Hedging
for Community Banks

SouthState
CORRESPONDENT DIVISION

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Introduction

For over 30 years, we have worked with community banks to help bankers mitigate risk, measure and improve performance, retain and attract profitable clients, and develop, introduce, and implement new banking products.

Over the years, community bankers have expressed interest in interest rate hedging. They have requested additional training and analysis on how these products generate fee income, increase loan stickiness, support deposit cross-sells, and improve overall bank performance.

This eBook is a comprehensive review of this subject and shares our many years of experience working with thousands of community banks across the country. For those readers who do not want this in-depth analysis but prefer a shorter primer on the subject, we also published a condensed, but still thorough, review of this topic. **Click Here**.

Your feedback is valuable to us. Please let us know what you think of the material, your experience with interest rate hedging, and where we can improve serving our clients. You may send your feedback to us here: **ARC@southstatebank.com.**

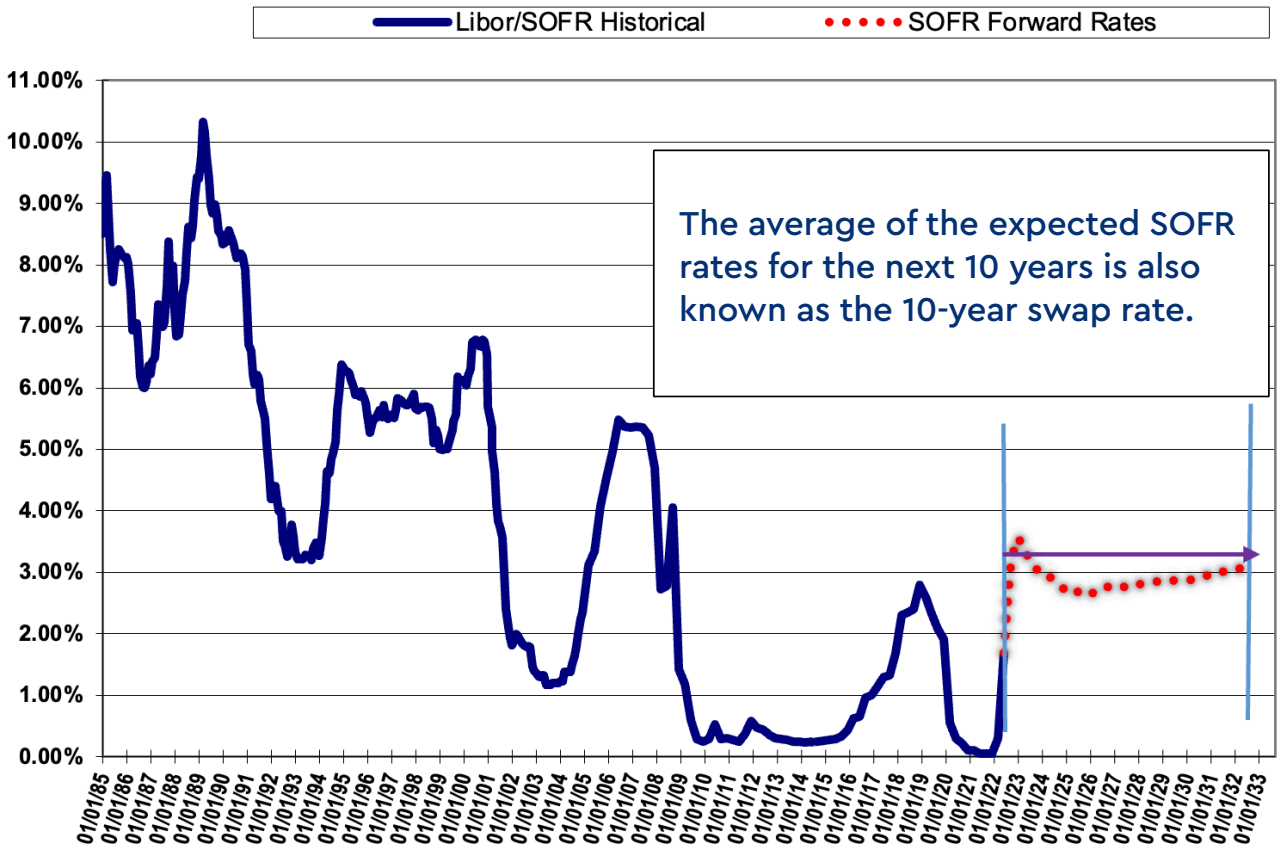
Click here if you would like to schedule a presentation to your bank's executive team (30 to 75 minutes, in-person or remotely) covering these key bank areas specific to your bank, geography, and competition.

