Paper No. 23
Conference on Rural
Finance Research
San Diego, California
July 28 - August 1, 1977



# Agricultural Credit Policy in Brazil: Objectives and Results

by

Paulo F.C. de Araujo, Director,
Instituto de Economia Agricola

and

Richard L. Meyer, Associate Professor
Department of Agricultural Economics and Rural Sociology
The Ohio State University
Columbus, Ohio 43210

June 15, 1977

Conference Sponsors

The Agricultural Development Council
The American Agricultural Economics Association
The Ohio State University

# Agricultural Credit Policy in Brazil: Objectives and Results

Paulo F. C. de Araujo
and
Richard L. Meyer*

## INTRODUCTION

A number of developing countries have stressed agricultural credit policies to achieve goals such as increasing output or accelerating adoption of new technology. It is frequently difficult, however, to evaluate the real effect of such policies because the amount of funds involved has been too small or their impact has been masked by the effects of other development policies. The Brazilian case is revealing because hugh amounts of credit have been channeled to agriculture, and credit policy stands out as a key component of agricultural policy. Thus, by evaluating the Brazilian experience, we gain insights into what other countries might expect if and when they assign credit such an important role in their development strategy. Furthermore, the Brazilian approach has relied almost exclusively on encouraging commercial banks to supply agricultural credit rather than setting up specialized agricultural credit institutions. Thus, the Brazilian case provides some evidence into how well and under what conditions an existing banking system can service agricultural credit needs in a developing country.

This paper provides background on Brazilian policy objectives and evaluates the impact of credit on agriculture. Emphasis is given on interpreting the behavior of agricultural lenders. The recently released 1970 agricultural census is used to provide aggregate data. Data from

farm surveys are also presented to provide additional detail on credit distribution. The paper will show that 1) agricultural credit policy has been a cornerstone for certain short and intermediate term agricultural objectives, 2) the volume of formal institutional credit relative to agricultural output has sharply expanded in recent years, and this volume appears associated with some indicators of agricultural performance, and 3) the distribution of credit continues to be concentrated in certain groups of farms in spite of the tremendous increase in total volume.

## BRAZILIAN AGRICULTURAL AND CREDIT POLICIES[1/]

Like many Latin American countries, Brazil has heavily regulated its financial markets in pursuit of its development goals [Eckaus]. The chief difference between Brazil and other countries, however, has been the energy and initiative with which it has pursued conventional and innovative prescriptions in the financial sphere [Yusuf]. Three general categories of credit controls including portfolio ceilings and quotas, discount mechanisms, and reserve requirements have been extensively employed to affect bank behavior in developing countries [Johnson]. All three plus interest rate controls and controls on bank mergers and expansion have been used in Brazil. These direct mechanisms of influencing the supply of credit have supplemented the usual indirect mechanisms of monetary control.

Brazilian objectives for this intervention have included modernization and increased efficiency in banking, enlarged financial services to less developed regions, and increased capital availability for particular sectors including agriculture. The strategy explicitly attempts to alter bank behavior through selective controls and distortions of financial markets so resources flow to sectors and activities considered most

productive in a social sense. The magnitude and comprehensiveness of the strategy suggests a "supply-led" interpretation of the relationship between financial and economic development [Patrick]. Development of real sectors is expected to accelerate through expanded supplies of financial services and institutions.

The institutional credit system for agriculture consists largely of private and "official" banks [Meyer et al., and Guimaraes]. Insignificant amounts of agricultural credit are provided by government agencies. Official banks have various degrees of state and federal government ownership and capital. Public sector deposits are held by these banks. The creation of the National Monetary Council and Central Bank in 1964 provided the federal government with an effective means to influence and control bank behavior. At least 40% of the funds applied in agriculture come from funds administered by the Central Bank and/or federal Bank of Brazil. Thus, the agricultural credit supply has been highly dependent on Monetary Council decisions.

The stated objectives of agricultural credit were established in 1965 by the Agricultural Credit Law 4829: 1) provide external funds to finance a portion of operating costs of agricultural production and marketing, 2) stimulate the process of capital formation in the agricultural sector, 3) accelerate the adoption of modern technology in agriculture, and 4) strengthen the economic position of farmers, especially small and medium ones. An implicit objective appears to have been the use of credit subsidies to compensate farmers for the discrimination resulting from price and exchange rate controls designed

to stimulate industrialization. Moreover, credit policies have been frequently adjusted to address short-term problems like the rapid rise in fertilizer prices in 1974. By using credit controls in conjunction with product pricing policies, the Brazilians have developed a comprehensive system for influencing factor use and output in agriculture.

A vast number of rules, regulations, programs and sub-programs have been applied to agricultural credit since 1965. Suffice to say that by the end of 1976, as many as sixteen different programs were in effect in a single state, not to mention several subprograms, each with its specific objectives, interest rates and repayment schedules. Three general features of credit policies need to be emphasized. First, nominal interest rates for agricultural credit have been controlled at rates lower than those charged other users. During all of the last decade, these controls have resulted in negative real rates of interest (i.e. nominal interest rates lower than the rate of inflation). Second, incentives and controls have been used to encourage official and private banks to lend more of their own deposits and/or government funds to agriculture. These efforts were required due to the banks' historical reluctance to lend to agriculture as well as their logical self-interest in preferring to lend where higher interest rates could be charged. Third, nominal interest rates for small loans (supposedly made to small farmers) have been set 1 or 2 percentage points below large loans based on the assumption that smaller farmers need special incentives to borrow and repay loans.

