

May 1967

LTC No. 34

THE LAND TENURE CENTER
310 King Hall
University of Wisconsin
Madison, Wisconsin 53706

A MODEL FOR ANALYZING SOME EFFECTS
OF DISCRIMINATORY CREDIT IN CHILE

BY

CHARLES T. NISBET

All views, interpretations, recommendations and conclusions expressed in this paper are those of the author and not necessarily those of the supporting or cooperating organizations.

... ..

... ..

... ..

ABSTRACT

A MODEL FOR ANALYZING SOME EFFECTS OF DISCRIMINATORY CREDIT IN CHILE

Charles T. Nisbet

This paper presents a general short-run model for analysis of a credit policy which discriminates against one factor input, labor.

Part I briefly describes the institutional credit market in Chile. Credit institutions are divided into three groups according to the type of lending undertaken: banking, mortgage, and development. Agricultural lending policies of these institutions are summarized.

Part II contains the analytical model. Firms, assumed to be using Cobb-Douglas type production functions, start from an equilibrium position and receive a subsidy from the banking system in the form of capital goods, i.e., seed, fertilizer, tractors. The subsidy is granted with the objective of maximizing agricultural output. According to the model, firms are able to reach a higher iso-product curve but are not able to achieve maximum output. The model further predicts that a subsidy of the same amount granted without restriction on factor utilization would permit the realization of maximum output. Part II also discusses producer attempts to avoid the intent of the credit policy through factor shifts. Factor shifts alter the model and result in increased efficiency but they do not permit attainment of maximum output.

1. The first part of the document discusses the importance of maintaining accurate records.

2. It also highlights the need for regular communication and collaboration among team members.

3. Furthermore, the document emphasizes the role of leadership in setting a clear vision and direction.

4. In addition, it discusses the importance of flexibility and adaptability in a rapidly changing environment.

5. Finally, the document concludes by stressing the need for continuous learning and improvement.

6. The following table provides a summary of the key findings and recommendations.

7. It is important to note that these findings are based on a limited sample size and may not be generalizable.

8. The data suggests that there is a strong correlation between team cohesion and performance.

9. This relationship is supported by the fact that teams with high cohesion tend to perform better.

10. Therefore, it is recommended that organizations focus on building strong teams.

11. This can be achieved through various strategies, such as providing training and resources.

12. Additionally, it is important to foster a culture of trust and open communication.

13. The results of this study have several implications for practice and research.

14. For example, they suggest that team cohesion should be a primary focus for managers.

15. Furthermore, future research should explore the underlying mechanisms of this relationship.

16. In conclusion, this study provides valuable insights into the importance of team cohesion.

17. It highlights the need for organizations to invest in building strong teams.

18. By doing so, they can improve their performance and achieve their goals more effectively.

19. The findings of this study are consistent with previous research on team dynamics.

20. They also provide a theoretical contribution to the understanding of team cohesion.

21. Overall, this study underscores the significance of team cohesion in organizational success.

22. It is a key factor that should not be overlooked by any organization.

23. The following table provides a summary of the key findings and recommendations.

24. It is important to note that these findings are based on a limited sample size and may not be generalizable.

25. The data suggests that there is a strong correlation between team cohesion and performance.

26. This relationship is supported by the fact that teams with high cohesion tend to perform better.

27. Therefore, it is recommended that organizations focus on building strong teams.

28. This can be achieved through various strategies, such as providing training and resources.

29. Additionally, it is important to foster a culture of trust and open communication.

Part III includes a discussion of three other effects of discriminatory credit. First, price is found to play no role in the distribution of loanable funds within the institutional market. Non-price rationing distorts the distribution of funds partly because personal connections replace rigorous economic criteria. Second, the existing real negative rate of interest distorts intended flows of funds. Producers substitute bank capital for their own capital, and funds intended for agricultural development are invested in other sectors. The low interest rates also set the stage for producers to borrow from the banking system for the purpose of relending in the informal credit market. Third, the discriminatory credit policy increases the possibility of misallocation of resources by limiting the firm's choice of production functions.

University of Wisconsin
May 19, 1967

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This ensures transparency and allows for easy verification of the data.

In the second section, the author outlines the various methods used to collect and analyze the data. This includes both primary and secondary data collection techniques. The primary data was gathered through direct observation and interviews, while secondary data was obtained from existing reports and databases.

The third section details the statistical analysis performed on the collected data. This involves the use of descriptive statistics to summarize the data and inferential statistics to test hypotheses. The results of these analyses are presented in a clear and concise manner, highlighting the key findings of the study.

Finally, the document concludes with a discussion of the implications of the findings. It suggests that the results have significant implications for the field of study and provides recommendations for further research. The author also acknowledges the limitations of the study and offers suggestions for how these can be addressed in future work.

