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EXPOSING INTEREST RATES: THEIR TRUE SIGNIFICANCE FOR MICROENTREPRENEURS AND CREDIT PROGRAMS

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ACCION INTERNATIONAL

ERRATA SHEET

Exposing Interest Rates: Their True Significance for Microentrepreneurs and Credit Programs

P. 20 Under **Institution**, the last sentence should continue:

training and transportation cost her $1.50 per hour). The loan would be disbursed in two weeks.

P. 38 The formula in footnote 17 should read:

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

P. 38 Replace **Box 3** with:

In Colombia during the period from 1980 to 1988, the average annual rate of inflation was 24% (World Bank, 1989). If in 1985 a credit program had a portfolio in Colombian pesos worth US$100,000, charged just enough interest to cover its costs, and had no new money during that period, then its portfolio would have devalued as follows (*):

Year	Beginning Portfolio ($)	Ending Portfolio ($)	Amount Lost to Inflation ($)
1985	100,000	80,645	19,355
1986	80,645	65,036	15,609
1987	65,036	52,448	12,588

By 1988, the portfolio would have been worth only $52,448! If the program could have provided 1000 loans for sewing machines in 1985, by 1988 it would have been able to provide fewer than 525 loans for sewing machines (assuming that the value of sewing machines remained constant).

(*) The effects of inflation on the value of a portfolio can be calculated with the following formula, where VPf is the value of the portfolio at the end of the period, VPi the value of the portfolio at the beginning of the period, and i the rate of inflation of the period:

$$VPf = \frac{VPi}{(1 + i)}$$

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FOREWORD

The role of interest rates as tools for economic development has been debated for decades, and will continue to be debated for years to come. Common sense dictates that lower interest rates for poor borrowers should be beneficial. Experience dictates otherwise. This document goes beyond the debate over subsidized versus nonsubsidized interest rates for microentrepreneurs. It explores the impact that interest rates have on microentrepreneurs and on credit programs. In so doing, it shows that efficient microenterprise programs can charge interest rates that reflect the cost of their lending and help them achieve self-sufficiency. The document discusses the importance of self- sufficiency for the long-term viability of microenterprise programs and for their capacity to expand the supply of credit to poor borrowers.

This paper is based on ACCION-affiliated programs' collective experience with market or higher interest rates as a key aspect of their credit delivery technology. Their track record, as well as that of microenterprise programs in other regions, makes a strong case for the arguments presented in this discussion paper.

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I. INTRODUCTION

The field of microenterprise development has changed considerably during the last decade. Recognition of the employment and income-generation contributions of the informal sector, and of credit's ability to stimulate those contributions, has focused increasing attention and resources on the establishment of microenterprise credit programs throughout the developing world. As those programs accumulate experience and become more sophisticated, they are combining aspects of informal credit with the management systems of formal financial institutions to reach increasing numbers of poor borrowers with improving efficiency. A growing focus on the viability of the lending institutions, and on the need to extend services to meet the enormous demand for credit, is leading many of the institutions away from relatively small projects funded exclusively by grants, toward an approach more closely tied to the formal financial sector.

One critical aspect of this evolution is the treatment of interest rates by microenterprise finance institutions. Because most of these institutions began as credit programs to benefit a particular sector of the poor, similar to directed credit programs sponsored by governments, interest rates were heavily subsidized. Subsidized interest rates, however, have proved to be an unsuccessful tool for economic development.

In the 1960s, cheap credit was a preferred instrument for promoting growth and development among disadvantaged groups and within selected sectors in developing countries. Governments created development banks to allocate credit to sectors of the economy that were considered priorities for development. The public sector rationed credit resources and imposed controls on interest rates to keep them at subsidized levels. Unfortunately, these programs of directed credit at subsidized rates have inhibited the mobilization of savings needed for

important investments, and undermined the development of sound financial systems in many countries (World Bank, 1989; Fry, 1988).

Directed credit and controlled interest rates have led to distortions and waste in the allocation of precious development resources. Governments that have maintained interest rates below inflation or the return available abroad have encouraged capital flight, negatively affecting the balance of payments and the local financial system. Likewise, in countries where an important proportion of credit is allocated by the public sector, there has been a lack of financing for key private sector ventures that have the potential for income generation and employment creation. This scarcity of resources for nonpriority sector investments has forced private firms into borrowing from foreign sources of credit. Currency devaluations exacerbated these debts, contributing to the debt crisis of the 1980s.

Furthermore, the priority investments toward which scarce financial resources have been directed, while socially desirable, have often been unprofitable. These unprofitable investments have contributed to extremely high levels of arrears in financial institutions and consequently to the overall instability of financial systems.

Development banks offer some of the most obvious examples of the negative repercussions of subsidized credit. Their track record as viable long-term financial institutions is dismal; many are now closed, others are insolvent, and most are unable to cover their operating costs without periodic injections of funds from governments or multilateral lenders. Most have been unable to mobilize substantial domestic resources since they did not offer market rates of interest to depositors, and thus could not compete with commercial banks. Approximately one-third of the existing development finance institutions in developing countries have large percentages of nonperforming loans and are in serious financial difficulty (Fry, 1988). While subsidized credit is not the only reason for the poor performance of development banks (poor management, lending practices based on political preferences instead of risks and costs, staff turnover due to uncompetitive salaries, etc. are all responsible), it is one of the main contributing factors. The bailout of development banks has usually required government funding, which is often supplied by issuing money, thereby contributing to inflationary pressures and making macroeconomic management more difficult.

Lastly, there is widespread evidence that directed credit programs have not fulfilled their developmental objectives[1]. Interest rate subsidies do not necessarily contribute to increased access to credit for the poor. In many cases, subsidized agricultural loans have gone mostly to relatively well-off farmers, worsening rural income distribution. Larger borrowers receive greater subsidies (the larger the loan, the larger the subsidy) while those excluded from access to credit do not get any subsidy. Since larger borrowers are those who can usually provide real guarantees and who are willing to absorb high transaction and opportunity costs, subsidized credit often favors the relatively wealthy.

Despite its weaknesses, however, there have always been strong arguments that make subsidized credit popular among policy makers. Credit at unsubsidized rates, it was argued, is too expensive for poor borrowers and does not allow them enough profits to improve their economic conditions or expand their economic activities. Cheap credit, on the other hand, can make even marginal activities profitable. These arguments generally prevailed in the microenterprise field until the mid-1980s. Until that time, most microenterprise credit programs set low interest rates to make inexpensive credit available to their poor borrowers.

Gradually, however, microenterprise finance institutions are moving toward higher, unsubsidized rates of interest. They are finding that poor borrowers are able to pay interest rates that reflect the real cost of loans, and still increase their profits and create more jobs. The institutions are also realizing that their own viability, potential growth, and capacity to serve their clientele over the long term depend upon their ability to generate enough income to cover their costs. Lastly, microenterprise institutions can only have a positive impact on the financial systems in which they operate if they are financially sound themselves.

This paper examines the shift in the interest rate policy of microenterprise finance institutions in order to show its merits, and to suggest the enormous implications that it has for the future of microenterprise finance institutions and the financial systems of the countries in which they operate. Section II looks at interest rates from the perspective of the borrower, and shows that reasonable financial costs do not hinder the ability of microentrepreneurs to increase their incomes and profits. It also shows that financial costs may be one of

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1 For an extensive analysis of the effect of subsidized credit on rural development, see Adams, Graham, and Von Pischke (1984).

the least expensive portions of a microentrepreneur's total borrowing costs. The perspective of microenterprise credit programs is studied in the following section. It examines the importance of interest rates for the achievement of institutional self-sufficiency, and discusses some of the external constraints often placed on an institution's interest rate policy. The final section highlights the exciting opportunities that sound interest rate policies create for microenterprise programs, the clientele they serve, and the financial systems of developing countries.