## CREDIT AND PERFORMANCE OF THE AGRICULTURAL SECTOR

### Volume of Formal Credit and Agricultural Output

The first major result of the Brazilian experience has been the sharp expansion of formal credit supplies relative to agricultural output. Table 1 shows the growth in number and value of loans made each year and the corresponding value of agricultural production for the 1960-1975 period. Columns 1 and 2 list operating loans, usually made for less than a year. These loans have represented about half the number and value of loans made in recent years. The remainder of the credit is split between marketing loans[2/] with a term of a few months, and investment loans payable over several years.[3/] In this 15 year period, agricultural output rose 2.3 times, while the new loans made per year rose almost 15 times! The ratio of operating loans to agricultural output (column 6) rose from .07 in 1960 to .27 in 1974; likewise the ratio of total loans to output rose from .13 to .59 in the same period. In 1975, the first ratio jumped to .37 and the second to a whopping .83, due in part to major funding for drought relief and coffee replanting. The ratios in the most recent years of the series clearly place Brazil in the top end of the range of ratios found in most other Latin American countries in the late 1960's [Adams]. The 1975 figure may well be the highest credit to output ratio for a nation in the world today! In comparison, the U.S. ratio of nonreal estate credit to total value of agricultural output in recent years has been about .60.[4/]

If all this increased credit supply was actually used by farmers for agricultural purposes, one could conclude that Brazilian policy makers clearly succeeded in meeting their objective of increasing institutional credit to finance production and marketing. Later we will present data showing great concentration of institutional credit among

Table 1. Agricultural Credit and Output, Brazil, 1960-1975

| Year | Loans Made During Year[a/] | | | | Net Internal Product From Agriculture in 1975 Cruzeiros[d/e/] (5) | Ratio of Operating Loans to Product (2/5) (6) | Ratio of Total Loans To Product (4/5) (7) |
|---|---|---|---|---|---|---|---|
| | Operating Loans[b/] | | Total Ag Loans | | | | |
| | Number[c/] (1) | Value in 1975 Cruzeiros[d/] (2) | Number[c/] (3) | Value in 1975 Cruzeiros[d/] (4) | | | |
| 1960 | 112 | 3,180 | 231 | 6,176 | 46,493 | .07 | .13 |
| 1961 | 184 | 3,280 | 285 | 6,157 | 48,252 | .07 | .13 |
| 1962 | 337 | 4,910 | 441 | 8,382 | 57,023 | .09 | .15 |
| 1963 | 416 | 4,410 | 549 | 7,267 | 50,182 | .09 | .14 |
| 1964 | 527 | 6,560 | 771 | 9,864 | 50,521 | .13 | .19 |
| 1965 | 509 | 5,730 | 666 | 8,483 | 56,875 | .10 | .15 |
| 1966 | 529 | 6,700 | 856 | 11,539 | 50,281 | .13 | .23 |
| 1967 | 633 | 9,040 | 1,029 | 14,925 | 53,415 | .17 | .28 |
| 1968 | 733 | 11,470 | 1,500 | 21,019 | 53,485 | .21 | .39 |
| 1969 | 675 | 9,624 | 1,145 | 20,718 | 56,737 | .17 | .36 |
| 1970 | 649 | 10,992 | 1,191 | 24,648 | 64,439 | .17 | .38 |
| 1971 | 686 | 12,394 | 1,253 | 28,481 | 76,126 | .16 | .37 |
| 1972 | 687 | 14,706 | 1,266 | 35,321 | 82,608 | .18 | .43 |
| 1973 | 771 | 21,288 | 1,400 | 49,852 | 95,996 | .22 | .52 |
| 1974 | 789 | 27,757 | 1,450 | 61,648 | 104,155[f/] | .27 | .59 |
| 1975 | 1,076 | 39,446 | 1,856 | 89,997 | 107,801[f/] | .37 | .83 |

a/ Source: Various Central Bank and Bank of Brazil reports. Figures represent number and value of new loans made.

b/ From 1960 to 1968, the estimates for operating loans are based on loans made by the Bank of Brazil, which was responsible for the majority of agricultural credit lent during the period.

c/ Thousands of loans.

d/ One million cruzeiros. Values adjusted by the Index "2" of Conjuntura Economica.

e/ Source: Various issues of Conjuntura Economica.

f/ Projected from the 1973 figure by compounding a 8.5 growth rate for 1974 and 3.4 for 1975.

relatively few borrowers implying that some of it must have been used for purposes other than originally intended. A logical question is whether all this credit was required to obtain these levels of output.

Piza compared the indebtedness of agriculture relative to other sectors in the recent years. He found that, although the entire economy was using increasingly more credit relative to output, the ratio for agriculture was growing much faster. Thus, although Brazilian economic development strategy is generally oriented towards accelerating development through financial means, the agricultural sector has been especially favored with a huge volume of subsidized credit.

Capital Formation and Technological Change

No recent reliable studies of capital formation in Brazilian agriculture have been made. Schuh cited data suggesting the structure of farm capital shifted away from real estate between 1940 and 1965, while the share in equipment rose. The 1970 census showed that land and buildings represented 68% of total capital assetts, 18% in productive and work animals, 9% in permanent crops, and 5% in farm machinery and vehicles. Although efforts have been made to deepen agricultural capital, it appears that the value of land and buildings still commands a large share of total farm capital because of increases in farming area and land prices.

Credit policies have encouraged the adoption of both biological and mechanical technology. Beginning in the mid-1960's programs were introduced to finance so-called "modern inputs" including improved seeds, fertilizer, lime, agricultural chemicals and livestock rations. Nominal interest rates varied from zero to 7 percent much of the time. During periods of high international fertilizer prices in the early 1970's, credit subsidies were increased to reduce domestic prices. Likewise,

purchasers of domestically manufactured machinery have benefitted from 5 to 8 year loans with nominal interest rates ranging up to 15 percent, occasionally with a two year initial grace period. In some cases no down payment was required.

It is difficult to evaluate the importance of credit in financing these inputs even though the respective credit programs have been large. Chemical fertilizer use rose 550 percent from 1966 to 1976 as the total nutrients consumed rose from 380 thousand metric tons to more than 2 million [Araujo]. There have been allegations that the quantity of fertilizer supposedly financed with formal credit in some regions has exceeded the amount actually sold. Likewise, tractor production per year grew from 6,300 units in 1967 to over 62,000 in 1975 (IEA). Most of these tractors were purchased by farmers.

For the Census, farmers reported making over Cr $4.4 billion in on-farm investments in 1970. Of this total, Cr $2.2 billion was spent for machinery, livestock and permanent crops, all of which were eligible for credit programs. The Central Bank reported Cr $2.5 billion in new institutional loans for agricultural investments in the same year. Thus, it appears that farmers self-financed most of their land and buildings but borrowed for most other on-farm investments. Moreover, over 50% of the investment loans were reported for machinery purchases, and almost two-thirds of these loans were made in the three states of Rio Grande do Sul, Parana and Sao Paulo; these states accounted for over 75% of the total number of tractors reported on farms in 1970. It is quite likely, then, that credit for investment has been highly correlated with new machinery purchases. This conclusion is consistent with the

results of the tractor demand model estimated by Sanders for the 1950-1971 period. He concluded that the variable for real value of tractor financing overshadowed the variable measuring tractor price relative to agricultural wage rates.