A MODEL FOR ANALYZING SOME EFFECTS
OF DISCRIMINATORY CREDIT IN CHILE

Charles T. Nisbet¹

Introduction

This paper presents a general short-run model for analysis of non-price rationing of credit, and as a case in point discusses agricultural credit policies in Chile which discriminate against one factor input, labor. The paper includes: 1) a brief description of the institutional credit market including lending policies in Chile, 2) the analytical model, and 3) a discussion of the effects of discriminatory policies on agricultural output, distribution of funds, flows of funds, and on the selection of production functions.

The Chilean institutional credit market is composed of a Central Bank, a State Bank, 28 private commercial banks, and four auxiliary

¹This paper is based upon one year of research in Chile made possible by the University of Wisconsin Land Tenure Center, the Fulbright Commission of Chile, the Institute of International Studies and Overseas Administration, University of Oregon, and the Agency for International Development, Washington. All views, interpretations, recommendations, and conclusions expressed in this paper are those of the author and not necessarily those of the supporting and cooperating organizations.

This paper has benefited from comments by Nicholas Schrock, John Schmidt, Marion Brown, and Lee Bawden. Any remaining errors, of course, are solely the author's.

credit institutions.² The private commercial banks comprise about 60 percent of the commercial banking system, both in total assets and deposits, with the State Bank forming the remainder. This paper will concern itself with the institutional credit market's involvement within the agricultural sector.³

All institutional credit lenders can be divided into three groups according to the type of lending undertaken by the institution: banking, mortgage, and development.

The banking group comprises the Central Bank, the banking department of the State Bank, and the private commercial banks. Their credits are characteristically short term and are used to finance working capital needs of farming operations. The banking group (see Table 1)

²The Agrarian Reform Corporation, the National Mineral Enterprise, the Chilean Development Corporation, and the Institute of Agricultural Development.

³This paper will not consider agricultural credit supplied through the informal credit market in Chile, i.e., landlords; itinerant traders, friends, neighbors, relatives, village merchants, and moneylenders. For a discussion of this market in Chile see Charles T. Nisbet, "Interest Rates and Imperfect Competition in the Informal Credit Market of Rural Chile," Economic Development and Cultural Change, forthcoming.

Table 1. Proportion of Total Agricultural Credit Supplied by Various Groups of Credit Institutions

Institutions	Average 1951-55 (percent)	Average 1956-60 (percent)	Average 1961-65 (percent)
Banking	58.6	56.3	59.2
Mortgage	11.3	3.0	2.1
Development	30.1	40.7	38.7
Total	100.0	100.0	100.0

Sources: Julio Barriga Silva, "Diagnóstico del Crédito Agrícola en Chile," unpublished thesis, Facultad de Agronomía, Universidad de Chile, Santiago, 1965, Annex 3; Superintendencia de Bancos, Estadística Bancaria, Santiago, January of each year; Corporación de Fomento de la Producción, Departamento de Finanzas; Sección Estadística, Instituto de Desarrollo Agropecuario; Solicitud de Préstamo al Banco Interamericano de Desarrollo, (Santiago: INDAP, 1965) and División Asistencia Técnica y Crédito, Corporación de la Reforma Agraria.

has been the most important supplier of agricultural credit during the 15 years studied.⁴

The mortgage group is made up of the mortgage department of the State Bank, the Mortgage Bank of Chile, and the Mortgage Bank of Valparaiso. Their credits are characteristically long term and are granted with the mortgage of the farm property. Table 1 shows the decline in importance of this type of credit over the fifteen year

⁴ According to Julio Barriga Silva, "Diagnóstico del Crédito Agrícola en Chile," unpublished thesis, Facultad de Agronomía, Universidad de Chile, Santiago, p. 48, the accounting procedures of private commercial banks classify agricultural credit as loans made to clients who claim farming as their occupation. No check is made by the banks to verify that funds were actually used for agriculture. With rates of return higher in some other sectors, especially construction, it seems reasonable to assume some of these funds end up outside the agricultural sector. Thus, one must be cautioned against taking too literally the apparent large role performed by the banking group within the institutional credit market.

period. By 1965, it no longer represented a significant lender group of the institutional credit market.⁵

The development group consists of the agricultural department of the State Bank, the Chilean Development Corporation (CORFO), the Agrarian Reform Corporation (CORA), and the Institute of Agricultural Development (INDAP). The objective of credits from these institutions is to promote agricultural development through medium and long term credits as part of regional and national development programs. Table 1 demonstrates that the development group increased its share of total credit by 8.6 percentage points between 1951 and 1965. Additionally, the total number of clients of the institutional credit market has

⁵Sources of funds for mortgage credit have come from bond issues. Continuous inflation in Chile (Table 2) has made this fixed interest security very unattractive. Until stabilization returns to the Chilean economy, and/or new sources of funds are discovered for mortgage banks, there is little likelihood of a return of mortgage credit as a viable force within the institutional credit market.