The paper includes two appendices that provide a technical background for some of the concepts discussed. Appendix I explains nominal, effective, and real interest rates and how they are calculated. Appendix II describes the three basic components of an institution's effective interest rate, and shows how microenterprise credit institutions can determine an interest rate that will lead them toward self-sufficiency.

II. INTEREST RATES AND MICROENTREPRENEURS

Microentrepreneurs face several different kinds of costs when they apply for and receive a loan. The **effective interest rate** of each loan, which includes the interest costs as well as all commissions and fees paid to the lending institution, represents the **financial costs** of the loan to the borrower[2]. The financial costs of loans to microentrepreneurs, especially the portion determined by the nominal interest rate, are often considered the most critical borrowing cost for poor microentrepreneurs. Depending on the source of the loan, however, the financial costs may actually be a small portion of the total borrowing costs that the microentrepreneur pays. Furthermore, the financial costs may be a relatively insignificant portion of the borrower's total operating costs.

This section looks at different borrowing costs, how they affect microentrepreneurs, and how they vary among different lenders. It shows how loans with low nominal or effective interest rates can be more expensive for borrowers than loans with high rates because of transaction and opportunity costs. It also shows that financial costs, though often considered to be the most burdensome for microentrepreneurs, are actually a small percentage of their total costs.

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2 Readers who are not familiar with the concept of effective, nominal, and real interest rates should refer to Appendix I before continuing.

Total borrowing costs include financial costs, transaction costs and opportunity or accessibility costs. **Transaction costs** are paid by the borrower, but not to the lender. Examples of transaction costs include: bus fares to the financial institution, fees paid to an accountant to produce financial statements required for the loan, the costs of obtaining documentation required to guarantee the loan, time spent by the borrower collecting needed information and documentation, etc. Transaction costs are indirect costs imposed by lenders through their delivery systems, but are not received by those lenders in the form of income.

Opportunity or accessibility costs are similar to transaction costs in that they are paid by the borrower, but not received by the lender. They are slightly different, however, because they reflect the cost of investment opportunities lost due to inefficiencies in lender delivery systems. When credit is not delivered in a timely manner, microentrepreneurs often lose opportunities to purchase inputs or equipment under favorable conditions, or lose important contracts. Opportunity costs include costs such as: missed investment opportunities because of delays in a loan's disbursement, extra time spent processing a loan because the lending institution misplaces a document, additional trips to the lending institution, etc. This opportunity cost is frequently greater than the financial or transaction costs for entrepreneurs dealing with banks or with inefficient microenterprise programs.

Taken together, all three costs (financial, transaction, and opportunity) make up the total borrowing costs that a microentrepreneur pays for a loan. The first part of this section examines the financial costs of loans in the context of the microentrepreneur's total cost structure. The second part looks at the total borrowing costs paid by the microentrepreneur, and discusses in detail transaction and opportunity costs.

A. Financial Costs and the Entrepreneur

Unlike transaction and opportunity costs, financial costs are established explicitly by a credit institution to generate income. The institution determines how much each loan will cost borrowers in interest, fees, and commissions. How the institution establishes these costs, which determine the effective interest rate for each loan, is critical for both the borrower and the institution. Many institutions have begun charging interest rates equal to, or even greater than, commercial bank

rates[3]. These institutions are convinced that higher rates do not prevent microentrepreneurs from working their way out of poverty, and can provide enough income for financial institutions to sustain themselves.

In order to examine how the financial costs of credit affect microentrepreneurs, income and expense information was gathered from 11 borrowers of programs affiliated with ACCION International in Chile, Colombia, and the Dominican Republic[4]. The purpose was to determine the relationship between a microentrepreneur's total costs and financial costs related to borrowing funds. Additionally, the information enables one to assess how the microentrepreneur's profit is affected by financial costs. In all three programs, the nominal interest rate charged by the program is equal to or higher than the nominal commercial interest rate in the country. The borrowers were selected in order to provide a variety of activities and loan sizes. No analysis of their costs was done prior to their selection. While the borrowers may not be representative of all microentrepreneurs, they do present a common or typical variety of activities and loan sizes handled by many microenterprise programs. Table 1 shows the results of this analysis.

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3 For the purpose of this document, commercial rates approximate those charged by commercial lending institutions for similar activities in the same country, even though those rates are rarely if ever available to microentrepreneurs. In many countries, commercial rates often apply to large loans or borrowers with sustantial collateral, implying that even if microentrepreneurs had access to banks, they would not have access to commercial rates.

4 The tree programs are, respectively, the Corporation for the Promotion of Small Enterprise (PROPESA), the ACCION Corporation of Bogotá (ACTUAR-Bogotá), and the Association for the Development of Microenterprises (ADEMI).

Table 1
MICROENTERPRICE LENDING:
THE IMPACT OF FINANCIAL COSTS ON TOTAL COSTS AND PROFITS
(US$)

Activity (a)	Loan Amount (b)	Loan Term (c)	Income (d)	Costs (e)	Fin. Costs (f)	Total Costs (g)	Profit (d-g) (h)	MEIR (i)	% Costs (f/g) (j)	% Chg. in Profit (k)
CHILE										
Shoemaker	269	4 m.	759	602	7	609	150	4.35%	1.1%	4.66%
Knitting	335	6 m.	1,028	905	15	920	108	7.33%	1.6%	13.88%
Furniture maker	99	6 m.	696	588	5	593	103	7.36%	0.8%	4.85%
Restaurant	242	2 m.	1,646	1380	7	1387	259	5.07%	0.5%	2.70%
Commerce	161	6 m.	544	449	2	451	93	2.26%	0.4%	2.15%
COLOMBIA										
Shoemaker	159	2 m.	889	671	6	677	212	5.84%	0.9%	2.83%
Candy maker	221	3 m.	2,050	1624	7	1631	419	4.07%	0.4%	1.67%
Tailor	808	8 m.	1,616	1301	20	1321	295	4.26%	1.5%	6.78%
DOMINICAN REPUBLIC										
Seamstress	555	6 m.	1,667	1300	30	1330	337	9.33%	2.3%	8.90%
Seamstress	444	6 m.	1,055	866	24	890	165	9.35%	2.7%	14.55%
Seamstress	333	5 m.	666	544	19	563	103	9.70%	3.4%	18.44%

EXPLANATION OF TABLE 1

Columns (a) through (e) show, from left to right, the activity of the borrower, the loan size, the loan term in months, the borrower's monthly income, and the borrower's monthly expenses (including take-home income but excluding financial costs).

Column (f) shows the **average monthly financial cost** of the loan to the borrower. This was calculated by adding together all of the financial costs of the loan (interest, commissions, and fees, including a mandatory training fee for the Colombian borrowers) and dividing these costs by the loan term[5]. **Column (g)** shows the total monthly costs of the borrower (operational costs plus financial costs), and **Column (h)** the borrower's monthly profit (the difference between monthly income and monthly expenses).

Column (i) indicates the **monthly effective interest rate (MEIR)** of the loan. It is not a **real interest rate.** In other words, it has not been adjusted for the effects of inflation which was 2.04%, 2.35%, and 6.25% on an average monthly basis in 1990 in Chile, Colombia, and the Dominican Republic respectively.

Column (j) shows the **financial costs as a percentage of the borrower's total costs.**

Column (k) shows what the **increase in profit would be if the borrower were paying zero financial costs.** It was calculated by subtracting the financial costs from the borrower's total costs, determining the borrower's profits with zero financial costs, and comparing that hypothetical profit to the actual profit. It indicates how much more profit the borrower would have if he or she did **not** have to pay any of the financial costs (interest or fees) of the loan, but still received the loan.

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5 The Colombia program also has a mandatory savings program through which its borrowers must have a certain amount deposited in a bank savings account in order to receive follow-up loans. The effect of the savings has not been included in the financial cost calculations or the effective interest rate calculations.

