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THE REGRESSIVE IMPACT OF INTEREST-RATE POLICIES
AND NON-INTEREST COSTS OF BORROWING: THE CASE
OF COSTA RICAN FARMERS

by

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AND NON-INTEREST COSTS OF BORROWING: THE CASE
OF COSTA RICAN FARMERS

ABSTRACT

The level and dispersion of non-interest borrowing costs for Costa Rican farmers are measured, their components identified, and their determinants evaluated through regression analysis. The relationships among the explicit and implicit prices for loans, access to credit, and other terms and conditions of loan contracts are evaluated and their income-distribution implications highlighted.

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THE REGRESSIVE IMPACT OF INTEREST-RATE POLICIES
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Credit programs have traditionally been judged as good if loans are cheap, timely, and sufficient; i.e., if they are granted at a low cost to the borrower, if funds become available when needed, and if loan size covers the borrower's financial deficit, so projects can be carried out without a need for additional funds.[4] These reasonable criteria present, nevertheless, problems of interpretation for policy-makers in low income countries. First, most policies designed to make credit cheap have focused on explicit, contractual rates of interest, in nominal terms, and have thus neglected non-interest borrowing costs and the impact of inflation on the real rates paid. Second, most policies have ignored the interdependence between interest-rate structures and non-interest borrowing costs, as well as the interactions between the price of loans and their opportunity and sufficiency. Third, these criteria do not provide sufficient guidelines for the evaluation of credit programs.

This paper presents an estimation of the level and dispersion of non-interest borrowing costs for Costa Rican farmers and examines their main components and determinants. This case is then used to illustrate the relationships among the explicit and implicit prices of credit, access to loans, and other terms and conditions of loan contracts, and to recommend policy changes.

The Costs of Borrowing

What matters for the borrower's investment and production decisions is the total cost of funds, including interest and non-interest components.[1] Frequently, the effective interest charged is higher than the explicit rate quoted in loan contracts as a result of discounting (advanced interest payments) or the requirement of a minimum compensatory deposit. Non-interest borrowing costs, on the other hand, include both explicit and implicit components. Explicit costs result from actual expenditures on bank fees and commissions, taxes, lawyer and document fees and preparation costs, the borrower's transportation, lodging, and food expenses, entertainment, presents and bribes for the bank's management and staff, and forced purchases of other lender services. The most important implicit component of borrowing costs is the opportunity cost of the time spent in completing loan transactions and fulfilling requirements.

Lack of timeliness and insufficient loan amounts impose costs on borrowers. Timeliness is particularly crucial in agriculture, since delays in the disbursement of funds result in yield reductions or force changes of production plans. The expected losses may induce the borrower to obtain a second, temporary loan, while waiting for the first. An insufficient loan amount may also force the borrower to obtain a complementary loan from another source. In either case higher interest rates are likely and the borrower has to incur in additional transaction costs. Credit programs characterized by delays and

quantity rationing, therefore, multiply the number of loans as well as borrowing costs.

Borrowers also value other loan characteristics: long term, flexibility of repayment schedules, absence of formal collateral, lack of constraints on the use of funds, and the permanency and predictability of services that result from an established bank-customer relationship with a viable institution. Poor loan quality increases borrowing costs, reducing the demand of credit at a given rate of interest.

Impact of Interest-Rate Restrictions

Any loan has four dimensions: size (loan amount), the explicit interest charged, non-interest costs, and other terms and conditions of the loan contract. A borrower's demand for credit is a function of all four features, while lenders attempt to adjust them to each particular borrower.

Borrowers recognize trade offs between all of these loan dimensions, while the behavior of lenders makes them interdependent. For example, if ceilings imposed on loan rates of interest become binding, lenders adjust either the non-interest charges or the other terms and conditions of loan contracts or reduce loan amounts, depending on the expected borrower responses (elasticity of demand) and existing regulatory constraints.[2] Borrowers receive a less attractive combination of loan dimensions and lender profits decline. Also, the willingness of the intermediary to lend to the preferred-rate borrowers diminishes. The elimination of the ceilings, is, therefore, Pareto Optimum

and it increases the welfare of both borrowers and lenders.