Scan Me

What is a swap?

An interest rate swap is an exchange of cash flows between an entity that pays a fixed rate and a second entity that pays multiple short-term rates. At the inception of the swap, both parties expect to receive and pay equivalent economic value.

The swap rate is determined by the markets' expectations of where short-term rates will be over the life of the swap. A similar concept applies in the Treasury market – the yield on the 10-year Treasury is the markets' average expectation of the yield on the next 40 consecutive 3-month Treasury Bill yields. The graphic example below shows the markets' expectations of short-term rates for the next 10 years and the corresponding swap rate.



The stigma associated with derivatives

There are many historical examples of some sophisticated and some less sophisticated entities imploding through the misuse of derivatives. Barings Bank, Orange County (CA), Enron, Long-Term Capital Management, and other entities misused derivatives or did not understand the difference between hedging and speculating.

Using a bank as an example, you are hedging if your position creates more stable earnings when interest rates change. In contrast, you are speculating if your position creates more earnings when interest rates change in one direction and your position creates less earnings when interest rates change in the other direction.

Historically, community banks have hesitated to adopt derivatives for several reasons. The documentation was lengthy and complex, the regulatory compliance and reporting was cumbersome, the accounting was tricky, and the overhead cost of launching a hedging program was challenging. Most importantly, community banks found it difficult to sell the product to their average customer. If you only sell a few loan hedges each year, are the startup and maintenance costs worth it?

ARC vs. ISDA derivatives

At SouthState Bank, we use an alternative to ISDA-based, back-to-back swaps. We believe that the ARC program offers an advantage against the national banks. The ARC program has the following benefits to the community bank lender and the borrower, as follows:

i) Only a short (4-page) and simple addendum to the promissory note as additional documentation. No ISDA documents.
ii) No derivative accounting for the lender or the borrower.
iii) Virtually no ongoing or upfront costs.
iv) SouthState Bank provides lenders with education and marketing support to sell the ARC program.

The ARC hedge mirrors the loan terms exactly – accrual, payment frequency, principal amount, and payment dates all match. The result is that the borrower is invoiced with one bill each payment period for the same P&I dollar amount. Therefore, the payment amount creates the equivalent

of a fixed-rate note experience for the borrower. On the spectrum of hedging vs. speculation, the ARC program is on the hedging extreme because the community bank allows the conversion of a floating rate note into a known payment, decreasing the borrower's credit and interest rate risk.