Table 1 shows how the financial costs of borrowing affect the financial situation of 11 microentrepreneurs participating in credit programs in three different countries. Even though the programs charge rates of interest equal to or higher than commercial rates, as well as commissions and fees, the average monthly financial costs of the loans are less than 1% of the total monthly costs for nearly half of the borrowers. For the other six, financial costs range from 1.1% to 3.4% of their total costs. **The financial costs of these loans are a relatively insignificant portion of total costs for the microentrepreneurs.** Microentrepreneurs typically use working capital loans from credit programs to purchase larger quantities of raw materials at lower prices. In many cases, even a slight decrease in raw material costs would quickly outweigh the increase in total costs due to the financial costs of the loan.

From a profit standpoint, the financial costs do have a slightly larger impact on the microentrepreneurs. Over half of the borrowers would see their profits increase by less than 5% if they paid zero financial costs for their loans; the other half would see their profits increase by 6% to 18%. **Financial costs do have a significant impact on the level of profits of several of these microentrepreneurs.** The critical question is whether the *negative* impact of the financial costs on profits outweighs the loan's *positive* impact on profits.

Determining the impact of these loans on the borrowers is beyond the scope of this paper. It would require following the borrowers through the loan period and beyond, and separating out the effects of the economy and other factors on their economic situations. Though many impact evaluations indicate that microentrepreneurs who receive loans improve their economic situations, few if any can attribute those improvements directly to the loans. Despite these weaknesses in impact evaluations, however, there are strong indications that providing microentrepreneurs with credit can raise incomes and productivity significantly (Holt and Ribe, 1991), even when they pay commercial interest rates.

The three Colombian borrowers analyzed in Table 1 increased their profits in nominal terms by 28%, 32%, and 35% respectively during the loan period (two months for the first borrower, three for the second, and eight months for the third). The findings of these three cases are supported by a two-year impact evaluation of nine ACCION-affiliated programs in Colombia which culminated in 1988. That study showed average annual increases in nominal income of 45.5% for borrowers

involved in commercial activities, and 57.8% for borrowers with productive activities[6] (Asociación Grupos Solidarios, 1988).

Another factor that should be considered when examining the financial impact of program credit on microentrepreneurs is whether that credit is replacing an even more expensive source of credit. In many cases, financial costs at or slightly above commercial rates can represent a dramatic *decrease* in financial costs for microentrepreneurs who previously borrowed from moneylenders. Recent studies of 15 ACCION-affiliated programs in Colombia show that more than 70% (658) of the microentrepreneurs surveyed received informal sector loans at nominal rates ranging from 7% a month to 20% a day before entering the program. When they receive loans from the microenterprise credit programs, the reduction in financial costs is immediately reflected in an often substantial increase in business and family income (Freres, 1989).

Likewise, in Bangladesh, it has been estimated that nearly 92% of landless households were dependent on informal moneylenders for their credit, and that the average annual rate of interest on three-fifths of those loans was 125%. The average rate of interest on loans from institutional sources was 14% (Hossain, 1988). Impact studies indicate that substituting credit from moneylenders with credit from the Grameen Bank substantially raises household incomes (Hossain, 1988).

Several factors make it possible for microentrepreneurs to pay reasonable financial costs for loans and still come out ahead. For one, as mentioned above, institutional credit is often replacing more expensive informal sector credit. Second, small- scale microenterprises are generally quite profitable, with quick turnover and an efficient use of capital. Studies carried out by ACCION in Costa Rica and Bolivia (Christen, 1987 and 1985) revealed annual gross rates of return on assets ranging from 100% to 3000%. The smallest businesses, which rotated their assets up to 48 times a year, had the highest rates of return. Third, loans to microentrepreneurs are relatively small, short-term and with frequent payments. As such, they are appropriately structured to coordinate with the financial cycles of microenterprises and are affordable.

Furthermore, it is more common for poor payback performance to be linked with subsidized loans (Holt and Ribe, 1991; Fry, 1988), than with

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6 The annual inflation rate at the time of the study was 24%, meaning that real increases in come were 21.5% for those with commercial activities, and 33.8% for producers.

loans at commercial interest rates. Examples of programs with commercial interest rates and acceptable levels of arrears and defaults are abundant. The unit desa system in Indonesia, with 1.8 million loans averaging $437 outstanding, charges commercial interest rates, and its percentage of past due loans to total loans has fluctuated from 2.1% in 1985 to 7.5% in 1990, with a long-term loan loss ratio of 3.26% (Boomgard and Angell, 1990). The Grameen Bank has financial costs equivalent to, or higher than those of commercial banks in Bangladesh, and consistently maintains a higher quality portfolio than other credit institutions in the country. The ACCION affiliate in Bolivia, PRODEM, charges higher effective rates than commercial lenders and, with over 15,000 poor borrowers with outstanding loans by the end of 1990, has never had its past due payments (by 30 days) reach even 1% of its active portfolio. There are countless cases of programs charging microentrepreneurs commercial interest rates or higher and maintaining high quality portfolios, and little evidence of commercial interest rates being a cause of delinquency or default.

In summary, there are several convincing arguments that financial costs even greater than those of commercial loans do not prevent microentrepreneurs from using credit to increase their incomes and profits.

- Financial costs from institutional sources of credit represent an extremely small portion of a microentrepreneur's total costs.

- The increase in profits from credit appear to outweigh any decrease in profits due to the financial costs of the loan.

- Institutional credit sometimes replaces credit from sources with even higher financial costs.

- There is no evidence that credit with commercial-level financial costs is more difficult for the borrower to repay than highly subsidized credit. Existing evidence actually shows that subsidized credit is more likely than nonsubsidized credit to be linked with high arrears.

The attitudes of microentrepreneurs as reported by ACCION programs confirm the evidence presented above. While microentrepreneurs often complain about lack of access to credit, they rarely mention high interest rates as a problem. More important than interest rates are speed of loan disbursement, availability of second loans, and simple procedures, all of which are reflected in

transaction and opportunity costs[7]. As the next section will show, while the financial costs of institutional credit are usually less than the financial costs of credit from informal sources, institutional credit with high transaction and opportunity costs can be *more expensive* to borrowers than credit from moneylenders.

B. Borrowing Costs and Sources of Credit

Different sources of credit imply different borrowing costs. Informal moneylenders often provide credit on the spot, implying zero opportunity costs and low transaction costs (one round-trip to the moneylender)[8]. If the borrower is known to the moneylender, the loan might even be taken to the borrower after a phone call, reducing transaction costs to zero. In relatively "free" informal financial markets, it is counterproductive for lenders to impose any cost on borrowers that they cannot collect directly. Consequently, informal credit delivery systems are designed for maximum efficiency and lowest transaction and opportunity costs.

Moneylenders do, however, inflict high financial costs on their borrowers. Moneylenders operate on a very small scale, the same general scale as their borrowers. Because they face similar investment opportunities as their borrowers in markets characterized by relatively free entry and exit, they must weigh available returns to lending against available returns from alternative, small-scale productive activities. Thus, the financial return to a moneylender must be at least as high as the returns on productive capital for other small-scale activities. These returns are much greater than market interest rates (Adams, 1989). They must also charge enough interest to cover losses on defaulted loans and offset their risks. Furthermore, in some places the demand for quick credit is much greater than the supply, and the only suppliers are moneylenders. In such circumstances, moneylenders can capitalize on their monopoly and ration the available supply of credit by charging very high interest rates.

Wholesalers also provide financing to microentrepreneurs. They may not charge interest explicitly, but the cost of the loan is often "hidden" in the price of the product provided to the client. They may charge a

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7 See Meyer (1989) and Steams (1989).

8 Christen (1990) points out some of the advantages to microentrepreneurs of borrowing form moneylenders. His paper argues that there are several aspects of the efficient service of microenterprise programs.

higher price for products purchased on credit, or offer lower quality merchandise. Wholesale market vendors, for example, may offer yesterday's leftover produce to customers buying on credit, while those buying with cash select their own produce. For entrepreneurs well-known to the wholesaler, credit might be provided without such costs, but with an agreement that the entrepreneur will consistently buy from the same wholesaler. Wholesalers often present low financial and transaction costs to microentrepreneurs, but impose opportunity costs through higher prices, lower quality products, or less freedom to shop around.

