



LESSON 3

ESTABLISHING INTEREST RATES FOR SELF-SUFFICIENCY

Self-sufficient financial institutions need to design an interest rate and fee structure that generate enough income to cover their costs. There are two sides to this self-sufficiency equation, the cost side and the income side. For an institution to be self-sufficient, its income has to be greater than or equal to its costs. For microenterprise finance institutions, income is earned through interest on portfolio funds (whether in the hands of borrowers or on deposit), and through fees or commissions.¹ Costs include the cost of funds, loan loss reserve, and other operational costs.

This same equation can be expressed with relation to the institution's portfolio. Annual income divided by the average outstanding portfolio during the year indicates the percent **yield of the portfolio**, or the **rate of return on the portfolio**. For an institution to be self-sufficient, the yield of its portfolio must be greater than or equal to the sum of its costs during the year divided by the average outstanding.

Accurately predicting the costs and income of a financial institution is a difficult task that requires the use of financial projections.² This section presents a conceptual guide to defining an appropriate interest rate and should be used with financial projections to determine a precise interest rate and fee structure.

The Cost Side of the Equation

There are three types of costs that a self-sufficient financial institution needs to cover with its income: the cost of funds, the cost of maintaining a loan loss reserve, and operating costs. These costs are the basic building blocks for determining how much an institution needs to earn to be self-sufficient. When these costs are expressed as a percentage of a given portfolio, they reflect the minimum rate of return, or yield, the portfolio must generate for the institution to cover all of its costs.

COSTS OF FINANCIAL INSTITUTIONS

Cost	Description
Cost of funds	Direct costs of resources used in loan portfolio; includes financial costs of borrowed funds. Also includes the "cost" of inflation on the institution's own funds.
Loan loss reserve	Amount of income needed to be set aside to maintain the loan loss reserve which is reduced when loans are written off.
Operating costs	Cost of other operating expenses.

¹ Institutions may have income from other sources but this discussion focuses on an institution's credit operation and the self sufficiency of those operations.

² Detailed projections require the use of a spreadsheet such as Microfin - see www.microfin.com

Cost of Funds

The cost of funds is what lending institutions pay for the resources they use to lend to their borrowers.

The cost of funds refers to the amount institutions pay for the resources they use to lend to their borrowers. These resources may be loans from local banks, savings deposited by borrowers, retained earnings of the institution, donated funds, or other funds in the portfolio.

Traditionally, most microenterprise credit programs have begun operations with donations, which have close to zero costs (the time and expense of applying for the funds is a cost). In order to expand, however, an increasing number of microenterprise institutions are borrowing funds at both subsidized and commercial rates of interest. Like any borrower, the microenterprise institution must pay financial costs for the funds it borrows for its portfolio. These costs include interest paid to depositors (if the institution accepts savings deposits), interest paid to lenders, fees paid to lenders (or donors), compensating balances required by lenders or donors, and any other financial costs.

The portion of an institution's portfolio funds that is not borrowed, but was donated or earned by the institution (or invested in it), form part of its equity. Though it pays no interest on these funds, the institution should protect them from devaluation due to inflation. One way to preserve the value of equity funds in the portfolio is to consider that they have a cost equal to the expected rate of inflation.³ Interest is then charged to cover that cost, and the income generated is reinvested in the portfolio to preserve its real value.

The institution does not have to preserve the value of the money it has borrowed from a bank or other source for its portfolio. The bank should charge the institution sufficient interest to preserve the value of those funds. If the bank does not charge sufficient interest, then the institution pays the bank back less (in value) than it borrowed; a situation that benefits the institution to the detriment of the bank.

In sum, the cost of funds includes the effective rate of interest on all borrowed money. It also includes the "cost" of inflation on the institution's own funds.

Loan Loss Reserve

Credit institutions must earn enough income to replace funds lost from the portfolio because of loan defaults. The loan loss reserve is established from income earned by the institution and is used to replenish funds lost to the portfolio when loans are written off. Through this process, non-recoverable amounts lost from the portfolio are replaced by income earned by the institution, thereby preventing the decapitalization of the portfolio.