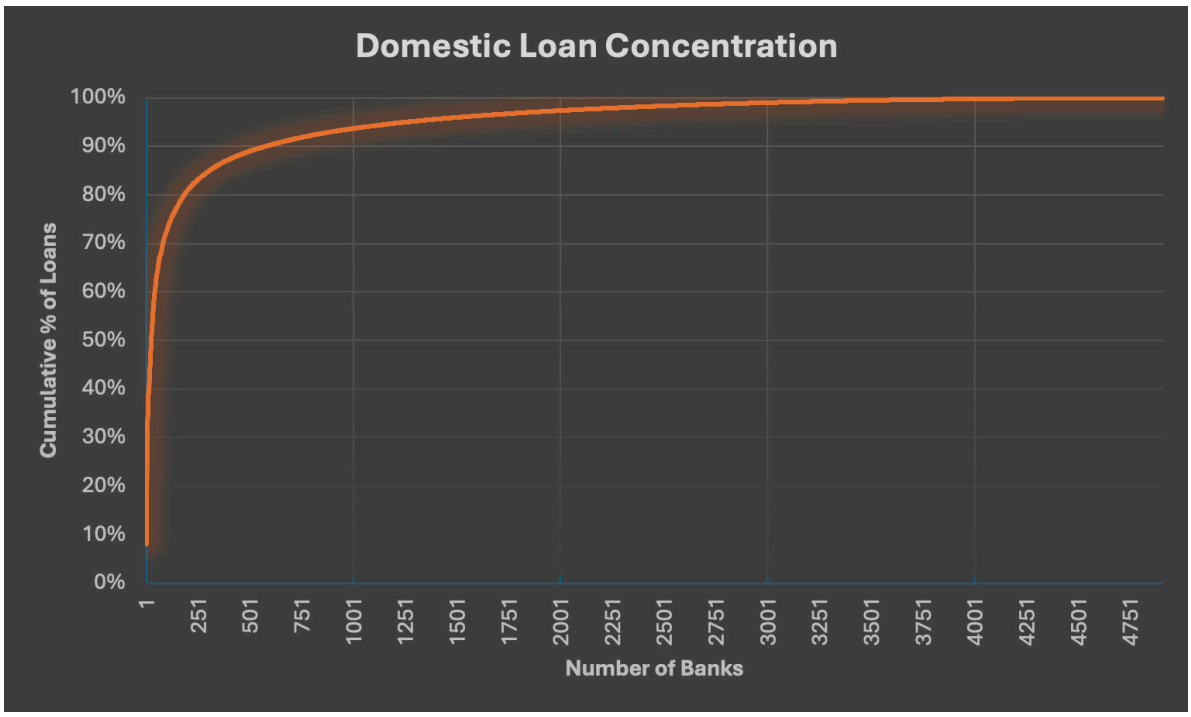
General:	ARC	vs.	Swaps
Fee Generation	✓		✓
Swap/Hedge Portability	✓		✓
Hedge for Unique Structures	✓		✓
Hedges for Forward-Starting Structures	✓		✓
Accounting:			
No Hedge Effectiveness Accounting	✓		✗
No Call Report Derivative Disclosure	✓		✗
No Derivative Capital Allocation	✓		✗
No Dodd-Frank Reporting	✓		✗
Documentation:			
No ISDA Documentation for Bank	✓		✗
No ISDA Documentation for Borrower	✓		✗
Collateral Requirement:			
No Independent Amount ($500k+)	✓		✗
No Additional Cash & Securities	✓		✗
Simplified Borrower Experience:	✓		✗

- ARC has all of the same capabilities of any swap program.
- ARC eliminates all derivative accounting headaches for banks.
- ARC reduces the number of pages required for documentation from 45 pages using swaps to four pages for ARC.
- ARC allows current loan settlement invoicing instead of having borrowers execute separate monthly swap settlements.
- ARC eliminates the requirement for loan officers to explain a complex transaction
- ARC is easier to understand reducing both sales friction and legal risk.

A simplified platform for borrowers and loan officers results in more transactions booked.

Usage by National, regional, and community banks

The graph below shows the concentration of domestic loans for all banks in the country, and it demonstrates that just a few banks control most of the loans. The same picture emerges for domestic deposits. The country's few largest banks hold most domestic loans and deposits, and the smallest 4,300 banks hold less than 20% of all loans and deposits.



The largest 100 banks dominate the industry with almost 75% of the market share. The number of banks that control the domestic loan market is summarized in the table below.

Number of Banks	%of Dom Loans
10	38%
20	46%
30	54%
40	60%
50	63%
100	73%
200	81%

A small number of banks control a significant majority of the loan (and deposit) market. Over the decades, the largest banks have been gaining market share while the total number of banks in the industry has been declining. All 20 of the largest banks in the country by asset size utilize interest rate hedges to manage risk and generate fee income. Of the largest 250 banks, 90% use interest rate hedges. Currently, 27% of all banks use interest rate hedges to manage some risk, up from 2% in 1985. Approximately 1,000 banks are reporting interest rate hedges on their balance sheets and another 500 community banks are actively using interest rate hedging with third-party providers, where the benefit of the hedge is retained by the community bank but reported on the balance sheet of a third-party vendor.

Because the largest banks hold a disproportionately large share of all loans, interest rate hedging tools are widely used in most of the loan market to manage risk, price more competitively and to generate fee income.

Most of the hedging activity at the largest 250 banks is related to fixing the interest rate on loans at borrowers' request. On average, 80.4% of the swap notional used by banks involves the bank paying fixed to broker-dealers and receiving fixed from commercial customers (a classic loan hedge scenario).