Distribution of Farms and Credit

The previous sections showed the apparent relationship between credit, output and use of certain inputs. This section presents data on credit distribution. It appears that 1) a large proportion of farms did not receive formal credit in 1970, 2) much of the credit has been concentrated on a relatively small number of farms, and 3) small farmers as a group receive a small share of total credit.

Table 2 shows the size distribution of Brazilian farms as reported in the 1960 and 1970 census.[5/] The total number of farms increased from 3.3 million in 1960 to 4.9 million in 1970, while the total area in farms increased from about 250 million hectares to almost 295 million. Three general trends between 1960 and 1970 can be noted from Census data: 1) the number of farms increased in all size strata except those over 10,000 hectares, 2) likewise the area increased in all strata except the largest, and 3) the gain (loss) in numbers exceeded the gain (loss) in area so there was a decrease in average farm size in the first four categories and an increase in the last. The change observed in the strata with less than 10 hectares is dramatic as over a million new farms were added to that group, while the average size decreased from almost 4 to 3.6 hectares. Of the 44 million hectare increase in farmland, this small size group accounted for only 7 percent, while the next two size strata (10-100, 100-1,000) accounted for 28 and 52 percent, respectively.

Table 2. Size Distribution of Farms[a/]
Brazil, 1960 and 1970

| Farm Size Strata (Hectares) | 1960 Census | | | 1970 Census | | | |
|---|---|---|---|---|---|---|---|
| | Farms | | Percent | Farms | | Percent | Percent of |
| | Number | Percent | of Area[b/] | Number | Percent | of Area[b/] | Production |
| Less than 10 | 1,495,020 | 44.8 | 2.4 | 2,519,630 | 51.1 | 3.1 | 17.8 |
| 10 to less than 100 | 1,491,415 | 44.7 | 19.0 | 1,934,392 | 39.3 | 20.4 | 40.0 |
| 100 to less than 1,000 | 314,831 | 9.4 | 34.4 | 414,746 | 8.4 | 37.0 | 29.3 |
| 1,000 to less than 10,000 | 30,883 | 0.9 | 28.6 | 35,425 | 0.7 | 27.2 | 10.7 |
| 10,000 and more | 1,597 | <0.1 | 15.6 | 1,449 | <0.1 | 12.3 | 1.9 |
| No farm size reported | 4,023 | 0.1 | ---- | 18,377 | 0.4 | ---- | 0.3 |
| TOTAL | 3,337,769 | 99.9 | 100.0 | 4,924,019 | 99.9 | 100.0 | 100.0 |

a/ In the Brazilian Census, farms are defined as "establishments." A farm is a unit with one or more adjacent parcels under a single administration. Two non-adjacent parcels are treated as separate farms even if they are under a single administration. Likewise parcels are treated separately even though owned by the same person if they are rented or sharecropped to two different persons with separate administration. Thus the number of establishments probably exceeds the number of landowners, since the number of ownership units treated as several establishments probably exceeds the number of ownership units treated as a single establishment because they are under a single administration.

b/ An unknown bias exists in these data due to the farms which did not report size.

Source: 1970 Census of Agriculture.

The inverse relationship between farm size and value of production noted in several countries is also found in Brazil in 1970. The first two size strata represented 90 percent of the farms, only 23 percent of the area but almost 58 percent of the production. On the other hand, units of 10,000 or more hectares represented less than 0.1 percent of the farms, 12 percent of the area but only 2 percent of the production. The second and third strata, frequently considered the most important for commercial agricultural production, represented roughly 50 percent of the farms, 60 percent of the area and 70 percent of total production.

Table 3 shows source of credit for farms reporting credit use in 1970. A most surprising result is that in spite of the steady increase in supply of formal credit between 1960 and 1970, almost 90 percent of the Brazilian farms reported no credit from any formal or informal source. About one-fourth of the farms in the upper three size strata reported receiving loans, but that proportion fell to 20 percent when loans from only government entities, including official banks, is considered. The number of farms reporting credit from government entities was just over 400,000 in the entire country. The disadvantage of farms in the smallest group is clear. As a group only five percent received loans and only 2.5 percent from government entities. Thus over 90 percent of all farms in the country were untouched by government credit programs in 1970 in spite of all the efforts to make credit terms attractive, increase the total volume of credit and extend banking services throughout the country.

The data in table 4 show a similar pattern of distribution of total volume of credit by source. Government entities provided almost 80

Table 3. Proportion of Farms Obtaining Loans, by Sources and Size of Farm, Brazil, 1970

| Farm Size Strata (Hectares) | Proportion of Farmers Reporting Loans From: | | | |
|---|---|---|---|---|
| | All Sources | Individuals | Government Entities | Private Entities[a/] |
| | Percent | | | |
| Less than 10 | 5.0 | 1.9 | 2.5 | 0.8 |
| 10 to less than 100 | 17.2 | 2.6 | 13.4 | 1.9 |
| 100 to less than 1,000 | 23.2 | 3.2 | 19.3 | 2.1 |
| 1,000 to less than 10,000 | 25.3 | 2.7 | 21.6 | 3.3 |
| 10,000 and more | 23.1 | 3.1 | 16.4 | 6.1 |
| No farm size reported | 13.7 | 9.4 | 0.3 | 4.0 |
| Total | 11.5 | 2.3 | 8.3 | 1.4 |

a/ This category includes private banks as well as noninstitutional lending sources such as input suppliers.

Source: 1970 Census of Agriculture.

Table 4. Total Value and Distribution of Loans Obtained, by Source and Size of Farm, Brazil, 1970

| Item | Sources | | | |
|---|---|---|---|---|
| | All Sources | Individuals | Government Entities | Private Entities |
| Total Value of Loans | | | | |
| Value (000 Cr$) | 4,144,187 | 356,261 | 3,270,743 | 517,183 |
| Percent | 100.0 | 8.6 | 78.9 | 12.5 |
| | | Percent | | |
| Farm Size (hectares) | | | | |
| Less than 10 | 5.5 | 13.2 | 4.2 | 8.5 |
| 10 to less than 100 | 33.1 | 35.1 | 33.4 | 29.4 |
| 100 to less than 1000 | 41.8 | 30.5 | 44.2 | 34.0 |
| 1000 to less than 10,000 | 15.6 | 15.9 | 15.2 | 18.0 |
| 10,000 and more | 4.0 | 4.4 | 2.9 | 10.0 |
| No farm size reported | 0.1 | 0.9 | 0.1 | 0.1 |
| | 100.0 | 100.0 | 99.9 | 99.9 |

Source: 1970 Census of Agriculture

percent of the credit reported in 1970. Informal credit sources and private banks were responsible for a far smaller share than expected.