Formal lenders, like banks, present borrowers with a very different cost structure, especially for small loans. Generally, the transaction methodologies of banks are designed for making large loans to borrowers with financial statements and collateral, not to microentrepreneurs. These methodologies impose very high transaction and opportunity costs on microentrepreneurs. Furthermore, because most banks find it impossible to make a profit on small loans[9], they tend to lend to microentrepreneurs only to improve their public image or to satisfy international multilateral agencies or local governments. Since their motivation is political, and they must comply with conditions established by the government or the multilateral agencies, banks often maintain lower than market interest rates on these loans.

Demand by small businesses for inexpensive loans, however, is enormous. The high transaction and opportunity costs imposed by the bank's traditional transaction methodology actually serves to ration the limited supply of cheap credit. Numerous requirements, long delays in processing, and slow disbursement make loans with low financial costs much less desirable, and more expensive, to microentrepreneurs. One study in Costa Rica found that of eight microentrepreneurs who had approached banks for loans:

> All of them gave up before finishing the application process. One finished the process once, and after being turned down never finished it the second time. One gave up when the bank lost his application and another after spending a futile six months trying to get the loan processed (Stearns, 1989).

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9 Loans to small borrowers are more expensive for banks than those to largue borrowers. González-Vega (1984) argues that interest rate restrictions lead to a redistribution of loan portfolios to relatively few large borrowers, thereby excluding large numbers of small potential borrowers.

Like banks and moneylenders, microenterprise credit institutions also impose financial, transaction, and opportunity costs on their borrowers. In most cases, one of the primary motivations of microenterprise credit institutions is to benefit microentrepreneurs. At the same time, however, these institutions must ensure their own survival by generating enough income to cover their costs (more on this in section III). Therefore, they need to minimize their costs to the borrower, but maximize their own income.

Unlike the moneylender, credit institutions do not need to use their interest rate to maximize profit and ration the limited supply of credit. Instead, they can decide on a financial cost (an effective interest rate) that enables them to cover their cost of providing financial services to microentrepreneurs[10]. Because these institutions intend to benefit their clients, they should not ration credit by increasing transaction and opportunity costs to the borrowers. Instead, they can ration the supply of credit by defining a limited target group, a limited geographic area, or using other mechanisms that restrict the demand for credit to the available supply. They can also adapt financial and operating structures that facilitate their growth, thereby increasing the supply of credit.

Example 1 shows how transaction and opportunity costs can elevate the costs of a loan to a borrower far beyond the financial costs. When total borrowing costs are considered, the loans of a moneylender may, in some cases, be less expensive to the borrower than loans from banks, credit unions, or even specialized micro- credit institutions.

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10 Appendix II explains how lending institutions can establish appropiate interest rates.

EXAMPLE 1
JUANA GARCIA'S POSSIBLE SOURCES OF CREDIT

Juana García is a seamstress who needs US$100 for three months to purchase material to fulfill a contract. If she buys the material this week, she will get a 20% discount. She will repay the loan in one payment at the end of the period. She can either take the loan from Doña Susana, her traditional moneylender who lives in the same neighborhood, or from a new institution in the city set up to help microentrepreneurs. Juana García earns approximately $300 a month for 200 hours of work, or an hourly wage of $1.50.

The costs of each alternative are as follows.

Doña Susana

Direct Financial Costs Interest (10% per month: $10 x 3 months)	$30.00
Transaction Costs (Doña Susana lives in the same neighborhood)	$0.00
Opportunity Costs (Money is available immediately)	$0.00
Total Borrowing Costs	$30.00

Institution

The institution would require Juana to take a one-week course (costing $2) for two hours a day. Since Juana lives in a low-income neighborhood on the fringes of the city, it takes her two hours to travel to and from the institution's office. She would need to go five times for the course, and then four times to apply for, receive, and repay the loan. This example assumes that half of the time that Juana spends in training and traveling to and from the office would otherwise be spent working in her business (thus, 14 of the 28 hours spent in

		TOTAL
Direct Financial Costs		$11.00
- Training Fee	$2.00	
- Interest (2% per month: $2 x 3 months)	$6.00	
- Monitoring Fee (3% of loan amount)	$3.00	
Transaction Costs		$24.60
- 10 Hours in Training (5 x $1.50)	$7.50	
- 10 Hours Transportation for Training (5 x $1.50)	$7.50	
- Bus Fare for Training (.40 per round trip x 5)	$2.00	
- 8 Hours Transportation for Loan (4 x $1.50)	$6.00	
Bus Fare for Loan ($.40 per round trip x 4)	$1.60	
Accessibility Costs		$20.00
- Lost Discount	$20.00	
TOTAL BORROWING COSTS		$55.60

When all costs are considered, the new institution, set up to help entrepreneurs, is offering Doña Juana a loan that is nearly 85% more expensive than a loan from her local moneylender. Unless Juana García greatly valued the training she was to receive, and could use it to increase her income, she would be better off getting a loan from Doña Susana. Even if there were no costs associated with the training [direct financial costs of training ($2) plus transaction costs of training ($7.50 + $7.50 + $2) equal $19], Doña Juana's borrowing costs from the institutions would be higher ($55.60 - $19 = $36.60), than those from Doña Susana ($30).

The example of Doña Juana, though fictitious, suggests the relative importance of different borrowing costs to microenterprise program borrowers. For Juana, the interest payment was 11% of the total costs associated with the loan from the institution (30% without including the $19 associated with the training). Total financial costs were 20%. The bulk of her borrowing costs were opportunity costs (36%) and transaction costs (44%), showing the value of quick and convenient credit to the microentrepreneur.

The example of Doña Juana and the previous discussion about the impact of financial costs on borrowers suggest that transaction and opportunity costs, which receive far less attention than financial costs, may be more burdensome to microenterprise program borrowers than financial costs. Interest rates may be of relatively minor importance to the financial well-being of microenterprise program borrowers. They represent an extremely small portion of the total costs of many microenterprises. Even the elimination of all financial costs to program borrowers would not have an overwhelming impact on the profits of most of the borrowers. A decrease of a few percentage points in the nominal interest rate would have even less of an impact. Credit institutions that want to benefit microentrepreneurs need to focus on the **total borrowing costs** of their loans, of which interest rates and financial costs are only part.

III. INTEREST RATES AND MICROENTERPRISE PROGRAMS

The discussion thus far has focused on interest rates, borrowing costs, and how they affect microentrepreneurs. It is equally important to examine how interest rates affect credit institutions. A one half percent increase in monthly interest charges will have a very limited impact on a borrower; for a six-month, $300 loan, the borrower will have to pay an additional $.87 in interest each month. On the other hand, a one half percent increase in interest will have an enormous impact on a credit institution.

With a portfolio of $500,000, monthly income would increase by $2,500, and yearly income by about $30,000.

Credit programs view interest from a very different perspective than borrowers. While interest represents a small portion of an entrepreneur's total costs, it is the primary source of income for a credit program[11]. The long-term viability of a credit program and its capacity to continue serving microentrepreneurs, depends upon its ability to generate enough income to cover its costs. Furthermore, if a program is to expand to meet more of the demand for credit among microentrepreneurs, just covering costs is not enough. An expanding program will need to generate a surplus, or establish a financial situation solid enough for the program to access lines of credit from the government or banks.

International foundations and donors have recognized that efficient microenterprise credit programs can cover large portions of their costs, and are beginning to demand increasing levels of self-sufficiency from their grantees. In addition, as section IV discusses, self-sufficiency can open doors to new sources of large amounts of capital for loan funds. Given the demand for credit in the microenterprise sector of many developing countries, only programs that gain access to that capital can begin to satisfy the demand for credit.

A. Self-Sufficiency and Interest Rates

The term self-sufficiency is defined in a variety of ways. This discussion will use the different levels of self-sufficiency outlined by Rhyne and Otero (Forthcoming):

Level I : Operating expenses and the capitalization of the loan fund are covered by grants or very soft loans (long-term loans with very low interest payments).