The downside of hedging

There are various risks to banks that decide to use hedges to manage interest rate risks. The risks are as follows:

i) **Credit Risk:** In the event of borrower payment default, the Bank's credit risk may be higher or lower depending on interest rate movement that occurred between the time of loan origination and the borrower default. This value fluctuation is not recognized for GAAP loans but is an economic exposure that should be reflected in the bank's underwriting process.

ii) **Interest rate risk:** The bank will earn a variable or fixed rate, depending on the nature of the hedge. The nature of the resulting revenue stream needs to be considered for any NII or EVE impact.

iii) **Liquidity risk:** Liquidity risks arise when banks are required to make hedge payments on behalf of the borrower or when banks are required to pledge additional collateral to secure a hedge.

iv) **Reputational risk:** A bank may incur reputation risk when the hedge provider does not perform under its hedge obligation. A bank may also incur this risk when borrowers claim that they were not properly informed of the risks of the hedge or were misled about the benefits of the hedge.

v) **Operational risk:** A bank's operational risk increases by using a hedging program. A separate process is required to handle hedge settlement notices and payments. Operational risks may arise if a bank cannot track settlement, payments, terminations and notices.

vi) **Compliance risk:** Some hedging programs require reporting and compliance through various regulatory bodies (including FDIC, OCC and numerous state regulators).

vii) **Accounting risk:** One of the main reasons community banks do not offer interest rate hedges is the requirement under some hedging programs to account for the derivative for GAAP and regulatory reporting purposes.

viii) **Counterparty risk:** Some hedging programs require that a bank trade the interest rate hedge with a counterparty without offsetting collateral. The failure of a counterparty without offsetting security collateral subjects banks to counterparty risk

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ix) **Documentation risk:** The main risk in some interest rate hedging programs is the complexity and volume in documentation requirements for client use. The traditional hedging agreements may be difficult to explain, understand, and review.

Prepayment provision, prepayment speeds, and profitability

Loan prepayment provisions are essential tools for commercial banks. Loan prepayment provisions lower prepayment speeds (especially in a stable or declining interest rate environment) and drive higher ROA for banks. There are four main reasons why prepayment provisions increase profitability for banks. The four reasons are as follows:

a) Decrease the value of the option held by the borrower to repay the credit when interest rates or credit spreads are lower.
b) Increase the lifetime value of the relationship.
c) Increase cross-sell and upsell opportunities.
d) Reduce negative selection bias in an economic downturn.

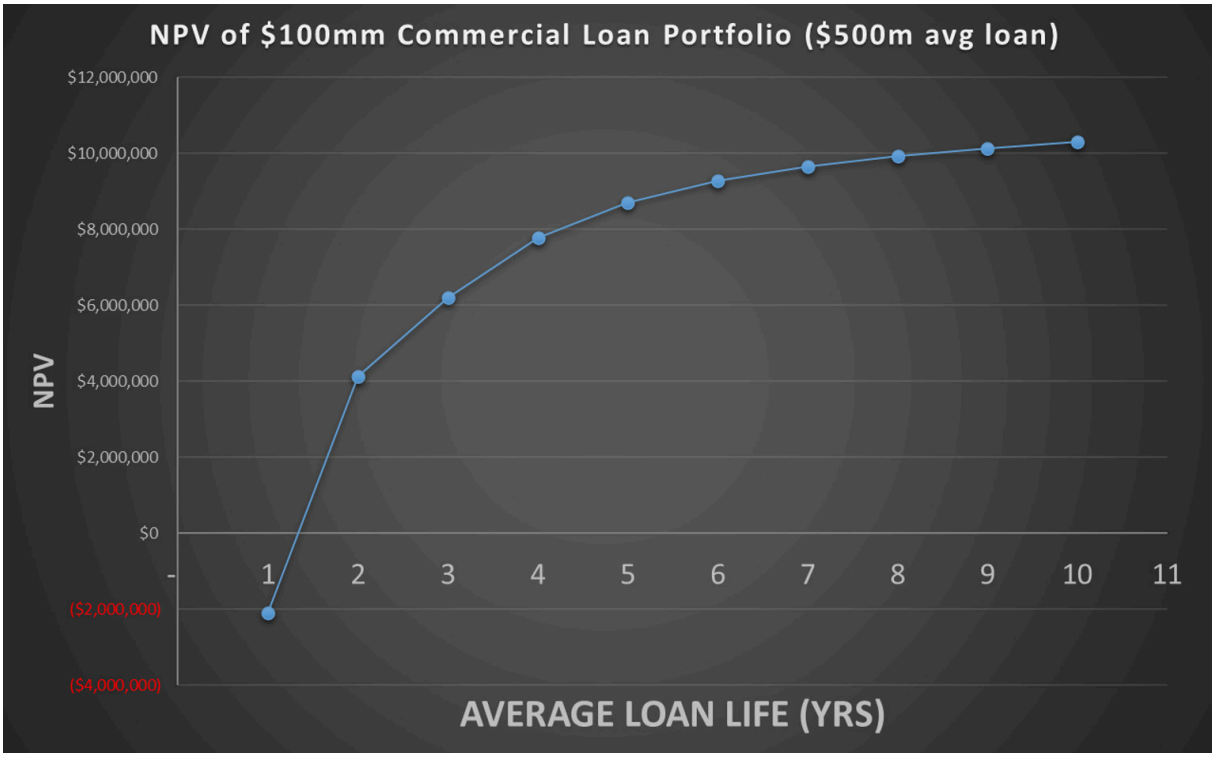
Banks use four standard prepayment provisions for commercial loans. The first is a step-down, and it is by far the most common prepayment provision used by community banks. For example, on a 5-year loan, the bank may charge a 5,4,3,2,1 prepayment. The borrower pays the number (expressed as a percentage) times the loan amount corresponding to the year of prepayment. The advantage of this prepayment provision is its simplicity.