Mortgage credit is left out of the analysis that follows because less than one percent of farm operators sought this type of credit.

been doubled over the last five year period due to the actions of INDAP.⁶

Some credit policy objectives of the institutional market have been to subsidize specific products or the use of specific inputs.⁷ For example, commercial banks may give credit to the agricultural sector in accordance with the Central Bank's Agreement No. 1839 under which the funds may be used for buying seeds, Chilean machinery, cattle, and fertilizer, but not for the payment of salaries. In this way, loan contracts discriminate against labor.

A Short-run Model

In many instances agricultural credit policy subsidizes the use of one factor input, capital. Capital in the model refers to capital goods or a bundle of non-labor raw materials not including land. The effects of this credit policy will be analyzed via the following

⁶Since the direction of this group is mainly determined by attitudes of incumbent administrations, there seems every indication that while the Christian Democrats are in power, the development group will continue to supply a larger percentage of total institutional credit and integrate a larger portion of Chilean farm operators into the institutional credit market.

⁷The history of inflation in Chile has turned positive nominal rates of interest into negative real rates on loans to agriculture with the result that agricultural credit has been transformed into a subsidy (see Table 2).

short-run model. The short-run is defined as one agricultural cycle which would be from 6 to 12 months depending on the type of crop planted.

The agricultural sector is assumed to be composed of agricultural units (firms) operating under competitive conditions where fixed factor prices are given and where production functions utilize only two inputs, capital and labor.⁸

The agricultural units are assumed to be using linear and homogeneous production functions of the Cobb-Douglas variety⁹ with the marginal productivity of each input decreasing as the use of that input increases.

⁸Actually output is a function of labor, capital, and land. In Chile, credit is generally not available for land purchases so that in the short-run land is fixed, i.e., a constant in the model. For simplicity in the diagrammatic presentation a two input model is utilized. The results would not be altered if the model was $X = f(K, L, \bar{U})$.

⁹The use of Cobb-Douglas functions in models of agricultural enterprises has proven very successful. See Martin J. Bailey, National Income and the Price Level, New York, McGraw-Hill Company, 1962, pp. 215-216. The Cobb-Douglas function is used solely for illustration to give more detail to the diagrammatic technique. My results in no way depend on the use of this function.

1) $X = AK^\alpha L^\beta$ where $\beta = 1 - \alpha$

2) $\frac{\partial X}{\partial L} = \beta AK^\alpha L^{\beta-1}$

3) $\frac{\partial X}{\partial K} = \alpha AK^{\alpha-1} L^\beta$

The slope of iso-product curves (R_1, R_2, R_3, R_4) at any point in Figure 1 is given by the ratio of the marginal productivities of the inputs.

4) $\frac{\beta AK^\alpha L^{\beta-1}}{\alpha AK^{\alpha-1} L^\beta} = \frac{\beta}{\alpha} \frac{K}{L}$

Figure 1 shows a representative farm operator who is planning to produce output R_1 at Q_1 which is assumed to be optimum position for the unit and one at which the marginal rate of technical substitution between capital and labor are equal to the ratio of their marginal productivities. The farm operator, assumed to have a fixed operating fund¹⁰ (that could

¹⁰This condition is not unrealistic for a farm operator who faces a highly imperfect or non-existent capital market. In addition, initially I assume there is no borrowing. Even when borrowing is introduced, there is a limit on the debt the farm operator can hold. The limits in Chile vary as to type of institutional lender and as to purpose of the loan. The limit in the model is assumed equal to Z , thus borrowing B , is under the restraint: $0 \leq B \leq Z$ ($Z = Q_2 Q_1$ in Figure 1).