The volume of credit received by each size strata can be compared with the three farm size dimensions reported in table 2: percent of farm numbers, percent of farm area and percent of production. The two smallest farm size strata received a share of credit far less than their share of farm numbers, while the three larger groups received far more. This trend is particularly true of credit from government entities. Considering farm area, however, the first three strata received more credit than their land share. The value of production criteria shows that the two smallest strata received less credit than warranted by their share of production, while the 100-1,000 group appeared to be especially favored with credit from government entities. Credit from private entities including private banks, on the other hand, was especially concentrated in the largest farms. Thus, according to the 1970 census, Brazilian policy makers had not achieved on a nationwide basis their objective of increased agricultural credit for small farmers.

The regional distribution of credit is important because a large number of small farms are concentrated in the Northeast, and to a lesser extent in the South. Vast regional inequalities have plagued the country for years and special credit programs have been designed to address income and productivity problems of certain regions and subregions.

Tables 5 and 6 report the regional distribution of farms, production and credit use. The state of Sao Paulo was analyzed separately because it represents such a significant part of the agriculture in the Southeast region and in the country. Both the South and Southeast reported a far larger share of the nation's agricultural production than percent

Table 5. Regional Distribution of Farms and Proportion of Farms Obtaining Loans, Brazil, 1970

| Region[a/] | Percent of Farms | Percent of Area | Percent of Production | Proportion of Farms Reporting Loans From: All Sources | Individuals | Government Entities | Private Entities |
|---|---|---|---|---|---|---|---|
| North | 5.3 | 7.9 | 3.1 | 6.9 | 4.2 | 1.6 | 1.2 |
| Northeast | 44.8 | 25.3 | 18.3 | 4.9 | 1.3 | 3.3 | 0.4 |
| Southeast | 18.9 | 23.6 | 37.3 | 18.4 | 3.3 | 13.5 | 2.7 |
| South | 25.9 | 15.4 | 33.8 | 18.7 | 3.0 | 14.1 | 2.4 |
| Center-West | 5.1 | 27.8 | 7.5 | 12.8 | 1.6 | 11.1 | 0.5 |
| Sao Paulo | 6.6 | 6.9 | 20.8 | 25.7 | 5.3 | 16.2 | 5.8 |

a/ The states and territories comprising each region are: North - Rondonia, Acre, Amazonas, Roraima, Para, Amapa; Northeast - Maranhao, Piaui, Ceara, Rio Grande do Norte, Paraiba, Pernambuco, Alagoas, Fernando de Noronha, Sergipe, Bahia; Southeast - Minas Gerais, Espirito Santo, Rio de Janeiro, Guanabara, Sao Paulo; South - Parana, Santa Catarina, Rio Grande do Sul; Center-West - Mato Grosso, Goias, Distrito Federal

Source: 1970 Census of Agriculture

Table 6. Regional Distribution of Value of Loans Obtained by Source, Brazil, 1970

| Region[a/] | All Sources | Source | | |
|---|---|---|---|---|
| | | Individuals | Government Entities | Private Entities |
| | | Percent | | |
| North | 3.0 | 4.5 | 1.9 | 8.6 |
| Northeast | 12.8 | 15.4 | 13.0 | 9.8 |
| Southeast | 40.3 | 44.0 | 38.3 | 50.6 |
| South | 34.7 | 27.5 | 36.9 | 25.9 |
| Center-West | 9.2 | 8.6 | 9.9 | 5.1 |
| Sao Paulo | 24.2 | 27.3 | 21.6 | 38.6 |

a/ See footnote a table 5 for a list of states and territories included in each region.

Source: 1970 Census of Agriculture.

of farm area. Sao Paulo alone produced almost 21 percent of total output on 7 percent of the country's total farm area. All other regions reported a production share smaller than their respective land shares.

Credit was clearly concentrated in the southern part of the country. About one-fifth of the farms in the Southeast and South and one-fourth of the Sao Paulo farms reported using credit. The proportion of farms receiving credit from government entities was particularly high in these regions. The regional concentration of production and total value of credit was even more striking. The Southeast and South together represented only 45 percent of the farms and 40 percent of the farm area, but produced 70 percent of total output and absorbed 75 percent of total and government credit. Sao Paulo alone absorbed 24 percent of the total credit, and a whopping 40 percent of the credit from private entities. On the other hand, the Northeast with almost one-half the nation's farm reported only 18 percent of the production, and just over 5 percent used credit. The previous national data showed the concentration of credit on supposedly commercial farms. These data show a clear concentration of credit in those regions where more commercialized agriculture predominates.

The state of Sao Paulo deserves special analysis because of its large share of output and credit use. The state produces a wide range of agricultural products, and has a strong network of research, marketing, extension and banking institutions. Land and labor has become increasingly scarce so there has been a strong tendency to substitute biological and mechanical technologies for these scarce factors.

Table 7 reports the state's credit and output data for the 1969-1975 period. In this period, output increased by 60 percent, operating loans

Table 7. Agricultural Credit and Output, State of Sao Paulo, 1969-75

| Year | Loans Made During Year[a/] | | | | Net Internal Product From Agriculture in 1975 Cruzeiros[c/d/] (5) | Ratio of Operating Loans to Product (2/5) (6) | Ratio of Total Loans To Product (4/5) (7) |
|---|---|---|---|---|---|---|---|
| | Operating Loans | | Total Ag Loans | | | | |
| | Number[b/] (1) | Value in 1975 Cruzeiros[c/] (2) | Number[b/] (3) | Value in 1975 Cruzeiros[c/] (4) | | | |
| 1969 | 166 | 3,408 | 313 | 6,843 | 14,640 | .23 | .47 |
| 1970 | 161 | 3,815 | 351 | 8,227 | 15,572 | .24 | .53 |
| 1971 | 165 | 4,080 | 349 | 8,905 | 17,439 | .23 | .51 |
| 1972 | 154 | 4,363 | 347 | 10,773 | 19,988 | .22 | .54 |
| 1973 | 177 | 6,657 | 384 | 14,636 | 23,676 | .28 | .62 |
| 1974 | 167 | 7,689 | 369 | 16,835 | 23,944 | .32 | .70 |
| 1975 | 208 | 9,423 | 419 | 21,220 | 23,388 | .40 | .91 |

a/ Source: Various Central Bank reports. Figures represent number and value of new loans made.