The second prepayment option is a lock-out. This provision prohibits any prepayment during a specified period. This provision is rare; we see it utilized in municipal financing, but commercial borrowers rarely accept it.

The third prepayment option is defeasance. This provision is used extensively by insurance companies and conduits. This provision is disadvantageous to borrowers and rarely correctly explained to clients. We have never seen a borrower presented upfront with a termination scenario for a defeasance—if they had, they would never take the loan.

Finally, more sophisticated banks use a symmetrical break even provision. This provision trues up or creates a neutral cost/benefit for prepayment based on interest rate movements. From an interest rate movement perspective, the bank and borrower become indifferent to prepayment whether rates are higher or lower. The provision better aligns with both the lender's and the borrower's interest rate sensitivity, and it is a standard provision at most national and larger regional banks that offer long-term fixed-rate financing.

Appropriate loan prepayment provisions increase the expected average loan life – the measure of the amount of time that principal is outstanding on a loan. This average life is driven by many factors, including amortization period, economic circumstances, nature of the loan and the expectations of the borrower, and most importantly, by contractual term and prepayment provisions. The relationship between prepayment provision, expected average loan life and loan profitability warrants additional discussion.



The average loan life affects the profitability of a loan portfolio. Our analysis and modeling shows this clearly. We calculated the NPV of income for the $100mm portfolio, $500k average loan size, for various average expected lives. The graph above on page nine shows the net present value (NPV) of income over a 10-year period.

On the spectrum of hedging vs. speculation, the ARC program is on the hedging extreme because the community bank allows the conversion of a floating rate note into a known payment, decreasing the borrower's credit and interest rate risk.

The expected life of a commercial loan is a major driver of profitability. As the expected life of the loans in the portfolio shorten, the NPV of income decreases, and vice versa. The NPV of income dips below zero with 1-year average expected loan life. The sensitivity between average loan life and NPV of income is even more pronounced for smaller loans.

Commercial loans have thin profit margins after accounting for ongoing costs such as COF, credit charges, and loan maintenance costs, but most importantly, commercial loans have high upfront origination costs. This behavior is especially pertinent for smaller credits – those below $1–2mm in size.

Hedged loans subject the borrower to a symmetrical break even provision. This extends the life of those loans substantially and, therefore, makes these loans more profitable for the bank.

Profit analysis of hedged loans

We analyzed community bank profitability on hedged commercial loans to those same banks' reported ROA/ROE. Our aim was to measure the impact, if any, of loan hedging on bank performance. We measured the risk-adjusted return on assets and equity for nine community banks ranging in asset size from $350mm to just under $8.5Bn. We were able to measure the Risk-Adjusted Return on Capital for approximately $501mm hedged loans (154 loans in total) to understand why these banks used loan-level hedging to book this portfolio of loans. All of these banks are utilizing RAROC models to measure risk adjusted return. We then compared the RAROC on these hedged loans with the banks' general financial performance and based on our RAROC modeling attributed which factors benefited or detracted from ROE as influenced by loan level hedging instruments.

