costs should be adjusted on loans of varying sizes. If there are procedures in place to streamline the origination of smaller loans, then it makes sense to reduce the cost per account assumptions in your pricing model to reflect this. On the flip side, if there is a size threshold for loans to go through the full approval process, including full credit underwriting and loan committee review, it is then reasonable to increase the cost per account in your pricing model for larger loans.

There are alternatives to the cost per account allocation method. Some institutions decide to allocate either a portion or all of their expenses as a percentage of loan amount. By making this change, the expense allocation assumptions will have the same profitability impact on all loan sizes. The question you need to ask is whether a $1mm loan should get 10 times the cost as a $100k loan. In a similar manner, some institutions opt to ignore cost allocations in their pricing model entirely. By doing this, the institution has decided to manage the profitability of their loans at the net interest margin level with small adjustments for fees and credit quality. Both of these methods generally force institutions to adjust their ROE targets higher to compensate for not fully allocating expenses.

Roadblock #3 – Loan Pricing Models Contradict the Spirit of Community Banking

Problem

Many community bankers believe that using a loan pricing model contradicts the philosophy of community banking. They view their role as community bankers as making lending decisions based on a close personal relationship with the borrower. Their decisions may not be completely based on a detailed analysis of the numbers and a strict requirement for a minimum level of return. They associate this with large impersonal banks in their markets.

Loan pricing models aren't for community banks; they are the exclusive purview of large regional or nationwide banks.

Solution

Community banks can implement a loan pricing model to **manage risks, achieve an acceptable level of return, and assure fairness and consistency in loan pricing without harming the close personal relationships they have fostered with borrowers over time**. There does not need to be a strict requirement for a single minimum target rate of return. As a matter of fact, a different level of return should apply to different borrowers, based on differences in credit scores, loan terms, and the other aspects of the relationships they maintain with your community bank.

Use of a loan pricing model may actually improve the lenders understanding and awareness of a borrower's business practices, banking patterns and future financial needs. The model can also serve to **strengthen the relationship that currently exists**, by explaining the balancing process that the lender manages in striving to simultaneously **meet the needs of both borrower and shareholders**, in a fair and consistent manner.

Establishing loan pricing policies that are appropriate to your community banking philosophy, and developing flexible return guidelines for a variety of lending situations are just two key implementation areas to consider. Implementing a loan pricing model in this manner will **increase your net interest margin, and add to overall profitability while still maintaining your community bank culture.**

Roadblock #4 – Funds Transfer Pricing doesn't Reflect Actual Cost of Funds

Problem

The single largest impact on profitability calculations in your loan pricing model is the Funds Transfer Pricing (FTP) rate. Many community bank commercial lenders and credit analysts generally are unfamiliar with the importance of FTP concepts and methodologies and how it figures into the lending process. Members of the finance team are often tasked with maintaining in-house FTP systems for their institutions, sometimes at the exclusion of lenders and credit personnel. This can lead to confusion and cause lender resistance because the FTP rates are not perceived to reflect the actual funding costs of the institution.

The funding curve used in the FTP process doesn't reflect the funding costs of our institution.

Solution

At the most basic level, FTP determines the Net Interest Margin of each individual account being analyzed for profitability. This includes the assignment of a Cost of Funding (COF) rate to asset products, and a Credit for Funding (CFF) rate to liability and capital products. Because these rates, and the resulting interest income and interest expense assigned to individual products, do not appear on an institution's income statement, a valid FTP allocation model needs to be defined so the total cost of funding applied to assets equals the total credit for funding applied to liabilities and capital.

	Interest Income	Interest Expense	Margin
Assets	4.25%	2.00%	2.25%
Liabilities & Capital	2.00%	0.40%	1.60%
Yield/Cost Spread	4.25%	0.40%	3.85%
	Results as reported in institution's financial statements		
	Weighted average FTP rates		
	Margin contribution		

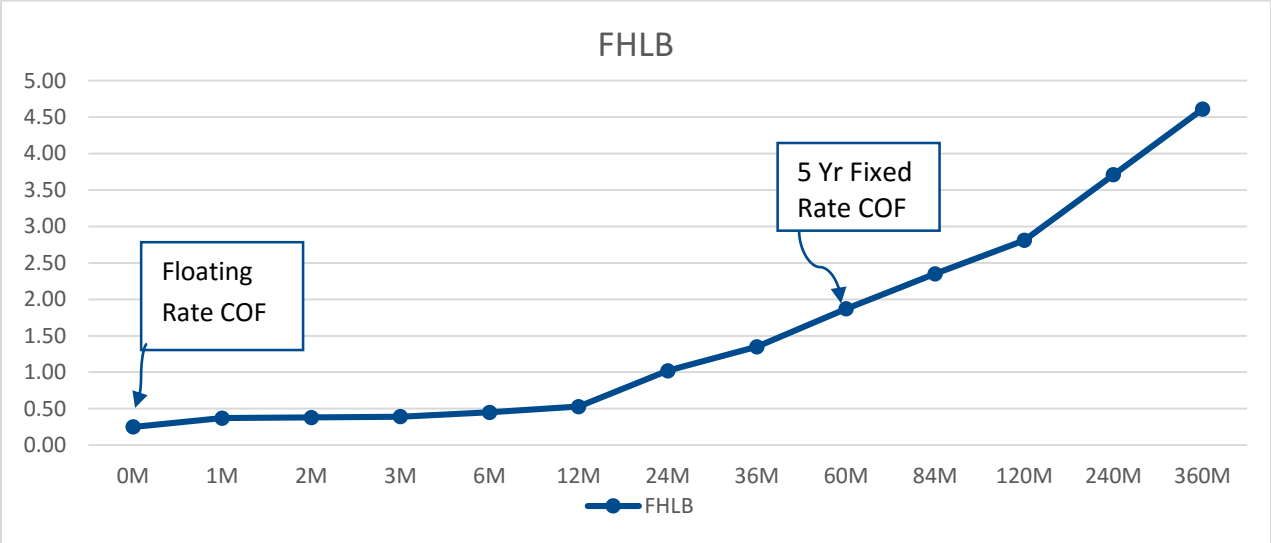
It is only through a methodology such as this that an accurate profitability contribution can be calculated for each individual account. Within your pricing model, once the profitability of each account is determined, relationship profitability can be easily calculated by aggregating totals of individual accounts in the relationship.