b/ Thousands of loans.

c/ One million cruzeiros. Values adjusted by the Index "2" of Conjuntura Economica.

d/ Source: 1969 from Conjuntura Economica, 24, No. 9, 1971; 1970 to 1975 projections made by compounding growth rates estimated by the Instituto de Economia Agricola in annual Prognosticos.

by 175 percent, and total credit by more than 200 percent. Furthermore, the average size loan more than doubled in real terms. Compared to the national data reported earlier, Sao Paulo clearly received proportionately more credit to output than the rest of the country. The values for the credit to output ratios for the nation and state tend to converge in recent years, however. The sharp increase in number and value of loans in 1975 noted in the national data is also found in Sao Paulo. In that year, the ratio of operating loans to output reached .40 and the ratio of total loans to output reached an exceptional .91.

Sao Paulo agriculture is heavily mechanized. It is estimated that the number of tractors in the state grew from 65,000 in 1970 to 100,000 by 1975. The average amount of cultivated land per tractor was estimated at 55 hectares in 1975 compared to the next most heavily mechanized state of Rio Grande do Sul with 90 hectares per tractor. Likewise, fertilizer use has grown to approximately 115 kilograms per hectare in recent years. Large amounts of credit have been lent in the state for machinery and fertilizer purchases.

Data on credit distribution within the state were obtained for the 1969/70 and 1973/74 crop years from farm surveys conducted by the Instituto de Economia Agricola. The farms were randomly sampled in both periods and are statistically representative of the state. Direct comparison with census data is impossible due to difference in farm size stratification and farm definitions, but some national trends observed earlier were found in the state as shown in tables 8 and 9. Official banks provided 80 percent of the credit reported by farms in 1969/70; the small decline noted in 1973/74 may represent the effect of policies to encourage more agricultural lending by private banks. With

Table 8. Farm Size Distribution, and Total Value of Loans Obtained by Source and Size of Farm, State of Sao Paulo, 1969/1970

| Item | Percent of Farms | Percent of Area | Percent of Total Production | Source of Credit[a/] | | |
|---|---|---|---|---|---|---|
| | | | | All Sources | Official Banks | Private Banks and other Sources |
| Total Value of Loans[b/] | | | | | | |
| Value (Cr $1,000) | | | | 528,015.7 | 425,476.4 | 102,539.3 |
| Percent | | | | 100.0 | 80.6 | 19.4 |
| | | | Percent | | | |
| Farm Size (hectare's) | | | | | | |
| 3 to less than 30 | 57.0 | 9.1 | 12.0 | 12.7 | 12.8 | 12.3 |
| 30 to less than 300 | 38.0 | 37.1 | 40.1 | 34.9 | 38.2 | 21.0 |
| 300 to less than 1,000 | 3.9 | 22.9 | 22.3 | 17.5 | 18.0 | 15.2 |
| 1,000 and more | 1.1 | 30.9 | 25.6 | 34.9 | 31.0 | 51.5 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

a/ Includes loans for operating costs and investments

b/ Based on a sample of 2,282 farms; farms below 3 hectares were not considered.

Source: Instituto de Economia Agricola.

Table 9. Farm Size Distribution, and Total Value of Loans Obtained, by Source and Size of Farm, State of Sao Paulo, 1973/74

| Item | Percent of Farms | Percent of Area | Percent of Total Production | Source of Credit[a/] | | |
|---|---|---|---|---|---|---|
| | | | | All Sources | Official Banks | Private Banks and other Sources |
| Total Value of Loans[b/] | | | | | | |
| Value (Cr $1,000) | | | | 2,105,314.2 | 1,629,889.8 | 475,424.4 |
| Percent | | | | 100 | 77.4 | 22.6 |
| | | | Percent | | | |
| Farm Size (hectares) | | | | | | |
| 3 to less than 30 | 56.8 | 8.9 | 11.3 | 18.5 | 16.1 | 27.1 |
| 30 to less than 300 | 38.2 | 36.7 | 42.8 | 48.2 | 49.5 | 43.4 |
| 300 to less than 1,000 | 3.9 | 22.5 | 24.7 | 22.0 | 23.4 | 16.9 |
| 1,000 and more | 1.1 | 31.9 | 21.2 | 11.3 | 11.0 | 12.6 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

a/ Includes loans for operating costs and investments.

b/ Based on a sample of 6,996 farms; farms below 3 hectares were not considered.

Source: Instituto de Economia Agricola.

such a large share of total credit attributed to official banks, the distribution of credit is largely determined by their lending patterns and objectives. The data on farm size distribution in tables 8 and 9 show that over one-half of the Sao Paulo farms had less than 30 hectares and accounted for less than 10 percent of the total farm area. Compared to the national data, the smaller farms appeared to contribute a proportionately smaller share of output relative to larger farms. The share of credit received by farms in this smallest strata was far less than their share of farm numbers but similar to their share of output. The credit share for this group increased substantially from 1969/70 to 1973/74, but, surprisingly, private banks and other sources were responsible for more of this shift than were the official banks. In 1969/70 over 50 percent of private credit went to the largest size group, but that proportion fell to less than 13 percent in 1973/74. The second size group also increased its share of total credit from 35 to 48 percent and received the largest share of both official and private credit. Thus, it appears that Sao Paulo has been more successful than the rest of the country in channeling credit to some of its smaller farmers.

Further Evidence on Credit Distribution and Use

The data reported in the previous section give an indication of institutional credit distribution within and among regions for one point in time. This type of data does not provide information, however, on how credit use and distribution on individual farms has changed over time. Such analysis requires panel data infrequently found in most developing countries.

Insights into this issue were provided by Adams in an analysis of 338 farmers located in the southernmost states of Rio Grande do Sul and Santa Catarina [Ohio State University, Chapter 10]. These farmers were interviewed in 1965 and again in 1969. The farms were located in areas well served by banks, both private and official. Some of the key results are reported in table 10. The number of formal loans held by these farmers increased more than 40 percent between these two surveys, while the real value increased a whopping 110 percent. As a result, the average size loan increased almost 50 percent. The number of informal loans sharply declined, while the real value held roughly constant.