Normally, financial institutions estimate the amount of expected bad debt (on the basis of prior experience and estimated potential losses from the current portfolio), and express it as a percentage of the portfolio. Mature financial institutions can usually predict with a high degree of accuracy the amount that will not be recovered and that should be in the loan loss reserve. As a general rule, well-managed microenterprise credit institutions should not have loan losses exceeding 3 percent of the average portfolio in any given year. With estimated annual losses of 3 percent of the average portfolio, an institution's loan loss reserve should be maintained at 3 percent of the portfolio, and the interest rate charged to borrowers should include 3 percent to maintain that reserve.

³ Estimating future inflation rates is extremely difficult. Estimates calculated by a country's Central Bank or another reliable source can be used.

Operating Costs

The operating costs of a credit institution include salaries, rent, supplies, and all other costs of operation. Because institutions in their early phases of operation have relatively high costs in relation to their small start-up portfolio, they must estimate their operating costs as a percentage of an expected future portfolio. Earning that percentage on the expected future portfolio will generate enough income for the institution to pay its operating costs. Until the institution reaches the expected future portfolio and its break-even point the operating deficit will have to be covered from a source other than the income earned on loans.

Because most microenterprise credit programs operate in an environment with little direct competition, they must challenge themselves to control their costs, provide efficient service, and become self-sufficient.

One cautionary note about covering costs is in order. A credit institution's costs (especially operating costs and those related to maintaining a loan loss reserve) will depend to a large degree on its efficiency. Borrowers should not have to pay high interest rates to cover a program's inefficiencies. Because most microenterprise credit programs operate in an environment with little direct competition, they must challenge themselves to control their costs, provide efficient service, and become self-sufficient. Some of the larger and most efficient microenterprise finance institutions have operating costs of approximately 15 percent of the principal amount outstanding.

In sum, a self-sufficient financial institution needs to earn enough income to pay its cost of funds, maintain a loan loss reserve, and pay for its operating costs. Accurately predicting these costs requires financial projections. By examining the sum of these costs in relation to a given portfolio size, an institution can determine the rate of return or yield that the institution must earn on its portfolio to break even. Example 1 shows how a non-profit lending institution can use these concepts to determine the rate of return that it needs to earn to cover its costs in a given year.

EXAMPLE 1

DETERMINING THE NEEDED RATE OF RETURN

A. Conditions	
Estimated rate of inflation for year	18 %
Own funds in portfolio	\$500,000
Borrowed funds in portfolio	\$300,000
Total portfolio	\$800,000
Effective interest rate on borrowed portion of portfolio:	15 %
Estimated annual loan loss rate (based on experience):	3 %
Operating costs as a percentage of \$800,000 portfolio: (With an annual income of \$176,000, or 22 percent of \$800,000, the institution covers its annual operating costs.)	22 %

B. Calculation

The institution wants to preserve the value of its own funds (\$500,000, or 63 percent of portfolio) and has made a policy decision to assign a cost to those funds equal to the estimated rate of inflation (18 percent). Revenues generated by assigning a cost of 18 percent to those funds will be reinvested in the portfolio to preserve its value.

Consequently, 63 percent of the portfolio has a cost of 18 percent, and 37 percent (the borrowed portion) of the portfolio has a cost of 15 percent.

The total cost of funds is: $(.63) (.18) + (.37) (.15) = .1689$, or	17 %
The estimated loan loss is:	3 %
The operating margin or spread is:	22 %
The sum of these three components is:	42 %

If the institution has accurately projected its costs, and earns 42 percent on its portfolio of \$800,000, it will cover all of its costs and break even.

The Income Side of the Equation

If the lending institution in Example 1 earns 42 percent on its portfolio, assuming its cost estimates are correct, it will be self sufficient. In the simplest of worlds, that institution could charge 42 percent interest for its loans and break even. Unfortunately, charging 42 percent is unlikely to be the best solution.

Even though an institution's financial projections might indicate that it needs to earn 42 percent on its portfolio in order to be self-sufficient, and micro entrepreneurs are willing and able to pay an effective rate of 42 percent or more, there may be external constraints that hinder the institution's ability to charge that rate. These constraints could be the result of government policies, laws, donor policies, or even other local institutions providing credit to micro entrepreneurs.

If interest rate ceilings or other regulations apply to nominal rates of interest, then they are not very restrictive. Banks commonly quote a nominal rate to which considerable commissions and fees are added. To avoid or limit controversy, microenterprise credit institutions can adopt a similar policy. Instead of charging 42 percent annual interest, the institution could set its nominal interest rate at 27 percent, and then charge the equivalent of 15 percent in commissions and fees for orientation sessions, application costs, and loan monitoring. In this way, the nominal interest rate might be similar to the nominal rates charged by banks, and considerable unnecessary controversy might be avoided.