CAPITAL

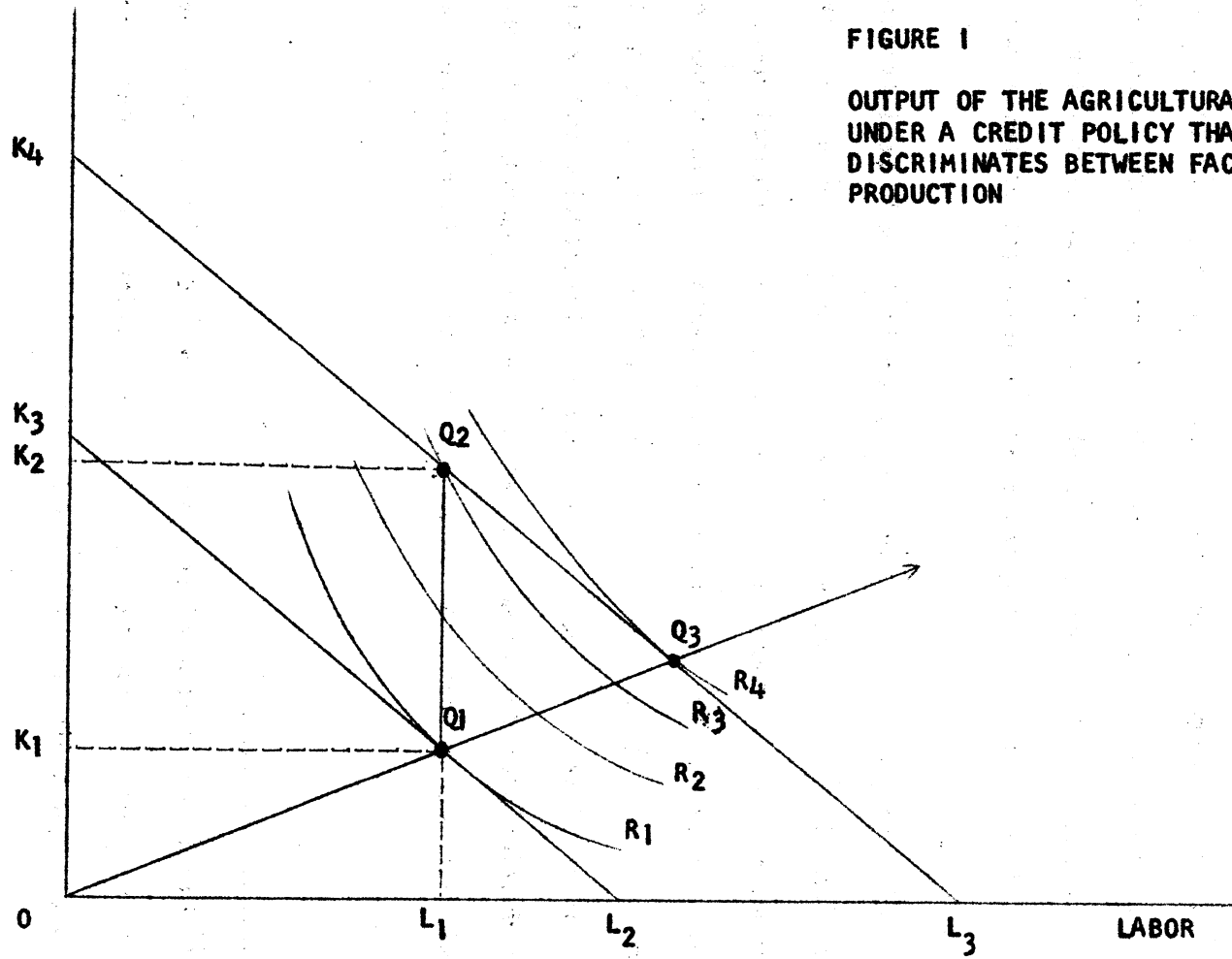


FIGURE 1

OUTPUT OF THE AGRICULTURAL UNIT
UNDER A CREDIT POLICY THAT
DISCRIMINATES BETWEEN FACTORS OF
PRODUCTION

command OL_2 units of labor or OK_3 units of capital goods) available for production, will maximize output when his outlay line L_2K_3 is tangent to some iso-product curve, in this case, R_1 . This side condition of a given operating fund makes this case one of output maximization. Since the slope of the outlay line L_2K_3 is equal to the price of labor over the price of capital and the slope of the iso-product curves defined by equation 4, then total product will be maximized for a given total cost when the marginal productivities are proportional to their prices.

Now let borrowing on the purchase of capital goods be introduced into the model.¹¹ The farm operator goes to the banking system with his proposed plan of production for the current agricultural year. Following Figure 1, the farm operator demonstrates that he plans to produce, in the absence of borrowing, output R_1 using L_1 units of labor and K_1 units of capital goods. The financial institution will analyze the production plan and in most cases make a farm inspection to verify the existence of the applicant's assets and assess their present value.

¹¹This is not a special condition of the model but in fact what happens when the farm operator goes to the institutional credit market seeking to expand his operating fund.

Then the bank will offer to lend the farm operator up to Q_1Q_2 units of capital goods.¹²

The bank requires the borrower to sign an agreement that he will not use the capital goods for any purpose other than that outlined in his production plans (e.g., invest capital goods in another sector or sell off the capital goods). It also requires that the borrower carry out his production plan and utilize OL_1 units of labor and OK_1 units of capital that come from the farm operator's own resources. To control the use of the subsidized inputs, financial institutions make farm inspections periodically. To insure the fulfillment of the entire production plan, the institution may require receipts for purchases of other capital inputs (from borrower's own resources).