A summary of the loan portfolio is shown in the table on page ten.

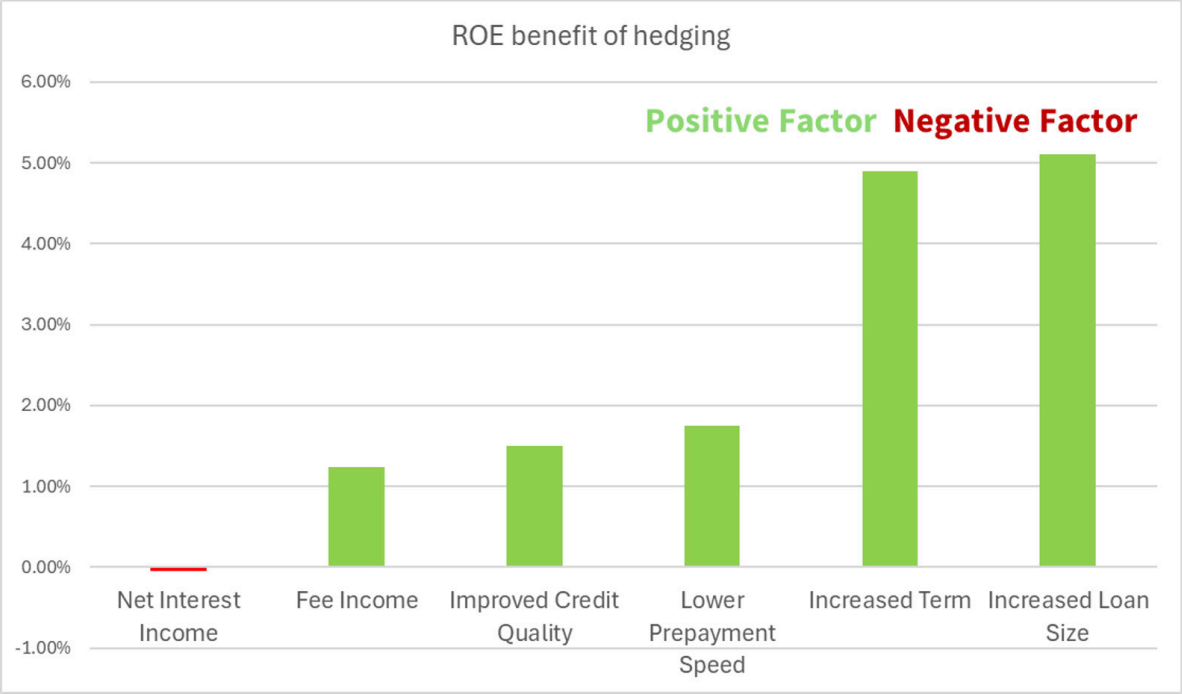
Max loan size	$34,000,000
Min loan size	$140,000
Average loan size	$3,253,826
Sum loans hedged	$501,089,213
Number of loans	154
Average LTV	59.6%
Average GDSCR	2.02
Average DSCR	1.92
Average hedge fee income	1.03%
Average credit spread to SOFR	2.56%
Average loan commitment term (yrs)	8.31

We compared the risk adjusted return of the hedged loan portfolio for each bank, to that bank's year-end reported ROA/ROE. The results appear in the table below.

Reported ROA	0.94%
Reported ROE	10.49%
Hedge loans average ROA	2.22%
Hedge loans average ROE	24.94%

For each bank, the portfolio of hedged loans exceeded that bank's reported ROA/ROE. On average, the hedged loans RAROC was 2.22% ROA and 24.94% ROE – this is more than double the group of banks' reported performance. These hedged loans created value for these nine banks as measured by RAROC. The hedged loans benefited from longer term, increased loan size, improved credit quality, and fee income.

We measured the benefit of hedging compared to the average bank's ROE based on NIM, fee income, credit quality, lower repayment speed, increased commitment term and increased loan size. Our conclusions appear below.