All mechanisms to clear the market in the presence of interest-rate restrictions increase non-interest borrowing costs. If loan amounts are reduced (quantity rationing), average borrowing costs increase (given the large fixed component of these costs). If new fees and commissions, more strict requirements, or more complex procedures are used (implicit prices), transaction costs augment.[3] This is also the case with less attractive loan terms and conditions. If the market is cleared through rationing by waiting, the resulting delays in, and increased uncertainty about, disbursements also increase the borrower's costs. Given these interdependencies, attempts to keep interest rates below equilibrium levels do not necessarily make credit cheap.

Borrowing Costs in Costa Rica

The measurement of the level, components, and dispersion of non-interest borrowing costs for Costa Rican farmers was based on a survey of 394 clients of Banco Nacional de Costa Rica (BNCR), who during 1983 received at least one agricultural loan from one of 10 selected branches throughout the country. Since many producers do not demand loans precisely because borrowing costs are too high, the exclusion of non-borrowers underestimates the problem. That is, the major consequence of high transaction costs: the exclusion of potential borrowers from market participation, was not observed by the survey. Similarly, distance and limited access, due to absence of roads or their poor condition,

prevented the completion of some interviews. Since these clients incur in high borrowing costs, precisely for the same reasons, these costs may be underestimated.

A detailed questionnaire was used for the measurement of commissions, fees, and taxes, other document and legal costs, and travel-related expenses (transportation, food, lodging, telephone) for borrower, cosigner, and bank officials (weighted according to the relative importance of loan-related activities within the multiple purposes of the trips), as well as an imputation for the opportunity cost of the time spent by the borrower and others acting on his behalf.

The average level of non-interest borrowing costs was high, amounting to 6.8 percent of loan size and, when term was considered, equivalent to 11.5 percent per annum. Since the average contractual interest rate was 13.6 percent, the total cost of the funds was at least 25.0 percent per annum. That is, interest charges accounted for only 54.4 percent of the total cost of the funds. This suggests that the regulator's emphasis on contractual interest rates is misplaced. Since non-interest borrowing costs are substantial and can not be assumed away, they should be assigned a major role in the design of credit policies.

Explicit expenses represented 50.0 percent of non-interest borrowing costs. The other half was accounted for by the opportunity cost of time, measured by the 1983 minimum agricultural wage. This underestimated this component of borrowing costs. The great-est proportion of non-interest costs (89.0 percent) resulted from trip expenses. The number and duration

of the trips required, therefore, should be of concern to the authorities.

More notable than their magnitude is the he great dispersion of borrowing costs, which ranged from 0.2 to 117.5 percent per annum. Interest rates, on the other hand, ranged from 8.0 to 30.0 percent per year. As a result, the total cost of the funds ranged from 10.8 to 129.5 percent per annum. Thus, while there was just over a three-fold difference among interest rates (22 points), there was almost a 600-fold difference among non-interest borrowing costs (117 points) and a thirteen-fold difference among the total cost of funds (119 points). The most important component of the total cost of funds from a distributional perspective, and as a determinant of access to credit, was the non-interest part.

Borrowing Costs Determinants

Determinants of non-interest borrowing costs were evaluated with the estimation of a generalized translogarithmic borrowing-cost function by ordinary least-squares. The results are presented in Table 1. Regression results indicate that loan size, the interest rate charged, and distance to the bank's branch are significant determinants of borrowing costs. Size of exploitation and branch age were also significant, but not with the expected sign. Dummy variables show that loan end use, the bank's department granting the loan, collateral used, loan term, the borrower's level of education, and his association with others explain differences in borrowing costs.

Table 1. Costa Rica: Non-Interest Borrowing Costs Regression Results.