A total of 148 farms reported formal loans in 1965 and that number increased to only 158 by 1969. On the other hand, 120 farms reported no loans in 1965 and this number fell only by four in 1969. All but one of the farms that reported no loans had less than 100 hectares.

Eleven farms in the sample had 100 hectares or more. These farms accounted for over 60 percent of the increase in formal credit noted for the entire sample. They also increased total informal debt so they accounted for over 80 percent of the total debt increase from 1965 to 1969. On the other hand, farms with less than 100 hectares also increased formal credit, but at a much slower rate, while reducing informal credit use. Thus, a handful of large farms in this region absorbed most of the increase in formal credit and complemented it with informal credit. Smaller farms appeared to substitute formal for informal credit resulting in a more modest growth in total credit use. No comprehensive data are yet available to show if this same type of concentration is found today in this same region or elsewhere in Brazil.

Table 10: Credit Use on Sample Farms, Rio Grando do Sul and Santa Catarina, 1965 and 1969

| Item | Year 1965 | Year 1969 |
|---|---|---|
| Year-end Outstanding Credit[a/] | | |
| Formal credit | | |
| Total number loans | 197 | 280 |
| Outstanding balance (Cr $) | 223,301 | 471,883 |
| Informal credit | | |
| Total number loans | 307 | 242 |
| Outstanding balance (Cr $) | 126,530 | 127,019 |
| Farm Credit Distribution | | |
| Number of farms with: | | |
| Formal loans only | 47 | 89 |
| Both formal and informal | 101 | 69 |
| Informal only | 70 | 64 |
| No loans | 120 | 116 |
| Total | 338 | 338 |
| Outstanding Credit Balances by Farm Size | | |
| Farms less than 100 hectares (n=327) | | |
| Formal credit | 100,404 | 189,506 |
| Informal credit | 94,143 | 52,815 |
| Total | 194,547 | 242,321 |
| Farms with 100 hectares (n=11) | | |
| Formal credit | 122,897 | 282,377 |
| Informal credit | 32,387 | 74,204 |
| Total | 155,284 | 356,581 |

a/ Measured in 1965 Cruzeiros

Source: Ohio State University, Tables 10-5 and 10-6

With this evidence on huge quantities of credit apparently going to a fairly small number of farmers, it is logical to ask if such a large amount of credit was really necessary in order to meet agricultural output and modernization objectives. How did the farmers use the large amount of credit received? Allegations have frequently been made of substantial diversion of credit to uses other than those stated at time of borrowing. Some farmers in frontier areas are reported to have borrowed money several times to clear the same piece of land. Other reports suggest that the amount of fertilizer supposedly financed with credit has exceeded the amount actually sold. A federal deputy reported, somewhat tongue in cheek, that if all the lime financed in his state would have been applied it would represent a six inch thick layer over the entire state. Even if farmers didn't directly transfer their agricultural credit to other uses, clearly the opportunity must have existed for substituting credit for their own funds which could then be invested elsewhere.

One piece of research tried to test the possibility that farmers received more credit than could be justified considering the amount of capital required to pay farm expenses [Fundacao Instituto de Pesquisas Economicas - Ministerio da Agricultura]. The research was based on data collected throughout the country from over 1600 farms in 1971. Farm expenses and investments during the year on the average represented about two-thirds of the total funds available from credit and own funds. The remaining one-third was available for consumption or investments in other sectors. For larger farms, which received relatively more credit, the proportion available for these purposes was even higher.

An alternative approach is to test the counterfactual question, "What would farmers have done if they would have received less credit or credit with less favorable terms?" Singh and Ahn used a recursive linear programming model to simulate farmer response to policy changes in a major wheat producing region in the state of Rio Grande do Sul [Ohio State University, Chapter 11]. They found that raising the nominal interest rate on credit from 15 to 40 percent to obtain a real rate of 10 to 12 percent resulted in a substantial reduction in production for medium and large farms, but had little effect on small farmers. This result may be unique compared to the rest of the country, however, since this region was undergoing rapid transformation from traditional livestock raising to wheat and soybean production. Large amounts of money were being invested in land clearing and machinery.

Several attempts have been made through linear programming and production function studies to analyze the productivity of capital inputs. The results frequently suggest underemployment of capital implying external credit rationing. Little effort has been made, however, to compare predicted optimal levels of capital with cash availability and credit to see if borrowed resources are contributing to consumption or off-farm investments. In an effort to study this issue as well as account for risk, Peres recently used a quadratic programming model to analyze credit demand on sampled farms in Sao Paulo. He concluded that small farms were actually borrowing more than predicted by his demand analysis but large farms could increase their borrowings.

These research efforts demonstrate the difficulty in determining the extent to which the existing pattern of credit use can be justified on efficiency grounds. The crucial issue is the extent to which supply

versus demand factors explain the present allocation of credit. Most research to date has focused on demand. Very little effort has been directed to the supply side of the issue.

Supply of Credit and Banking Services

An analysis of bank behavior in relation to agricultural credit supplies is badly needed in Brazil. In the absence of such research, a deductive method is used in this section to identify some of the supply factors which may contribute to explaining the pattern of credit use described above. Future empirical work may determine the extent to which these arguments are the most important ones.

The allocation of agricultural credit must be examined in relation to the motivation of the lenders. The banking system includes private banks with typical profit motives. Official banks are partly state owned and hold large interest free public sector deposits. Thus, they should be relatively more responsive to social objectives. They cannot completely ignore costs and returns, however, and in fact tend to use standard efficiency criteria for evaluation of bank personnel.

Brazilain policy makers distort interest rates by fixing agricultural loan rates lower than those permitted for other loans, then try to force lenders to increase the volume of their agricultural operations. Further, interest rates have been negative in real terms with the return lowest for the smallest size loans. By lending to agriculture, lenders earn less than could be earned by lending to other sectors, and the real value of their portfolios decline due to inflation. It is not surprising in such a situation that strong regulations and incentives are required if large volumes of credit are to be lent to agriculture, and that the public sector must furnish a large proportion of the funds. Other reactions

by Brazilian lenders are also logical. Private banks, that historically had less experience and expertise in agricultural lending than official banks, have been particularly resistent to expanded lending. Their portfolios have tended to be concentrated in loans to large farms. Agricultural credit managers in the Bank of Brazil have complained of losing large farmer clientele when private banks were forced into agricultural lending, but were largely unassisted in their efforts to meet small farmer needs. A large share of agricultural lending has gone for marketing loans where collateral is readily available. Lenders have resisted increasing the proportion of operating loans and longer term loans for investment. Finally, many banks have attempted to increase their return from agricultural lending by charging various non-interest costs and fees and requiring borrowers to maintain large compensating checking account balances.