The new budget restraint under bank borrowing facing the farm operator is now $K_4Q_2Q_1L_2$. Notice that the new budget restraint has a discontinuity Q_2Q_1 . This discontinuity comes from the institutional restraint on the borrowed capital inputs. The budget restraint no longer gives the relative prices of capital and labor between the points Q_1 and Q_2 but it does imply the conditions under which capital can be exchanged for labor.

¹² Q_1Q_2 units of capital goods will be taken by the firm since the Chilean case is one of excess demand (Figure III) and a negative rate of interest (Table 2). The reader is reminded that the bank lends physical goods, e.g., seeds, fertilizers, or tractors: it does not lend money or create a demand deposit.

The farm operator can now reach the highest level of output R_3 by taking Q_1Q_2 units of capital goods (the maximum the banking system will lend). The credit policy of restricting the subsidy to capital goods has clearly contributed to the expansion of agricultural output.

What would have been the effect of the credit policy had the institutional credit market not just subsidized the use of capital goods? Had credit been made available for the purchase of both capital goods and labor, the result would have been a new budget line K_4L_3 which is free of a discontinuity. The bank still offers the same level of subsidy, Q_1Q_2 . Now the farm operator is free to determine the employment of factors and he will reach an output maximum at Q_3 producing R_4 units. This demonstrates that by not restricting the subsidy to the purchase of capital goods the agricultural unit could attain a higher level of output.

Borrower Action to Avoid the Intent of the Credit Policy

During a sample field survey of 200 farm operators in middle Chile during 1965-66, a number of producers complained about the restrictiveness of credit policy. Several large farmers in the province of Bfo-Bfo reported to have sold fertilizer they obtained on credit from the State Bank (Banco del Estado) to smaller farmers in their locality. In Aconcagua, three clients of INDAP claimed to have sold fertilizer and fencing material, obtained through credit, to make payments to day laborers.

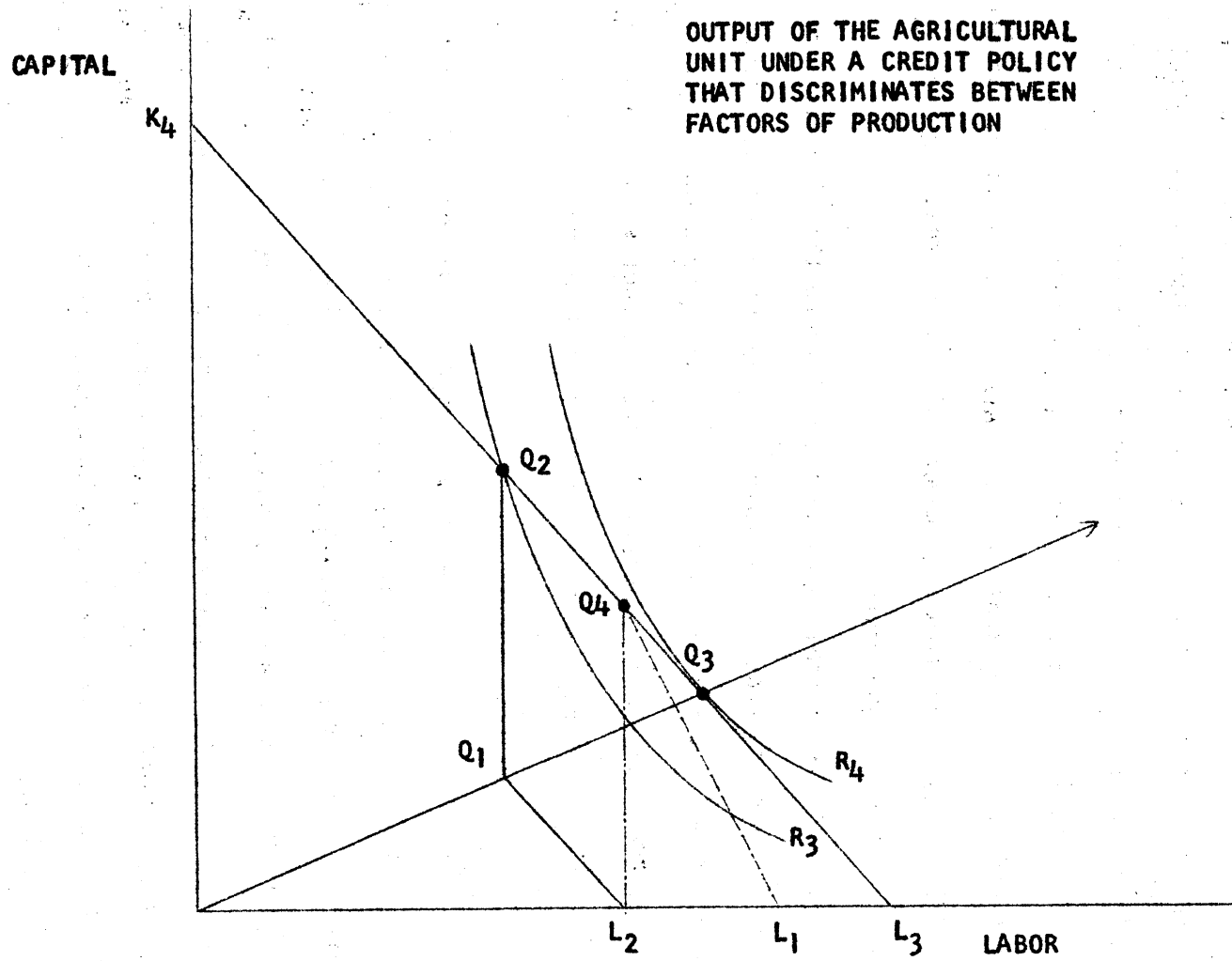
It can be demonstrated that if the borrower shifts out of his own capital goods into the cheaper capital goods of the bank, e.g., selling off the cheap capital goods,¹³ that the budget restraint is no longer $K_4Q_2Q_1L_2$. The new budget restraint could be K_4Q_4L' as depicted in Figure 11. The kink in the new budget restraint is produced by transaction costs and possible losses on the liquidation of capital which would occur from shifts to the right of Q_4 in Figure 11. The producer could only move to the right of Q_4 by selling off some of the units of capital Q_2Q_1 that it has obtained from the bank. In other words, at Q_4 , the producer is using all his own resources in the employment of labor inputs.