<u>Independent Variables</u>	<u>Coefficient Estimates (1)</u>	<u>Coefficient Estimates (2)</u>
Intercept	17.040**	10.723**
ln L	-1.401 **	-1.279**
A ₁ lnL	-0.065	-0.110**
A ₂ lnL	0.197	--
A ₃ lnL	0.171	--
I ln L	0.046**	0.045**
T ln L	0.001	--
R ln L	-0.001	--
ln I	-5.245**	-2.842**
DP ln I	2.285	--
ln T	0.073**	0.089**
ln K	0.208**	0.217**
ln R	-0.085	--
ln NE	0.043	--
ln AN	0.337**	0.317**
A ₁	-0.167	--
A ₂	-0.934	--
A ₃	-0.940**	-0.300**
DP	-6.117*	-0.443**
CR ₁	0.424*	0.393**
CR ₂	0.128	--
CR ₃	0.180	--
D ₁	-0.205	--
D ₂	0.103	--
S	-0.056	--
U	0.488**	0.400**
E ₁	-0.069	--
E ₂	-0.444	-0.341**
E ₃	-0.048*	--
P ₁	-0.469**	-0.447**
P ₂	-0.622**	-0.665**
R ²	0.627	0.61

Table 1 (cont.)

- ** Significant with a two-tailed t-test at the .01 level.
- * Significant with a two-tailed t-test at the .05 level.

- (1) Full model estimation
- (2) Estimation with significant variables only, corrected for multicollinearity and heteroscedasticity.

Symbols:

- L: Loan size (thousands of colones)
- I: Interest rate charged (percentages)
- T: Area cultivated by the borrower (hectares)
- R: Length of bank-customer relationship (years)
- K: Distance from the borrower's home to the bank's branch (kilometers)
- NE: Number of loans per branch employee.
- AN: Branch age (years)
- A₁, A₂ and A₃: Dummy variables accounting for the loan's end use (basic grains, export crops, livestock, and other)
- DP: Dummy variable representing the BNCR commercial and rural departments
- CR₁, CR₂ and CR₃: Dummy variables for guarantee type (several, cosigner, mortgage, and chattel mortgage)
- D₁, and D₂: Dummy variables for repayment record (No default, 1983 first time, before 1983)
- U: Dummy variable for individual versus group or corporate borrowers.
- S: Dummy variable for possession of bank deposits
- E₁, E₂ and E₃: Dummy variables for educational level (No education, primary, secondary, higher)
- P₁ and P₂: Dummy variables for short, medium, and long terms.

The elasticity of non-interest borrowing costs with respect to loan size is given by:

$$E_L = -1.279 - 0.110 A_1 + 0.095 I.$$

Thus, for a median interest rate of 12 percent, this elasticity would be -0.68 for basic-grain loans and -0.79 for export-crop loans. As loan size increases, borrowing costs rapidly decline. Given this marked inverse relationship between loan size and the non-interest costs of borrowing, a generalized increase in borrowing costs leads to a non-uniform contraction of the demand for loans, with the smaller borrowers deciding that the new total cost of the funds is too high for them. Given the very limited access of small farmers in low income countries to institutional credit, this exclusion from loan portfolios because of excessive borrower transaction costs reflects the very regressive impact of these costs and should be a major concern for policymakers.

The elasticity of borrowing costs with respect to the interest rate is equal to:

$$E_I = -2.842 + 0.045 I \ln L.$$

For a median loan of 43,000 colones and a median interest rate of 12 percent, this elasticity would be -0.811. This confirms the existence of a trade-off between the interest and non-interest components of the total cost of funds. Under-equilibrium interest rates generate excess demands for loans that require strict rationing criteria (complex procedures, multiple steps, and waiting) and thereby increase borrowing costs. End-use targeting, with accompanying requirements (eligibility, supervision), augment borrower costs. Also, preferential rates for marginal clientele make it difficult for lenders to cover operating costs and risks. Thus, they tend to shift some of

these costs over to borrowers or to discourage them from applying for such loans.