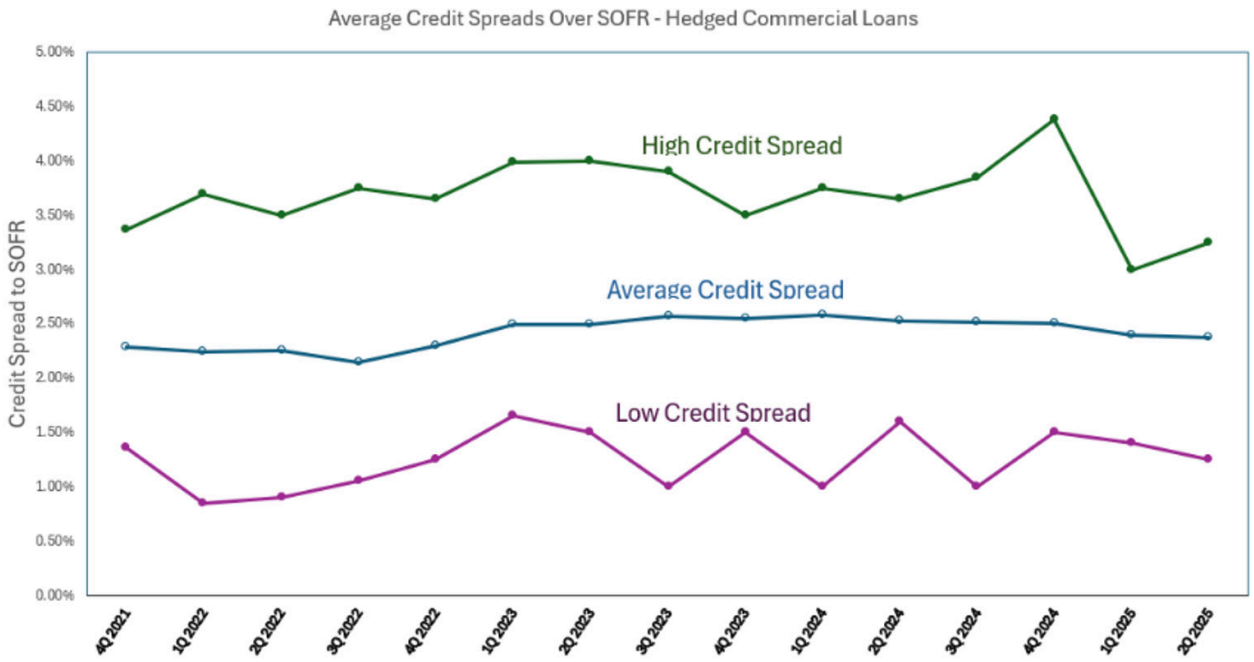


While hedged loans had slightly lower NIM (thus lowering the ROE on this portfolio), every other factor associated with these hedged loans contributed to the ROA/ROE return for these nine banks. The biggest drivers of ROE performance were increased loan size, followed by increased loan commitment term (accounting for 66% of performance increase for hedged loans). One driver for ROE performance we could not measure was the ongoing cross-sell opportunity that longer-term loans may offer to community banks. This would require a longitudinal study to investigate whether over time banks can improve performance by cross-selling higher valued products such as deposits, treasury management and other fee businesses.

There are real and direct benefits for community banks to use loan-level hedging to generate additional performance, retain more coveted clients, and attract higher credit quality borrowers. Our study shows a community bank's most profitable commercial borrower customers are composed of larger, longer, more stable, and higher credit quality clients.

Hedged loan pricing

The graph below shows hedged commercial loan pricing as a spread to term SOFR for community banks. The data represents almost 2k loans over 4 years. We consistently observe that average credit spreads are relatively flat with an average of 2.41% credit spread over term SOFR in the last four years. Over that same period, the average of the high credit spread is 3.68% and the average of the low credit spread is 1.25%. The average LTV and DSCR over that same period is 65.3% and 2.01X, respectively. These loans have an average contractual term of 9.1 years, and average amortization period of 22.1 years.



This consistent pricing data reflects a few important market forces:

1. While not all community banks using loan level hedging utilize a RAROC loan pricing model, these community banks do compete for loans with other financial institutions that utilize RAROC models. The average credit spread corresponds to 15% to 25% ROE for the credit facility.
2. The loans in the data set are above average in size ($2.71mm) and above average in credit quality (65.3% LTV and 2X DSCR). This is one reason that the loans are more profitable for community banks.
3. Community banks using a loan hedging program generate additional upfront hedge fee income, which can equal up to 2.5% of the hedge amount (the average has been 1.35% hedge fee income as percentage of the loan amount). This additional non-interest income makes these loans more profitable.
4. While difficult to measure for each specific loan, most hedge loans represent relationships for community banks. Banks are originating these loans with the expectation of additional credit, deposit, and fee cross-sell and upsell opportunities.