Level II: The loan fund is capitalized by grants and loans, some of which are on terms that begin to approach market rates. Interest income covers the cost of the borrowed money and a portion of the operating expenses, but grants are still required to finance some aspects of operations.

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11 Programs that provide extensive training will have costs and income related to training. Those activities that are not directly related to the effective functioning of the credit component of the program should be considered separately. This discussion focuses on the costs and income of the credit component of a microenterprise program, whether or not that program offers training.

Level III: Most, but not all, subsidy is eliminated. Loans used to capitalize the portfolio are usually below market interest rates, and some "soft" money might be on deposit generating additional income. Daily operating expenses might be covered by interest income, but expatriate advisers, or the cost of inflation, might require external funds. Programs at this level can operate on a very large scale. Most of the best-known programs, such as the Grameen Bank, the Badan Kredit Kecamatan program in Indonesia, and some of ACCION's programs, operate at this level.

Level IV: All subsidies are eliminated. The loan fund is fully capitalized from the savings of clients and funds raised at commercial interest rates. Operating expenses and all costs, including those of inflation, are covered by interest income and fees. The only major microenterprise programs to have reached this level are the credit union movements in certain countries and the unit desa system of the Bank Rakyat Indonesia (BRI).

In general, only programs at or above Level III can expand to serve thousands or tens of thousands of borrowers. The amount of grant money continually needed to reach even several thousand borrowers at a lower level of self-sufficiency is more than donors or governments will consider for more than a few years. In order to have a considerable impact, credit programs need to be moving toward level III. Therefore, for the purposes of this discussion, self-sufficiency refers to level III and above.

There is considerable evidence that programs willing to charge commercial or higher rates of interest can reach level III within three to five years. Two of the programs in Table 1, PROPESA in Chile and ACTUAR in Bogotá, began lending in September/October 1988 and have substantial financial costs for portions of their portfolios. By the end of 1990, the two programs were covering approximately 75% of their monthly operating costs (including financial costs) with their own income. The ADEMI program in the Dominican Republic has been covering its operating costs with its own income since 1986. Other ACCION programs, such as those in Guatemala, Bolivia, and Paraguay, are also covering their monthly operating costs with their own income, as are the Grameen Bank in Bangladesh, and the BRI and Badan Kredit Kecamatan programs in Indonesia. As seen in Table 1, **the financial costs that these programs impose on their borrowers do not hinder**

their borrowers' ability to increase their incomes and profits. They do, however, permit the institution to attain self-sufficiency.

With the objective of achieving self-sufficiency, setting effective interest rates is fairly straightforward. There are three basic costs of providing financial services that institutions must cover with their income from those services: the **cost of funds**, the **expected loan loss reserve**, and **operating costs**[12]. Each of these costs is independent of the other two, and only by covering all three can microenterprise finance institutions achieve self-sufficiency and long-term sustainability[13]. Other costs that a microenterprise credit institution might have, such as the costs of providing training, should only be included as operating costs of providing financial services to the extent that they are necessary for the effective provision of those services. Interest charges represent the cost of the money in the portfolio and the expenses incurred in administering that portfolio. Other noncredit services should be paid from specific fees for those services, special grants, or other sources.

It is important to realize that an institution's operating costs and loan loss reserves will depend on its efficiency. Borrowers should not have to pay exorbitant interest rates to pay for a program's inefficiencies. Because competition among institutional lenders is extremely rare in the microenterprise field, programs must challenge themselves to control their costs, provide efficient service, and become self-sufficient.

B. External Constraints on Interest Rates

Although a program's financial projections might indicate that it needs to charge an effective annual interest rate of 42% in order to become self-sufficient within five years, and microentrepreneurs are willing and able to pay 42%, 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 microentrepreneurs.

Most governments control the maximum interest rates charged by banks and other financial institutions. Microenterprise credit programs

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12 Appendix II provides a detailed explanation of how credit institutions can set their interest rates based on estimates of these three costs.

13 Programs operating in areas with very low borrower densities find it extremely difficult, if not impossible, to cover their high operational costs with reasonable levels of interest. New lending methodologies like "village banking" are gradually decreasing the costs of lending in low- density rural areas.

run by private, nonprofit institutions are not part of the banking sector, however, and do not fall under government financial regulations. In some cases, however, governments set interest rate ceilings which do apply to nonprofit institutions.

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% interest, the program could set its nominal annual interest rate at 27%, and then charge the equivalent of 15% 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 commercial-level interest rates sometimes generate a negative image of an institution that is supposed to promote economic development among the poor. Traditionally, development credit is subsidized at low rates of interest. Charging "high" rates of interest to "poor" borrowers may seem usurious to local officials, the general population, donors, and even other institutions offering subsidized credit to microentrepreneurs.

This subsidy mentality arises from basic misconceptions about the costs to borrowers of obtaining and repaying credit, and the profitability of microenterprises. As previously explained, explicit financial charges imposed by institutions are often a small part of the total borrowing costs faced by small borrowers, and an extremely small portion of a microentrepreneur's monthly costs. If transaction and opportunity costs are kept low, and the lending institution is efficient, microentrepreneurs can afford to pay the financial costs of the relatively small, short-term loans they need, and still increase their incomes substantially and reinvest in the growth of their enterprises.

IV. IMPLICATIONS OF SOUND INTEREST RATE POLICIES

The preceding discussion has provided a financial perspective on interest rates, their relative cost for borrowers, and their purpose for lenders. This financial approach is gaining increased acceptance as a viable alternative to the political or subsidized approach which has traditionally guided interest rate policies for development programs. Accepting financial arguments as the determinants of interest rate policy for microenterprise credit programs has profound implications.

A sound interest rate policy and operations that keep operating costs low are the most critical determinants of whether a program can become self-sufficient. Self-sufficiency, in turn, determines whether a program can gain access to the resources needed to expand and reach tens or hundreds of thousands of borrowers.

As programs approach self-sufficiency, they can find new sources of funds for the capitalization of their portfolios. Savings, commercial loans, and loans from multilateral banks or institutions are feasible sources of large amounts of capital for self-sufficient programs. Capital from these sources tends to be too expensive for heavily subsidized programs, especially those that lend at subsidized interest rates.

A. Resource Mobilization

Savings

The potential of savings to provide a significant amount of capital for the portfolio of a microenterprise finance institution is greatly enhanced by a sound interest rate policy[14]. If an institution offers cheap credit to borrowers, it cannot afford to offer competitive interest rates to its savers. The institution can force clients to save at low rates as a requirement to get a loan. The clients will save only the minimum required and will not provide the organization with sufficient resources to expand significantly the credit portfolio.

If an institution pays a competitive rate for savings, the volume saved can play a critical role in capitalizing the credit portfolio. The institution will be mobilizing local resources to fund productive local investments, in itself a valuable contribution to economic growth and development. Whether savings can be mobilized on a large enough scale to meet local credit needs is still being debated. Evidence from rural Indonesia indicates that the potential for mobilizing savings, even among poor populations, is enormous.

> The new view of savings mobilization is that its potential will only be realized when financial institutions provide incentives to save by offering savings as a service, stressing convenience, access and returns. BRI (Bank Rakyat Indonesia) incorporated this view into its unit desa (district

14 For a broader discussion of savings, its role in microenterprise credit institutions and benefits to borrowers, see Otero (1989) and Rhyne and Otero (Forthcoming).

sub-office) system from the beginning. It offers SIMPEDES, a passbook savings instrument with no minimum balance, unlimited withdrawals and an interest rate close to that available to larger savers at commercial banks. Since the introduction of SIMPEDES, BRI has seen its savings grow faster than lending to the point where, in 1989, savings exceeded loans. It has also found that its savings services reach many more people than credit services, by a factor approaching four to one (Rhyne, 1990).