The most important FTP concept to understand is that not all accounts are assigned the same FTP rate. The FTP rate is based on both the duration of the account and the rate environment at the time the account is originated or has a rate reset. Usually an institution determines a single FTP

curve to apply to their FTP modeling. Most often these are market-based curves such as U.S. Treasury, FHLB Borrowing, or LIBOR/Swap curves. Other institutions might decide to use an internal FTP curve based on their current CD offering rates.

Cost of Funding Loans

The FTP rate assigned to loans is called the cost of funding (COF) rate and is based on the term of the loan. Floating rate loans that have an overnight rate change frequency have a COF assigned from the shortest end of the FTP curve; while longer term fixed rate loans are assigned a COF from a point farther out on the FTP curve.



	0M	1M	2M	3M	6M	12M	24M	36M	60M	84M	120M	240M	360M
FHLB	0.25	0.37	0.38	0.39	0.45	0.53	1.02	1.35	1.87	2.35	2.81	3.71	4.61

Therefore, the loan rate required on longer term loans is generally higher than shorter term loans in order to achieve the same margin and ultimately the same profitability and ROE. Of course, this does not include risk rating and other factors that ultimately impact the profitability of a loan.

Cost of Funding Methodologies

Due to the amortizing nature of loans, most loan pricing models allow the COF calculation to be adjusted based on different methodologies.

Coterminous Maturity Matched – The COF rate is assigned based on how long the loan rate is fixed for with no adjustment for principal pay downs. A five-year fixed rate loan receives a five-year COF rate derived from the FTP curve.

Duration Cash Flow Method – The duration of the loan is first calculated based on the fixed term and the amortization period. The COF rate is then assigned from the point on the FTP curve that matches this duration. A five-year fixed rate loan with customary P&I payments amortizing over 15 years has a duration of approximately 4.6 years.

Coterminous Cash Flow Method – Each principal payment is assigned a COF rate based on the month that payment is made. The first month's payment receives a one-month COF rate, the second month's payment receives a two-month COF rate, and so on. A weighted average of the principal amounts and COF rates is then calculated. The results of this method are similar to the duration cash flow method.

Credit for Funding on Deposits

The FTP rate assigned to deposits is called the credit for funding (CFF) rate and, similar to loans, is based on the term of the account. This is straightforward for term time deposits. The CFF rate is applied based on the term of the CD and the date the bank rate was set on the CD. This is either the origination date or last renewal date.

Non-maturity deposits are somewhat more complex since they have no stated term or maturity. The best method to apply a CFF rate to these accounts is based on the average life or duration. Often, this data can be gathered from results of the institution's non-maturity deposit decay studies. Once that data is gathered, the CFF rate is determined based on a schedule similar to the following.

	Contractual Term	Average Life	Duration	CFF Rate
NIB DDA	0 years	6 years	3 years	1.10%
IB DDA	0 years	4 years	2 years	0.85%
MMDA	0 years	2 years	1 years	0.44%
SAVINGS	0 years	8 years	4 years	1.50%

The CFF rate is then calculated by evaluating the average rate at the point on the FTP curve that matches the duration of the product over a time period that also matches the duration of the product. As an example, the savings account with a four-year duration would receive a COF rate based on the average four-year FTP curve rate over the last four years.

There are many assumptions that impact the profitability and ROE calculations in loan pricing models. Factors such as account size, product costs, provision expense allocations, and capital allocations are just a few of the variables. The Funds Transfer Pricing methodology trumps all other profitability assumptions. Having a comprehensive understanding of this key driver of profitability is essential in the successful implementation of a loan pricing model.

CONCLUSION

With information provided in this whitepaper coupled with your professional experience, you should now be armed with the tools to break through many of the loan pricing model roadblocks. Proper configuration of both the model assumptions and ROE targets are essential to a successful implementation. By having a firm grasp on the factors that drive the profitability results within your model, your commercial lending team will become stronger advocates and more effective practitioners of your institution's loan pricing tools and strategies.

ADDITIONAL RESOURCES

Visit www.loanpricingpro.com for additional resources, including:

- Articles
- Case Studies
- News and Events
- Recorded Webinars

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