The situation depicted in Figure 11 where the firm, through shifting, is able to reach an iso-product curve above R_3 but below R_4 is only one of several possibilities. Depending upon the production function and size of the subsidy relative to the producer's own resources, the firm may or may not be able to reach point Q_3 or output R_4 (i.e., the

¹³During a field survey it was reported that one large farm operator received a bank loan to import breeding cattle under a long term non-adjustable (for inflation) contract. The negative rate of interest allowed him to purchase the animals well below their market price. The terms of the contract called for the borrower to develop a large stock of quality animals. Less than a year later the borrower had violated the contract by selling off a large portion of the cattle at black market prices.

FIGURE 11

OUTPUT OF THE AGRICULTURAL UNIT UNDER A CREDIT POLICY THAT DISCRIMINATES BETWEEN FACTORS OF PRODUCTION



output that would result in the absence of a discriminatory credit policy). For example, a subsidy that represented a small percentage of the producer's own resources could permit the firm to reach output R_4 at Q_3 since the kink would be located close to the X axis, out of the relevant region.

It could also be argued that if the farm operator falsified his present operating fund (e.g., has more capital goods than he claims on the application form or balance sheet) that he could then sell off these capital goods to employ more labor and expand output. This would represent a second manner in which the farm operator could shift out of capital goods (the same costs of shifting would apply to this case).

The situation of excess demand for credit will discourage some producers from shifting since there is the risk of being discovered by the institutional lender that would result in being cut off from further funds.

The purpose of the analysis is not to evaluate whether shifts are possible and/or effective but to point out that in fact the objective of the credit policy is to prevent such shifts. If the bank is successful in implementing its policy an output of R_3 would result. If the borrower shifts out of some of his initial capital goods, an output R will result that will be greater than R_1 but less than R_4 . If the borrower is free to utilize borrowed funds for capital and labor, output R_4 will result.

Distribution of Credit

Agricultural credit in Chile cannot be analyzed without taking inflation into consideration. Table 2 demonstrates differences between rates of interest on loans from banking and development groups and rates of inflation. The real rate of interest for the banking group has been negative for 12 out of 15 years.¹⁴ The real rate of interest for the development group has been negative for four out of six years.¹⁵

The negative rate of interest typically found in Chile affects the distribution of credit. Figure III demonstrates that if the rate of interest were at an equilibrium level, OB would be the quantity demanded and supplied through impersonal market forces. But when the rate of interest is administratively set below equilibrium (i_a) excess demand (BC) exists. With the quantity demanded exceeding the quantity available, credit suppliers must resort to non-price rationing which could hamper the efficient use of credit. The institutions must

¹⁴During 1966, the Frei government managed to hold the 12 month rise in the consumer price index to 17 percent via an elaborate system of price controls. The result was a negative real rate of bank interest of about one percent. See, B.O.C.S.A. Review, Vol. 1, No. 1, January 1967, Bank of London and South America, London, p. 18.