Comparison of profitability between hedged and unhedged loans

Our empirical analysis shows that, on average, hedged loans are more profitable than unhedged loans. We conducted a study of a regional bank with just over $23Bn in funded commercial loans. We reviewed just over 25.5k relationships and compared profits as contribution to overhead adjusted for fund transfer pricing. We removed any relationship that did not contain a funded loan. We specifically wanted to distinguish hedged loans versus unhedged loans and how this one specific product reflected on the bank's profitability. This bank has been offering fixed-rate loans to clients both as hedged loans and fixed on balance sheet.

The table below summarizes our findings. Out of the 25.5k loans, a little less than 5% are hedged loans. However, the hedged loans are on average $3.4mm in size compared to $781k in unhedged loans, and the hedged loans contributed almost 25% of annual profit for the bank. The average hedged loan generated $73.7k in profit – which is 6.4 times the average profit for an unhedged loan.

	Hedged Loans	Unhedged Loans	All Loans
Number of Borrowers	1,221	24,301	25,522
Percent of Borrowers	4.78%	95.22%	100%
Sum of Loans	$ 4,154,648,834	$ 18,994,365,357	$ 23,149,014,191
Sum of Annual Profit	$ 89,927,517	$ 279,050,696	$ 368,978,213
Percent of Profit	24.37%	75.63%	100%
Average Annual Profit	$ 73,651	$ 11,483	$ 14,457
Average Loan Size	$ 3,402,661	$ 781,629	$ 907,022
# of Unprofitable Borrowers	15	5,653	$ 5,668
Sum of Annual Loss	$ (751,432)	$ (61,864,502)	$ (62,615,934)
Sum of Unprofitable Loans	$ 84,287,854	$ 6,569,289,755	$ 6,653,577,609
% of Unprofitable Loans	2.03%	34.59%	36.61%

The important takeaway from the table above is not the sum of the profitability for hedged loans versus unhedged loans but the percentage of the loans in the two groups that generate negative profit for the bank. Of the hedged loans, only 15 were unprofitable for the bank, versus 5.7k unprofitable unhedged loans.

Further, the total sum of unprofitable loan principal outstanding for hedged loans was just 2% of all hedged loans versus 34% for unhedged loans. Stated another way, the bank had $84mm in hedged loans with negative profit, and $6.6Bn in unhedged loans with negative profit. The hedged loans subtracted $751k in annual profit from the bank, but the unhedged loans subtracted $61.9mm in profit. The bank allocated 36.61% of its loans (a proxy for capital) to unprofitable clients. An unintended result that would motivate any management team to reconsider upfront pricing and return analysis.

The graph of all hedged and unhedged loans with annual profitability is shown below. The graph shows very few unprofitable hedge loans (15 in total), and 5.7k in unprofitable unhedged loans, subtracting substantial amount of value (profit) from the bank. This phenomenon requires some further analysis, explanation and discussion.

Why are so many of the unhedged loans so unprofitable for this bank? There are two major reasons that a high percentage of unhedged loans are unprofitable. First, many of the unhedged and unprofitable loans are fixed-rate loans priced in a lower interest rate environment. These loans are now unprofitable because of the bank's higher COF as the result of an upward shift in the yield curve. Second, we measured the profitability per client and the bank's cost of deposit per relationship is a large factor. Some of the unprofitable unhedged loans suffer from high-cost deposits. This second reason also brought down the profitability for some hedged loans.

Some bankers will point out that the unprofitability of this bank's current fixed rate loans was caused by an idiosyncratic event (a sudden shift in interest rates) that is not often repeated. But we believe that this is an incorrect argument. For as long as we have been studying bank profitability, both in up interest rate cycles and down cycles, interest rate risk has been a main culprit in depressing bank profitability. When interest rates rise, fixed-rate borrowers extend their loan duration. When interest rates decrease, fixed-rate borrowers refinance their loans to prevailing lower coupons. In any interest rate environment, banks are disadvantaged without a hedging program. Fixed-rate, on balance sheet loans, become one-way floaters that hurt bank profitability.

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