The unit desa system of BRI described above disburses an average of 115,000 loans per month with a value of $50.3 million and an average loan size of $437. There are currently 1.8 million loans outstanding worth a total of $614.5 million. Savings on deposit total $646.8 million in 6.7 million accounts. In 1989, the system earned a profit of $25 million. It is "fully self-sustaining without any remaining external subsidy" (Boomgard and Angell, 1990).

Local regulations and the legal status of microenterprise programs frequently inhibit their ability to capture and lend out savings (Otero, 1989). Microenterprise institutions are beginning to explore options to address these restrictions. In Bolivia, the Foundation for the Promotion and Development of Microenterprises (PRODEM, the ACCION affiliate currently lending to microentrepreneurs) is working with the private sector to establish a commercial bank for microenterprises. The Association of Solidarity Groups in Colombia is creating a second-tier cooperative structure that will allow the mobilization of savings from among the more than 15,000 borrowers of the 17 ACCION affiliates in the country. Another alternative is for programs to work with local banks to capture the savings of their clientele, and then use that savings as leverage to borrow funds from the bank.

Loans from Commercial Banks

The commercial banking sector is an alternative source of capital for microenterprise programs. Banks will provide loans to the programs based on their normal lending criteria and their own availability of funds. A program with few assets and a small capital base will not have the guarantees necessary to borrow from banks. The use of a guarantee fund, savings on deposit as mentioned above, or other innovative mechanisms (some of them requiring initial donor financing) can provide the guarantees necessary to convince commercial banks to lend to microenterprise credit institutions.

ACCION's guarantee fund in the United States enabled its affiliates to borrow over $3 million in 1990 from banks in Latin America. The programs must pay commercial rates of interest for the funds, implying that their own interest rate policy includes those costs in the cost of funds calculation. Unless special arrangements can be negotiated, this is a relatively expensive way for microenterprise programs to enlarge their portfolios. Nonetheless, especially if combined with cheaper funds, commercial loans can be an important source of funds for expanding programs.

Multilateral Institutions and Other Sources

Less expensive sources of larger quantities of borrowed money might include multilateral institutions like the World Bank, the Inter-American Development Bank, their private sector arms (the International Finance Corporation and the Inter-American Investment Corporation respectively), and others. These organizations generally work through governments, making access to their resources dependent on a positive relationship between the microenterprise finance institution and the government. Although the multilateral institutions are beginning to turn away from heavily subsidized interest rates, microenterprise institutions may gain access to their funds on more favorable terms than those offered by local commercial banks. Because the loans are often in dollars, however, the foreign exchange risk can more than offset the lower costs, depending on the economic conditions of the country and whether the government or the microenterprise institution assumes the risk.

Institutions willing and able to pay for the funds used to expand their credit portfolios can devise innovative alternatives attractive to donors, other financial institutions, and even private investors. Corporations with blocked funds might be willing to invest those monies in a local microenterprise program offering them a low rate of return, rather than leave them sitting in a government bank. Donors might be willing to "front- load" a credit program by giving a one-time, large, low-interest loan (or even donation) that the credit institution could invest locally, earn interest, and gradually incorporate into a growing portfolio. The income from the investment would cover the program's expansion costs, and the growing portfolio would cover operational costs. A similar design has financed the expansion of the Grameen Bank over the last few years. The possibilities are numerous and, as yet, relatively unexplored.

B. The Future of Microenterprise Lending

Traditionally, interest rates have a broad mandate; they are used to promote investments in key sectors and subsidize targeted borrowers who can then work themselves out of poverty. They are a tool of policy. Experience has indicated, however, that subsidized interest rates can cause detrimental side effects to financial systems that often outweigh the benefits. Subsidized rates weaken financial institutions and financial systems, making them incapable of providing long-term, efficient financial services.

Recognition of the detrimental effects of subsidized rates, and the realization that even poor borrowers can pay reasonable rates of interest, are beginning to change the mandate of interest rates to a far simpler one: to cover the costs of lending money. Used to cover the costs of lending, interest rates can help build strong financial systems and institutions. Policies to promote investments in key sectors and subsidize marginalized populations are important. They should not, however, rely on interest rates. Instead, they should rely on other mechanisms that do not weaken the financial institutions and systems necessary for developing countries to progress.

For microenterprise finance institutions, the future appears relatively clear. Heavily subsidized programs will face problems trying to expand because they will not have access to the necessary resources. They will be unable to pay the financial costs of mobilizing savings on a large scale or borrowing from commercial banks or multilateral institutions. While donor financing may permit some growth, it will not be sufficient given the growing credit needs of the microenterprise sector. Microenterprise programs dependent on donor financing for expansion will rarely reach more than a few thousand borrowers.

Donors themselves will need to adapt to the changing environment. Their financing will continue to be critical for the start-up phase of most new microenterprise credit programs in the near future. After the start-up phase, however, donors will need to choose between continuing to subsidize programs whose very existence depends upon their donations, or supporting programs moving toward self-sufficiency and expansion. Self-sufficient programs eager to expand will develop capital needs greater than available donations. Donors eager to support them will need to establish investment or lending mechanisms that can provide larger quantities of capital. Donors will also be looked to for support in testing and developing innovative financial mechanisms that increase programs' access to new commercial sources of funds.

Microenterprise finance institutions that use interest rates to cover their lending costs are more likely to develop into self- sufficient institutions capable of meeting the financial needs of large numbers of microentrepreneurs. Institutional development for expansion, or the efficient "scaling up" of operations, will be a major challenge. These financial institutions will need to combine sound financial management with the lessons learned from the many small, subsidized, microenterprise credit programs of the last 20 years to have a widespread, long-term impact on the availability of financial services to the poor. They will begin to give large numbers of the poor permanent access to savings facilities, loans, and other financial services that can help them improve their own lives and promote economic development within their country. The proliferation of this new type of financial institution will be an important improvement of the financial systems of developing countries, while providing immediate, direct benefits to the poor.

This potential, though unproven on a large scale except in Indonesia, argues for sound interest rate policies, self- sufficiency, and progress toward "a time in which the majority of poor entrepreneurs throughout the Third World have access to financial services provided from locally-generated funds, without external subsidies" (Rhyne and Otero, Forthcoming).

APPENDIX I - UNDERSTANDING INTEREST RATES[15]

Interest rates represent the cost of money. They are what a borrower pays in order to have access to money, which is a scarce resource. Understanding interest rates for microenterprise lending requires knowledge of a few simple financial terms, concepts and formulas. This section discusses basic types of interest rates and their methods of calculation. These concepts are essential to the management of microenterprise credit programs.

A. Nominal Rates of Interest

Simply put, **nominal rates of interest** on a loan are the rates the lender says the borrower will pay. In formal financial circles, nominal rates are almost always quoted on an annual basis. Because microenterprise loans frequently have terms of less than a year, nominal interest rates are often quoted on a monthly basis. Informal sector moneylenders will sometimes have daily interest rates. For long-term (more than one year) financing, standard banking practice is to use the nominal rate to calculate the interest payments on the **outstanding** or **declining balance** of a loan. Using this method, the amount of interest that a borrower pays during each payment period equals the nominal interest rate times the outstanding principal amount. Box 1 shows how the principal and interest payments are calculated.

Nominal rates of interest do not tell the whole story in terms of the costs of a loan, however. In Box 1, the loan's nominal interest rate reflects the full financial cost of the loan. If that same $100 loan were to include a commission of 5% to be deducted from the original loan amount before disbursement, then the cost of the loan would be much higher than 2%. Likewise, if the interest were calculated using the original balance of the loan ("simple" interest or the "flat" method of calculation), or if the interest were "discounted" before loan disbursal, the true financial cost of the loan would be higher than the nominal rate of 2%. The rate that will reflect the full financial costs of the loan is known as the **effective interest rate.**

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15 This section is adapted from Christen (1990).