In these circumstances, raising interest rates may have a progressive distributional effect. The interest-rate component will weight more in the case of large borrowers, discouraging them from demanding cheap loans, while in the case of small borrowers it will have a small proportional impact, possibly more than compensated by the expected decline in non-interest costs and thus improving their access to loans. In effect, for loans of over 500,000 colones, interest accounts for 85.5 percent, and other costs for 14.5 percent of the total cost of funds (23.5 percent per annum). On the other hand, for loans of less than 10,000 colones, interest accounts for 24.7 percent and other borrowing costs for 75.3 percent of the total costs of funds (49.3 percent per annum).

The positive elasticity of borrowing costs with respect to distance (0.217) suggests the extent of potential social gains from further geographical expansion of the branch network. As indicated, non-interest borrowing costs are higher for basic-grain loans than for other uses; higher for loans from BNCR's rural department (specialized in small-farmer credit at preferential interest rates) than from the commercial department; higher when cosigners rather than other forms of collateral were used; higher for individual rather than group or corporate borrowers; and lower as education levels and loan terms increased. Although not significant at the 5 percent level as independent determinants of non-interest borrowing costs, it was

observed that prior default records were associated with higher borrowing costs and the possession of deposit accounts with BNCR was associated with lower borrowing costs.

Conclusions

The most important indicator of the efficient performance of a financial system are the level and dispersion of the transaction costs imposed on actual and potential market participants. High transaction costs imply that society is spending too many resources in operating the system and, as a result, the cost of funds to borrowers is high, the net reward to depositors low, the profitability of intermediaries unattractive, and the size of markets small. Large dispersion of transaction costs results in wide divergences among marginal rates of return across the economy and unexploited opportunities for growth and improved resource allocation. Among transaction costs, the non-interest costs for borrowers are the most neglected by policymakers in low income countries, but they have a significant impact on differential access to loans and, therefore, on income distribution.

Neglect of non-interest borrowing costs explains emphasis on contractual interest rates, just another component of the total cost of funds. While interest rates can be set by decree, however, non-interest costs cannot always be so reduced. When they arise from excessive regulation, unnecessary bureaucratic requirements, or legal constraints, that may be reduced by decree, eliminating the undesirable restrictions. When they reflect plain X-inefficiency, they may be reduced by organiza-

tional and managerial reforms. When they arise from regulatory avoidance and rationing schemes, in the presence of interest-rate and similar restrictions, these policies may be corrected. In the end, however, they also reflect the high costs of information and the risks characteristic of low incomes countries, represented by the human and non-human inputs required for the joint production of loans by borrowers and lenders. Ultimately, they will be reduced by financial-technology innovations, market integration, economies of scale and scope, and greater competition. Emphasis on interest-rate regulations, nevertheless, has diverted attention away from the need for innovation, while financial repression has constrained the incentives for technological change.

The components of the total cost of funds are not independent. Ceilings on interest rates increase non-interest borrowing costs, create delays and reduce loan size. As a result, loans are not necessarily cheap, timely, and sufficient. The incidence of these added costs depends on relevant elasticities and on loan size. From this perspective, it is highly regressive. Interest-rate restrictions, moreover, constrain the lender's viability and reduce loan quality (through a deterioration of the other terms and conditions of the loan contracts). The data reported for the nationalized banking system of Costa Rica confirms these hypotheses and suggests that this negative income-distribution implications should not be neglected.

REFERENCES

1. Adams, Dale W and Gerald J. Nehman, "Borrowing Costs and the Demand for Rural Credit," The Journal of Development Studies, January 1979.
2. Gonzalez-Vega, Claudio, "Credit Rationing Behavior of Agricultural Lenders: The Iron Law of Interest Rate Restrictions," in Dale W Adams, Douglas H. Graham and J.D. Von Pischke, eds. Undermining Rural Development with Cheap Credit, Boulder, Colorado: Westview Press, 1984.
3. Graham, Douglas H. and Cuevas, Carlos E., "Lending costs and Rural Development in an LDC Setting: Is Cheap Credit Really Cheap?", Savings and Development, 1984.
4. Soley, Elias, "Agricultural Credit Practices in Costa Rica with Special Reference to the Rural Agencies for Agricultural Credit," Proceedings of the International Conference on Agricultural and Cooperative Credit, University of California, Berkeley, 1952.