¹⁵Negative real rates of interest are not peculiar to Chile but occur in other countries in Latin America. For example, Brazil, Werner Baer, "The Inflation Controversy in Latin America: A Survey," Latin American Research Review, 11, No. 2, Spring 1967, p. 6.

Table 2. Comparison Between Nominal and Real Interest Rates in the Chilean Institutional Credit Market

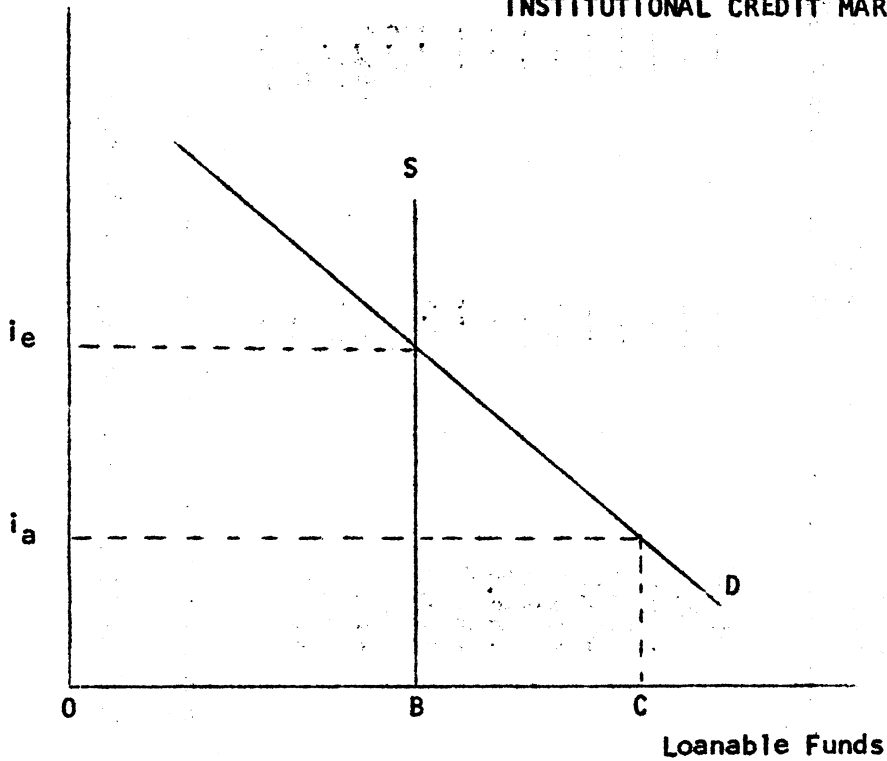
Year	(1) Annual Rise in the Consumer Price Index-Percent	(2) Current Bank Interest	(3) Real Bank Interest	(4) Current Development Interest ^a	(5) Real Development Interest ^a
1951	23.2	11.7	-11.5	---	---
1952	12.1	12.1	0.0	---	---
1953	56.1	12.5	-43.6	---	---
1954	71.1	13.2	-57.9	---	---
1955	83.3	13.7	-69.6	---	---
1956	37.7	13.9	-23.8	---	---
1957	17.3	14.4	-2.9	---	---
1958	32.5	15.7	-16.8	---	---
1959	33.3	16.3	-17.0	---	---
1960	5.4	16.7	+11.3	12.0	+6.6
1961	9.7	15.6	+5.9	12.0	+2.3
1962	27.7	14.4	-13.3	12.0	-15.7
1963	45.4	14.3	-31.1	12.0	-33.4
1964	38.4	14.9	-23.5	15.0	-23.4
1965	25.9	15.6	-10.3	16.5	-9.4

Sources: Banco Central de Chile, Boletín Mensual, Santiago, various years; and Barriga, op. cit., p. 55.

^a INDAP and CORA not included.

Nominal
Interest
Rate

Figure III. SUPPLY AND DEMAND
FOR LOANABLE FUNDS IN THE
INSTITUTIONAL CREDIT MARKET



administratively supply quantity OB and eliminate the balance. This situation, where the rate of inflation exceeds the administered nominal rate of interest, produces a scramble for "free money." Projects with high rates of return may be left unsatisfied while those

with low rates of return receive credit.¹⁶ In light of the fact that in the institutional credit market in Chile personal connections¹⁷ outweigh rigorous economic criteria, it is particularly disturbing

¹⁶ Ernest Feder is a study of the State Bank in the late '50's discovered that the credit program 'does not provide for standards which permit a distinction to be made between 'good' and 'poor' users from the point of view of agricultural development.' 'Feudalism and Agricultural Development: The Role of Controlled Credit in Chile's Agriculture,' Land Economics, XXVII-XXIX, (1962-63), p. 93.