Even if the institution does charge an effective rate of 42 percent, however, the portfolio is unlikely to generate the 42 percent yield needed. Two key factors of credit operations make the rate actually earned on a portfolio different from the effective rate being charged. Those factors are on-time repayment rates below 100 percent and idle funds.

Even if the institution does charge an effective rate of 42 percent, however, the portfolio is unlikely to generate the 42 percent yield needed.

The Effect of Loan Terms on Income

As discussed in the section on effective interest rates, loans with commissions or fees will have higher effective interest rates as the loan term decreases. Likewise, a lending institution that charges fees will earn more income the shorter the terms of its loans, as the same portfolio amount generates fees more frequently.

Assume that the institution with an \$800,000 portfolio charges 27 percent interest and 20 percent of the loan amount as an up-front fee. There is no delinquency and the money is re-lent the same day it is paid.

- With an average loan term of 12 months, the yearly income is:
\$376,000 $[(800,000 \times 0.27) + (800,000 \times 0.20)]$
- If the average term is 6 months, annual income increases to:
\$536,000 $[(800,000 \times 0.27) + (1,600,000 \times 0.20)]$
- If the institution charged 47 percent interest and no fees, its annual income regardless of the loan term, would be:
\$376,000 $(800,000 \times 0.47)$

Repayment Rates

Late payments can have a devastating effect on an institution's income. The cost side of the self-sufficiency equation includes the cost of default through the maintenance of a loss reserve. In addition, the side of the equation must incorporate the interest income postponed from loans that fall into arrears (some of which might eventually be lost if the loans are defaulted). If interest payments on loans are not made when they are due, interest income during a specific period will be far lower than the amount outstanding times the nominal interest rate for that period.

One common method used by financial institutions to compensate for income postponed due to delinquency is to charge a penalty for late payments. Such penalties also serve to motivate on-time repayment.

Effect of Late Payments on Interest Income

The institution in Example 1 calculates that it needs to earn 42 percent on its portfolio of \$800,000 to break even in a given year. The nominal interest rate is 27 percent, and the rest is through fees collected upon loan disbursement.

- Assume that only 90 percent of the amount due during the year (principal and interest) is actually paid during the year.
- Instead of earning 27 percent in interest on the portfolio during the year, i.e. \$216,000, the program earns only 24 percent (0.90×0.27) , i.e. \$194,400 $(0.90 \times 0.27 \times 800,000)$.

Idle Cash

Efficient portfolio management is critical for an institution to maximize its income. Money in the hands of borrowers should produce more income than cash on hand, money on deposit in the bank, or funds in other low risk investments. Money that is not generating income is considered "idle". All financial institutions will have varying amounts of funds throughout the year that are either idle or earning lower rates of interest than they would be if they had been lent out to borrowers. These are funds that are between loans (paid back but not yet lent out again), or not lent out because of a lull in demand or a pending expansion.

To maximize income and meet the credit needs of micro entrepreneurs, credit institutions need to minimize idle funds, maintain available portfolio funds in the hands of borrowers to the greatest extent possible, and look for secure high-yielding investments when there are excess funds.

Effect of Idle Funds on Income

Assume the institution in Example 1 effectively earns 42 percent on its loans, but only keeps an average of 85 percent of its portfolio in the hands of borrowers during the entire year. On average, the institution has \$120,000 of its available portfolio funds of \$800,000 on deposit in the local bank, earning only 12 percent.

Instead of producing a yield of 42 percent, the portfolio would only earn 37.5 percent $[(0.15 \times 0.12) + (0.85 \times 0.42)]$. Actual income would be \$300,000 instead of \$336,000.

As the examples above show, charging an effective interest rate equal to the needed rate of return will not produce the income an institution needs to be self-sufficient. For political reasons, the institution may need to charge a nominal interest rate commensurate with similar institutions in the area, and also charge fees. With fees, the yield of the portfolio will vary depending upon loan terms. In addition, delinquency and idle funds will make the actual rate of return of the portfolio less than the effective rate that borrowers are being charged.