BOX 1
CALCULATING INTEREST ON A DECLINING BALANCE

If a loan is to be paid in equal, periodic amounts (such as monthly), it is known as an **amortized** loan. The **amortization table** below shows the schedule for the payment of principal and interest on a loan using the declining or outstanding balance calculation.

Loan amount	$100.00
Monthly interest rate	2%
Loan term	3 mos.

Payment	Interest	Principal	Total	Loan Balance
				$100.00
1	$2.00	$33.33	$35.33	66.67
2	1.33	33.33	34.66	33.34
3	.67	33.34	34.01	0.00
Total	$4.00	$100.00	$104.00	

The interest to be paid at the end of each payment period is 2% of the outstanding balance during that period. The first interest payment is 2% of $100, the second is 2% of $66.67, and the third is 2% of $33.34. Because both lenders and borrowers prefer payments to be an equal amount each month (instead of the differing monthly payments seen in the total column), the payment schedule shown above would usually be adjusted to read:

Payment	Interest	Principal	Total	Balance
				$100.00
1	$2.00	$32.68	$34.68	67.32
2	1.35	33.33	34.68	33.99
3	.68	33.99	34.67	0.00
Total	$4.03	$100.00	$104.03	

With this payment schedule, the borrower pays 2% of the balance of the loan each month, and the total amount paid each month is $34.68, including principal and interest.

There are several possible ways to calculate the payment schedule when interest is calculated on a declining balance. The easiest is to use a financial calculator which (given the loan amount, the interest rate, and the number of payment periods) can quickly provide equal payment amounts and indicate how much goes toward principal and how much toward interest for each payment. The following mathematical formula can also be used to calculate loan payments and to construct an amortization schedule.

i = interest rate per installment period

n = number of installments

P = principal amount of the loan

$$\text{Installment payment} = P \times \frac{i \times (1+i)^n}{(1+i)^n - 1}$$

Using the same loan example as above, where the principal amount of the loan is $100, monthly interest is 2%, and the loan term is three months:

$$\text{payment} = 100 \times \frac{.02 \times (1+.02)^3}{(1+.02)^3 - 1} = 100 \times \frac{(.02 \times 1.0612)}{.0612}$$

payment = 34.68

To determine the amortization schedule, period by period:

1) Calculate the interest to be paid in the first payment:
($100 x 2%) = $2 interest

2) Subtract the interest from the first payment to see how much principal is paid with the first payment:
($34.68 – $2) = 32.68

3) Subtract the first principal payment from the outstanding balance to determine the new outstanding balance:
(100 – 32.68) = 67.32

4) Calculate the interest to be paid in the second payment based on the new outstanding balance:
(67.32 x 2%) = 1.35

Continue repeating steps 1-3 for each payment.

B. Effective Rates of Interest

Effective rates of interest bring all of the direct financial costs of a loan together in one interest rate. Effective interest rates include the effects of commissions, fees, the calculation method, and other loan requirements on the total cost of the loan to the borrower. Effective rates can be compared to determine whether the conditions of one loan make it more expensive or less expensive to the borrower than the conditions of another loan.

When interest is calculated on a declining balance, and there are no additional costs to a loan (as in Box 1), the effective interest rate is the same as the nominal interest rate. Effective interest rates will differ from nominal rates, however, whenever there are any additional financial costs to a loan, such as:

(a) the interest being calculated based on the original loan amount instead of the outstanding balance. This "flat" method of calculation is commonly used by informal lenders, some microenterprise credit programs, and banks for consumer or short- term working capital loans.

(b) the interest being deducted ("discounted") from the original loan amount before the loan is disbursed. Moneylenders often calculate the interest using the flat method and deduct it up-front from the original loan amount. Some microenterprise credit programs calculate the interest on a declining balance, but deduct it up-front from the original loan amount.

(c) a commission or other fee. Such fees will alter the effective interest rate to varying degrees depending on whether the fees are a specific amount per loan, a percentage of the loan amount, deducted from the original loan amount before disbursement, or paid in installments with the loan payments. Banks and credit programs charge commissions or fees for specific services, such as the processing of loan applications.

(d) a requirement that the borrower maintain a minimum amount, a **compensating balance**, in a savings account in order to receive a loan. Compensating balances are a common practice of credit unions and some microenterprise programs.

The effective interest rate represents the total financial costs of a loan to the borrower, considering the conditions of the loan (as in the four examples above). Financial calculators calculate the effective rate when provided with the **amount the borrower receives** (sometimes called **present value** on the calculator), the **number of payment periods**, and the **amount to be paid in each period** (often entered as a negative number). These three variables change depending upon the conditions of the loan. Table 2 shows how these changing conditions alter the effective interest rate of the loan, and thereby the cost of the loan to the borrower. It is important to realize that the loan used in these examples has a term of only three months. With each additional payment period, the monthly effective interest rate on loans with commissions or fees will decrease, but the total amount paid in interest over the course of the loan will increase. When interest is calculated using the original loan balance, both the effective interest rate and the amount paid in interest will increase substantially as the loan term lengthens.

Table 2
LOAN CONDITIONS AND EFFECTIVE INTEREST RATES
Original loan amount: $100; Loan period: three months; Nominal interest rate: 2% per month

	CONDITIONS	PRESENT VALUE (Amount borrower receives)	PAYMENT PER PERIOD	EFFECTIVE INTEREST RATE
A.	No additional financial costs.	$100	$34.68	2%
B.	Interest calculated using original loan amount instead of declining balance (flat method).	$100	$35.33 ($33.33 principal plus $2 interest)	2.97%
C.	Interest deducted up-front from original loan amount.	$95.97 ($100-$4.03 interest)	$33.33	2.08%
D.	5% commission deducted up-front.	$95 ($100-$5)	$34.68	4.69%
E.	5% commission added to original loan amount.	$100	$36.41 (Borrower must repay $105 because of commission)	4.55%
F.	25% compensating balance required; no interest earned.	$75 ($100-$25)	$34.68	18.34%
G.	25% compensating balance required; 1.5% interest per month earned on balance.	$75 ($100-$25)	$34.30 ($34.68 - $.38 interest earned on deposit)	17.65%

As Table 2 shows, a three-month loan advertised at 2% monthly interest could have an effective interest rate that varies from 2% to over 18%. The higher the effective interest rate, the more this loan is actually costing the borrower. All of these types of interest calculations are considered legitimate, underscoring how little nominal interest rates reveal about the costs of a loan. Nominal interest rates, however, are the rates commonly quoted by financial institutions, credit programs, and moneylenders. In order to ascertain the true financial costs of loans, the **effective interest rate** must be determined. If it is not provided, it should be calculated considering the way the lender calculates interest due, and factoring in all fees, commissions, and other direct financial costs.

BOX 2
HOW CALCULATORS CALCULATE THE EFFECTIVE INTEREST RATE

The effective rate is determined through an iterative process carried out by the calculator. Given the three variables, the effective interest rate is adjusted through trial and error until the result of the equation below is as close as possible to the present value (initial principal amount) of the loan.

Using a 3-month, $100 loan with monthly payments of $34.68 and no additional costs (as in example "A" of Table 2), the calculator continually adjusts the value of I (interest) until the following equation is correct[16].

Payment Period	Payment	Formula	Present Value
1	34.68	$\frac{34.68}{(1+I)^1}$	34.00
2	34.68	$\frac{34.68}{(1+I)^2}$	33.33
3	34.67	$\frac{34.67}{(1+I)^3}$	32.67
Total present value (initial loan amount):			$100.00

In this case, the value of I which correctly completes the equation is .02, meaning the loan has an effective monthly interest rate of 2%.