Likewise, it is logical to question if the expansion of efficient banking and credit services throughout the country, another Brazilian objective, might be retarded due to agricultural credit policies. Two dimensions of this problem are evident. First, there is little evidence that banks are actively searching for streamlined procedures to accomodate large numbers of small farmers. Regulations permit waiving collateral requirements, but the internal inefficiency of banks coupled with complicated inspection procedures and associated costs result in high borrowing costs. Informal credit with its higher interest charge actually may be less expensive, especially for the borrower of small loans (Nehman). A few cotton cooperatives in the Northeast and wheat cooperatives in the South, as a service to their members, have arranged to operate as agents for the

local banks. Banks have embraced this mechanism as it reduces their costs and the small farmer may gain at the expense of the large one if the costs became part of the cooperatives' general overhead rather than passed on to the individual borrower.

Brazilian policy makers have contributed to high bank costs. There has been a tendency to attack a specific agricultural problem by creating a new credit program with special objectives, interest rates, and repayment schedule. The profileration of programs has become too complex for the persons ultimately responsible for implementing them: the overburdened credit manager and staff of the local bank. Efforts to simplify and consolidate the excessive number of individual credit programs are now underway. Also, a mechanism must be created for partial service branches. Currently, little opportunity exists for establishing branches which offer less than a full line of banking services. Thus, it is difficult to economically justify opening a branch in a low income rural area.

The second dimension concerns farmer accessability to banking services. Central Bank policies have encouraged the merger of smaller inefficient banks and from 1961 to 1975 the number of banks declined from 332 to 103. Branches have been encouraged and their number rose from 4949 to 7897 (Anuario Estatistico). In spite of increased branching, the regional distribution of banking facilities has not appreciably changed. In 1972, over 80 percent of the banks and branches were located in the South and Southeastern regions which have some of the larger cities and accounted for 70 percent of the 1970 agricultural output. The Northeast with 45 percent of the nation's farms had only 12 percent of the banks. Nationwide,

there were two banks per municipio (roughly equivalent to a county) but Sao Paulo, which had over a third of the banks, averaged five per municipio. The official banks responsible for most of the agricultural credit had just over 2200 branches in 1972 representing about one branch per two municipios. An unanswered question is whether the growth and location of banking services has led or followed agricultural growth. The controls on agricultural lending suggest that banks should have limited interest in expanding into regions where most of their banking business would be limited to agriculture.

White encountered the problem of limited access to banks in a low income area of the state of Minas Gerais largely dominated by agriculture. Only one-third of the 123 municipios studied in 1969 possessed an agency of an institution which was a significant source of agricultural credit in that state. The federal Bank of Brazil accounted for 89 percent of all agricultural loans made and had only 16 agencies with authority for agricultural lending in 114 municipios. Eighty percent of the farms had less than fifty hectares, and the Bank of Brazil was the only one effectively making loans under Cr $1,000.

## CONCLUSIONS AND IMPLICATIONS

During the last decade, Brazilian policy makers have made agricultural credit policies a cornerstone of their development strategy. The existing banking system has been relied upon almost exclusively to channel credit into agriculture. A wide variety of powerful incentives and regulations have been implemented to encourage increased agricultural lending. The resulting distortions are designed to influence the flow and cost of credit.

Formal agricultural credit has sharply increased relative to output. Increased use of fertilizer and agricultural mechanization has been associated with this credit. The spread effect of the formal credit flow appears limited. Over 90 percent of the farmers in 1970 reported receiving no formal or informal credit. Approximately 75 to 80 percent of the formal credit is used by commercial farms in a few southern states. Small farmers and less productive regions appear to have been largely missed by the expanded formal credit supplies. A question can be raised as to whether or not all this credit was necessary in order to achieve output and modernization objectives, especially considering that much of it appears to have been absorbed by relatively few farmers. There is some evidence that farmers receiving large amounts of credit have either channeled some of it into other uses, or substituted credit for their own funds which were then available for use elsewhere.

It is tempting to conclude that the Brazilian experience demonstrates that an existing banking system is an ineffective means to broadly expand credit services in developing agriculture. The implication is that establishing special agricultural programs and institutions is a preferred approach. This latter approach has its own set of problems, however, as amply documented in the reports included in the A.I.D. Spring Review of Small Farmer Credit. Furthermore, the Brazilian model cannot be fully judged, particularly on equity grounds, until it has had a chance to perform under more favorable conditions, and that requires removing some of the distortions that currently exist in the credit market. Then and only then will the real strengths and weaknesses of the model emerge.

The most pressing problem concerns interest rate controls which result in negative real rates of return on agricultural loans. Until nominal interest rates are raised so that lenders are not penalized for agricultural loans, there is no way to judge how well they will supply agricultural needs and at what price. Moreover, higher interest rates will help clarify the effective credit demand situation for various sizes and types of farms. If the current subsidy provided through credit is required to encourage output and modernization, far better to provide it through product price supports or direct input subsidies. If interest rates for small farmers must be kept low for economic or social reasons, then as White recommended, the farmer should be charged a "just" rate and the lender subsized up to a market rate so an adequate supply is assured. There are signs that changes in interest rates are forthcoming in Brazil, not necessarily for the reasons argued here, but due to the financial burden of the present credit subsidies. Besides increasing the return on loans, raising the interest rate should also help reduce the need for costly inspection systems now required to monitor the use of borrowed funds. With interest rates approaching those charged in other sectors, there will be less reason to borrow funds for investment outside agriculture.

Other complimentary policies need to be expanded in Brazil to make agricultural lending more attractive and less risky to lenders. For example, the minimum price policy for agricultural products has been improved in recent years but is still infrequently used by small farmers. Crop insurance has only recently been expanded in the country and could eventually become an important measure to reduce risk. There has been little experimentation with joint liability lending. Even when cooperatives serve as credit intermediaries, the loans made are the obligation

of the individual borrower. Some success has been reported in other countries using group lending and this approach is especially worthy of study in small farmer areas in Brazil.