Only through financial projections that consider these factors can an institution predict the level of income that a given interest rate and fee structure will produce. Furthermore, as an institution develops, the assumptions and conditions upon which the interest rate and fee structure were based will change. For example, the institution's cost structure, local nominal interest rates, and the average loan terms may change. The interest rate and fee structure must be reanalyzed and adjusted periodically.

THE COST AND INCOME SIDES OF SELF-SUFFICIENCY

Income Side	\geq	Cost Side
Interest		Cost of Funds
+ Fees		+ Loan Loss Reserve
		+ Other Operational Costs
TOTAL INCOME \$	\geq and	TOTAL COSTS \$
% Effective Interest Rate charged to borrowers		<u>Total Costs</u> Average Portfolio
Repayment Rate ↓ Idle Funds		↓
% YIELD ON PORTFOLIO	\geq	COSTS AS % OF PORTFOLIO

Defining and Adjusting Interest Rates and Fees

The following is a step-by-step description of the process that microenterprise finance institutions can follow to determine an appropriate interest rate and fee structure.

- Step 1 Estimate the portfolio yield needed to cover the costs of funds, loan loss reserve, and operational costs at the targeted break-even portfolio size.
- Step 2 Considering the local nominal interest rates being charged by similar institutions, estimate an acceptable nominal interest rate. Estimate a fee structure that, combined with the nominal interest rate, produces an effective interest rate greater than the yield needed to cover all costs.
- Step 3 Project income, taking into account delinquency, idle funds and loan terms. Adjust nominal interest rate and fees in projection until income is greater than costs at targeted break-even portfolio size.
- Step 4 Evaluate the effects that the proposed interest rate and fee structure would have on some typical borrowers. An analysis of the effect that the financial costs of loans would have on the structure and level of profits of entrepreneurs in some of the most common activities to be financed will show whether or not the proposed interest rate and fee structure is feasible for the target population.
- Step 6 Implement proposed interest rate and fee structure.
- Step 7 Conduct periodic financial analyses and projections to determine whether interest rate and fee structure are meeting the institution's income objectives, serving the borrowers and continuing to be appropriate for the prevailing economic conditions.

Is the portfolio yielding enough for the institution to reach its targeted level of self-sufficiency given the actual costs? Continual monitoring of all of the variables used and assumptions made in the original estimates is necessary to ensure that the interest rate and fee structure remains appropriate as the institution's cost structure and the economic environment change.

Step 8 Adjust interest rate and fee structure as conditions change. Institutions in relatively stable economies may need to make only minor adjustments every 6 or 12 months. Institutions in unstable economies with variable inflation may need to make adjustments every month or even index their interest rate so that it continually fluctuates with inflation.

SUMMARY OF FORMULAS:

1. Gross Rate of Return or Yield on Portfolio

$$\text{Annual Yield} = \frac{\text{Annual gross income from interest and fees}}{\text{Average outstanding portfolio during year}}$$

2. Amount of Interest Payment on Simple Interest Loan

$$\text{Interest Payment} = \text{Loan amount} \times \text{Nominal interest rate for loan term}$$

3. Interest Payment on Amortized Loan (per period)

$$\text{Interest Payment} = \text{Loan balance} \times \text{Nominal interest rate for period}$$

4. Amount of "Flat" Interest Payment on Amortized Loan

$$\text{Interest Payment} = \text{Original loan amount} \times \text{Nominal interest rate for period}$$

5. Effective Interest Rate (EIR) of Simple Interest Loans

$$\text{EIR} = \frac{\text{Amount paid in interest, fees, etc.}}{\text{Principal amount received by borrower}}$$

6. Approximate EIR of Amortized Loans per Payment Period

$$\text{EIR} = \frac{\text{Amount paid in interest, fees, etc.}}{\text{Sum of principal amounts outstanding during loan period}}$$

7. Approximate Real Rate of Interest

$$\text{Real interest rate} = \text{Nominal interest rate} - \text{inflation rate}$$

8. Actual Real Rate of Interest

$$\text{Real interest rate} = \frac{(1 + \text{nominal interest rate})}{(1 + \text{inflation rate})} - 1$$

9. Inflation's Effect on Value of Portfolio

$$VP_f = \frac{VP_i}{(1+i)}$$

where VP_f is the value of the portfolio at the end of the period, VP_i is the value of the portfolio at the beginning of the period, and "i" is the inflation rate of the period.