16 This representation of the calculation was provided by Jeanine Corvetto.

C. Real Rates of Interest

Real rates of interest are rates that have been adjusted to compensate for the effects of inflation. Real interest rates are either nominal or effective rates of interest minus the inflation rate[17]

BOX 3
THE EFFECTS OF INFLATION

In Colombia during the period from 1980 to 1988, the average annual rate of inflation was 24% (World Bank, 1989). If in 1985 a credit program had a portfolio in Colombian pesos worth US$ 100,000, charged just enough interest to cover its costs, and had no new money during that period, then its portfolio would have devalued as follows:

By 1988, the portfolio would have been worth only $43,897! If the

Year	Beginning Portfolio ($)	Amount Lost to Inflation ($)	Ending Portfolio ($)
1985	100,000	24,000	76,000
1986	76,000	18,240	57,760
1987	57,760	13,862	43,897

program could have provided 1,000 loans for sewing machines in 1985, by 1988 it would have been able to provide fewer than 500 loans for sewing machines (assuming that the value of sewing machines remained constant).

Negative real interest rates are common in highly inflationary environments, especially if government policies control interest rates. Negative rates create great incentives to borrow because, in effect, the borrower pays back less (in value) than what he or she borrowed.

In order to control the negative effects that high rates of inflation can have on financial systems, some countries **index loans.** The loans are not denominated in a specific currency, like pesos, but rather in a nonmonetary unit which is pegged to inflation. This nonmonetary unit, such as the "unidad de poder adquisitivo constante" in Colombia (UPAC:

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17 In Hyperinflationary conditions, real interest rates equal: $\frac{(1+\text{nominal interest rate})-1}{(1+\text{inflation rate})}$

constant purchasing unit) is a "value unit" pegged to a specified "basket" of goods and services that is used to measure inflation. The UPAC is, in essence, a monetary unit reflection of inflation. In Colombia, interest rates for long-term loans (mostly for housing) are always expressed as UPACs plus a nominal interest rate.

APPENDIX II - SETTING INTEREST RATES[18]

There are three basic costs of providing financial services that institutions must cover with their income from these services: **the cost of funds, the expected loan loss reserve, and the operating costs.**

A. Cost of Funds

The **cost of funds** refers to the amount that institutions must pay for the resources that they use to lend to their borrowers. These resources may be local currency loans, foreign currency loans, savings deposited by borrowers, or other funds for the portfolio that imply a cost for the institution. Like any borrower, the lending institution must pay an **effective rate of interest** for these funds, which includes: interest paid to depositors, interest paid to lenders, fees or commissions paid to lenders (or donors), compensating balances required by lenders, and all financial costs related to the funds.

Institutions that operate with foreign currencies must also consider the cost of converting currencies. If an institution in Colombia borrows dollars from a US bank, the Colombian institution will change the dollars into pesos in order to lend the funds to microentrepreneurs. Eventually, dollars will have to be purchased with pesos to pay the loan back to the American bank. If the Colombian peso loses 24% a year in value (or devalues) vis-a-vis the dollar, then the loan will cost the Colombian institution the effective rate of interest **plus** 24% a year.

Inflation has a similar effect on the cost of funds. If an institution works with a significant portion of donated or heavily subsidized resources, it should protect those resources from a loss of value due to inflation. As shown in the section on real interest rates in Appendix I, inflation deteriorates the value of a portfolio. To maintain the real value, an institution must consider that its own funds have a cost equal to that of inflation. Income charged to cover the costs of inflation is then reinvested in the portfolio to preserve its real value.

In sum, the cost of funds should include the effective rate of interest on borrowed money, costs due to devaluation (if funds are being converted between currencies), and costs due to inflation for the institution's own money.

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18 Much of this section has been adapted from Christen (1990), pp. 69-73

B. Loan Loss Reserve

Institutions that lend money do not always get it all back. Nonrecoverable loans must be "written off" to remove them from an institution's assets. In preparation for writing off loans, credit institutions set up a **loan loss** or **bad debt reserve** by expensing a certain amount through the income statement each month[19]. When nonrecoverable loans are written off, an accounting adjustment which should take place at least once each year, the uncollected amount is actually subtracted from the loan loss reserve. The loan loss reserve portion of the interest rate provides the income necessary to build and maintain the loan loss reserve, which is depleted when loans are written off. Through this process, nonrecoverable amounts lost from the portfolio are replaced by income earned by the institution, thereby preventing the decapitalization of the portfolio because of defaults.

Normally, financial institutions estimate the amount of expected bad debt on the basis of prior experience and estimated potential losses from the actual 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 enter into default and not be recovered, and therefore the amount that should be in the loan loss reserve. As a general rule, well- managed microenterprise credit programs should not have loan losses exceeding 3% of the average portfolio in any given year. With estimated annual losses of 3% of the average portfolio, an institution's loan loss reserve should be maintained at 3% of the portfolio, and the interest rate charged to borrowers should include 3% to maintain that reserve.

C. Operating Costs

The **operating costs** of a credit program are usually covered by what is known as the **interest rate spread**, or **margin**. The spread is the portion of the interest rate which produces the revenues used by the institution to cover its operating costs and, in the case of commercial banks, the institution's profits. The spread is the difference between an institution's cost of funds and expected loan losses, and the effective interest rate charged by the institution.

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19 For a detailed description of the establishment and management of loan loss reserves, see Christen (1990)

Because programs in their early phases of operation do not have sufficient lending volume to break even, they must estimate the spread they will need to cover their operating costs when they reach early maturity (three to five years). With budgets and financial projections, a program can estimate its operating costs as a percentage of an expected future portfolio. This percentage, at the program's break-even point, should produce the amount of income needed for the program to cover its operating costs. Until the program reaches the break-even point, the operating deficit will have to be covered from a source other than the interest earned on loans.

Generally, retail lenders in Latin America work with a spread of 9% to 15%. Large commercial lenders operate on a three to nine point spread. The more efficient the institution (the lower its operating expenses), the larger the profit produced by the spread. Microbusiness lending is relatively expensive and requires a large spread just to break even. ACCION programs generally operate with a spread of 18% to 30%. Because of economies of scale, in general, the larger the portfolio, the smaller the necessary spread. For instance, a program with a portfolio of $300,000 to $500,000 may need a spread close to 30% whereas a $1.5 million program could break even with an 18% spread.

BOX 4
INTEREST RATE COMPONENTS

Component	Purpose
Cost of funds	Covers explicit real direct costs of resources used in loan portfolio. Covers the indirect cost of inflation on donated or low-cost funds by producing an annual operating surplus that should be reinvested in the portfolio to prevent devaluation of the portfolio.
Loan loss reserve	Sets aside the income needed to maintain the loan loss reserve which is reduced when loans are written off.
Operating spread	Provides the revenue necessary to cover operating expenses (and produce profits in the case of commercial lending institutions).

In sum, the three specific costs that should be used to determine a lending institution's effective interest rate to borrowers are **cost of funds, loan losses,** and **operating margin.** The proportional revenue generated by each of the three components of the institution's effective interest rate has its own specific and essential purpose. Revenue generated for one purpose should not be used for another. For example, using funds generated to protect the portfolio from inflation to cover operating costs could have a devastating impact on the value of the portfolio. Income generated to cover the cost of inflation should be reinvested in the portfolio to maintain its value.

The following example shows how a nonprofit lending institution can use these concepts to determine the effective interest rate that it should charge for its loans.

BOX 5
SETTING AN APPROPRIATE INTEREST RATE

Conditions

Average annual rate of inflation:	18%
Total portfolio:	$800,000
Portion of portfolio donated (63%):	$500,000
Portion of portfolio borrowed (37%):	$300,000
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:	22%

(With an annual income of $176,000, or 22% of $800,000, the institution covers its annual operating costs.)

Calculation

The institution wants to preserve the value of its own funds ($500,000, or 63% of portfolio) and has made a policy decision to assign a cost to those funds equal to the annual rate of inflation (18%). Those revenues will be reinvested in the portfolio to preserve its value.

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

The total cost of funds is:

(.63) (.18) + (.37) (.15) = .1689 or 16.89%

The estimated loan loss is:	3%
The operating margin or spread is:	22%
The sum of these three components is:	41.89%

Therefore, in order to break even, this program would have to earn an effective rate of 42% on its portfolio. That would be a positive real interest rate of 24% (42% - 18% inflation).

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