It is not clear how many of Brazil's current agricultural credit problems would be resolved and new ones created by these changes. Considerably more research is required to adequately understand the agricultural credit market. But if the banking system is to better meet agricultural credit objectives, particularly regarding small farmer credit, these proposed changes represent a step in the right direction. There is really no alternative in Brazil. Neither in the mid 1960's when the current strategy began to take shape, nor today a decade later, is there any possibility of creating a separate agricultural credit system to effectively serve five million farms scattered across 4000 municipios in an area larger than the continental U.S.

## Footnotes

*Director, Instituto de Economia Agricola, Sao Paulo, Brazil, and Associate Professor, the Ohio State University, respectively. We gratefully acknowledge the assistance of Iby Pedrosy, Caio Yamaguishi and Luiz Henrique Piva in assembling some data used in the paper, and the comments by Dale Adams, Doug Graham, Donald Larson and Warren Lee on a previous draft. The normal disclaimers apply.

1/ Several detailed accounts of Brazilian agricultural policies are available. Smith reviewed key aspects of agricultural policies up to the end of the 1960's. Schuh provided a useful survey of the entire sector and its performance up to 1970. The Ohio State Research Team surveyed much of the literature available as of 1973. Paiva et al. reported on several aspects of credit policy and agricultural performance, also in 1973. In our paper for the 1973 A.I.D. Spring Review, Agricultural Credit policy, with special reference to small farmers was discussed in detail.

2/ Substantial amounts of marketing loans go to individuals other than farmers. Thus column 2 underestimates the total short-term credit obtained by farmers, while column 4 overestimates total credit.

3/ Little institutional credit is available for farm real estate mortgages so investment loans are used largely to finance machinery, livestock and perennial crops.

4/ Calculation was based on new nonreal estate loans made by Production Credit Associations during the 1970's assuming that they represented about 25 percent of all nonreal estate lending each year.

5/ See footnote b to table 2 regarding the definition of a farm used in the Census.

References

Adams, Dale W. "Agricultural Credit in Latin America: A Critical Review of External Funding Policy." American Journal of Agricultural Economics. 53(1971): 163-172.

A.I.D. Spring Review of Small Farmer Credit, Several Volumes, Washington, D.C., 1973.

Araujo, Paulo F. C., et al. "Crescimento e Desenvolvimento da Agricultura Paulista." Agricultura em Sao Paulo. Tomo III (1974): 169-199.

Brazil, Fundacao Instituto Brasileiro de Geografia e Estatistica. Anuario Estatistico do Brasil, 1974. Rio de Janeiro: 1975.

Brazil, Fundacao Instituto Brasileiro de Geografia e Estatistica. Censo Agropecuario do Brasil, 1970. Rio de Janeiro: 1975.

Brazil, Instituto de Economia Agricola, Secretaria de Agricultura. Prognostico 1976/77. Sao Paulo: 1976.

Brazil, Instituto de Economia Agricola, Secretaria de Agricultura. Prognostico Regiao Centro-Sul 76/77. Sao Paulo: 1976.

Eckaus, R.S. "Financial Regulation as a Means of Directing Development Policy in Latin America." Department of Economics, M.I.T., March, 1975.

Erven, Bernard L. and Normal Rask. "Credit Infusion as a Small Farmer Development Strategy - The Ibiruba Pilot Project in Southern Brazil." Department of Agricultural Economics and Rural Sociology Occasional Paper No. 48, Ohio State University, 1971.

Fundacao Instituto de Pesquisas Economicas - Ministerio da Agricultura. "Credito Rural no Brasil: Avaliacao e Criticas." Sao Paulo: 1976.

Guimaraes, Mario K. Credito Rural: Enfoques da Politica Agraria Brasileira. Rio de Janeiro: Nobel, 1974.

Johnson, Omotunde E.G. "Credit Controls as Instruments of Development Policy in Light of Economic Theory." Journal of Money, Credit and Banking. 6 (1974): 85-100.

Meyer, Richard L., et al. "Rural Capital Markets and Small Farmers in Brazil, 1960-1972." Small Farmer Credit in South America. A.I.D. Spring Review of Small Farmer Credit, Vol. III, Washington, D.C., February, 1973.

Nehman, Gerald I. "Small Farmer Credit Use in a Depressed Community of Sao Paulo, Brazil." Ph.D. dissertation, Ohio State University, 1973.

Ness, Walter L. "Financial Markets Innovation as a Development Strategy: Initial Results from the Brazilian Experience." Economic Development and Cultural Change. 22(1974): 453-472.

Ohio State University Research Team. Farm Growth in Brazil. Department of Agricultural Economics and Rural Sociology, Ohio State University, 1975.

Paiva, R. M., et al. Brazil's Agricultural Sector: Economic Behavior, Problems and Possibilities. XV International Conference of Agricultural Economists, Sao Paulo, Brazil, 1973.

Peres, Fernando C. "Derived Demand for Credit Under Conditions of Risk." Ph.D. dissertation, Ohio State University, 1976.

Piza, Jr., Clovis de T. "Alguns Indicadores de Desempenho e de Conjuntura de Credito Rural." Mimeograph. Instituto de Economia Agricola, 1976.

Rask, Norman, Richard L. Meyer and Fernando C. Peres. "Credito Agricola e Subsidios a Producao Como Instrumentos paro o Desenvolvimento da Agricultura Brasileira." Revista Brasileira de Economia. 28(1974): 151-172.

Sanders, John H. "Mechanization and Employment in Brazilian Agriculture, 1950-1971." Ph.D. thesis, University of Minnesota, 1973.

Schuh, G. E. The Agricultural Development of Brazil. New York: Praeger, 1970.

Smith, Gordon W. "Brazilian Agricultural Policy, 1950-1967." The Economy of Brazil. Ed. H.S. Ellis, Berkeley: University of California Press, 1969.

White, T. Kelly. "Credit and Agricultural Development - Some Observations on a Brazilian Case." Small-Farm Agriculture: Studies in Developing Nations. Eds. George F. Patrick, Lawrence J. Brainard and Frederick W. Obermiller, pp. 66-91. Department of Agricultural Economics, Station Bulletin No. 101, Purdue University, 1975.

Yusuf, Shahid. The Commercial Banking Industry in Brazil, Studies in Domestic Finance No. 39, Development Economics Department, World Bank, May, 1977.