¹⁷The importance of personal connections for having success in a loan application is not peculiar to Chile but typical throughout Latin America. See Javier Marquez, 'Financial Institutions and Economic Development,' in Howard S. Ellis, Economic Development for Latin America, New York, MacMillan and Co., 1962, pp. 176-77; Wendell C. Gordon, The Political Economy of Latin America, New York, Columbia University Press, 1965. p. 344; and Werner Baer, Loc. Cit.

that the one strong impersonal factor, the rate of interest, has been reduced to manipulation.¹⁸

Flow of Funds

A discriminatory credit policy distorts flows of funds in three ways. First, loanable funds earmarked for agriculture will be drained off into other sectors. Even if the rate of return were presumed equal

¹⁸Chandler contends that a policy of excessively low interest rates retards rather than promotes real saving and capital formation and that it also militates against economic growth by subsidizing the waste of capital. He feels that "interest rates so low that they do not reflect the scarcity value of capital and its productivity in alternative uses are in effect a subsidy to the use of capital and an invitation to its waste. Higher interest rates reflecting its scarcity value would increase the cost of using capital and promote economy in its use." See, Lester V. Chandler, Central Banking and Economic Development, Bombay University Press, Bombay, 1962, pp.43-47. Hugh Patrick also has made the point that "Some underdeveloped countries today misguidedly pursue low interest rate policies which effectively prohibit financial assets from competing with real assets." See his "Financial Development and Economic Growth in Underdeveloped Countries," Economic Development and Cultural Change, XIV, No. 2, (January, 1966), p. 187.

for all sectors, farm owners would find it profitable to borrow for non-agricultural purposes in the name of agricultural credit because of a cost benefit. In Chile, where rates of return are lower in the agricultural sector than in some other sectors (especially construction) and many large farm owners have interests in other sectors, it seems very likely that funds are being drained off. At least the climate has been created for stimulating speculative investments outside agriculture that may have little positive effect upon the economy. But this remains to be established empirically. Secondly, it can be argued that the preferential rate (negative real rate) will be an incentive for some farmers to substitute bank credit for their own personal funds that might have been used to finance working capital needs. The freed personal funds can now be used to maintain higher levels of consumption,¹⁹ or they could experience a capital flight. For example, it would then be prudent for the farmer to send his personal capital abroad to accumulate interest with a stable currency and use the banking system to finance his working capital needs.

¹⁹See, Nicholas Kaldor, "Problemas Económicos de Chile," El Trimestre Económico, XXVI, No. 102 (1959) and Marvin J. Sternberg, "Chilean Land Tenure and Land Reform," unpublished Ph.D. thesis, University of California, Berkeley, 1959.

Thirdly, if it is possible to obtain bank loans at a negative real rate of interest, a landlord may be encouraged to borrow funds specifically for the purpose of relending, either to his tenants or to other small farm operators. Such a relending process would have to be judged on the basis of the use of borrowed funds, the rates of return of the secondary projects versus those presented by other landlords and the nature of the relending transaction.

Production Functions

Finally, discriminatory credit policy can distort current production functions and limit the range of possible future production functions. Land is generally excluded from selective credit programs which has the effect of freezing or inhibiting land transactions. For some farm operators, this means selecting highly capital intensive production techniques that might not normally be chosen if all inputs, i.e., land, labor and capital could be increased. When one considers that in practice there is not likely to be perfect substitution between these three inputs, a stronger case is made for arguing that discriminatory credit policy is not maximizing its objective of increasing agricultural output.

Conclusions

Between 1951 and 1965, the Chilean institutional credit market typically granted loans at a negative real rate of interest. A model was developed to analyze the effects of the government's discriminatory credit policy favoring agriculture. This model suggests that the present government policy objective of maximizing agricultural output is not well served by a discriminatory credit policy that finances only capital goods. A credit policy that finances both capital goods and labor was found to lead to a higher level of output.

The fear of lending officials that loans for labor inputs might be used for consumption by the borrowers could be dispelled by granting loans based upon so much per hectare, per unit of output, and/or requiring applicants to show the social security cards of the labor force.

If interest rates in the institutional credit market were such as to reflect the scarcity of capital, the supply and demand for loanable funds could be determined by the market. Low yield projects could be eliminated with more certainty than they are at present.

A positive rate of interest reflecting the scarcity of capital would eliminate administrative rationing of credit. In addition, such a rate would allow credit to flow to sectors where loanable funds have their highest productivity. In this way, the distribution of loanable

funds would not be distorted as it is at present. Lastly, the possibility of relending between organized and unorganized money markets would be greatly restricted by an equilibrium rate of interest, i.e., landlords would not have the present incentive to borrow from the banks and relend to small farmers.

University of Wisconsin
May 19, 1967