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SOURCES OF FUNDS
FOR AGRICULTURAL INVESTMENT
IN PORTUGAL†

Many proponents of agricultural credit programs advocate more loans as if little investment were undertaken without formal lending. While formal loans, those extended by financial institutions such as banks and credit cooperatives, have obvious importance for some borrowers, many investments in rural areas are financed informally, through use of savings from farming and off-farm employment and of emigrant remittances. This phenomenon is particularly important where agriculture offers profitable investment opportunities and where off-farm sources of funds are substantial enough to finance equipment, building, and land purchases that are part of agricultural development.

The availability of funds from informal sources makes less clear the impact of government credit policies on agricultural investment. Many studies (Adams et al., 1984) have emphasized the negative impacts of financial market distortions on agricultural investment. Lenders often exhibit an urban bias in their

credit rationing, and concessionary interest rates limit the aggregate supply of loanable funds from the formal sector. When surplus funds are available in rural areas from emigrant remittances and off-farm earnings, however, low interest rates may discourage the use of financial savings deposits and encourage either consumption or investment in agriculture or other local industry. The availability of loanable funds for agricultural investment can thus at least partially offset the distorting effects of government credit policy. On balance, investment in the agricultural sector could be larger with a fragmented financial market than with a non-distorted market. These distortions remain costly, however, since aggregate (national) levels of savings, investment, and income growth are lower than they would be in the absence of financial repression.

A simple graphical framework is used in the following section to describe the relationships among the formal credit market, self-finance, and the amount of agricultural investment. The remainder of the paper applies this framework to an analysis of agricultural investment in Portugal, where remittances and off-farm income are important complements to agricultural activity. Formal credit for agriculture is distributed principally to the central and southern regions of Portugal. The poorer northern districts, dominated by smaller farms, rely principally on self-finance. While credit-rationing programs impose some constraints on the delivery of formal credit in the north, farm survey data are used to demonstrate that emigrant remittances and off-farm income have superseded formal credit institutions. Nearly one-third of the Portuguese labor force is employed outside of Portugal, and the northern districts are the home of a disproportionate number of these emigrants. Emigrant remittances provide a pool of funds that are available at lower costs than formal credit, because farmers avoid the transaction costs of borrowing that are associated with obtaining loans and paying service charges of banks or moneylenders. The importance of emigrant remittances in funding agricultural investment is not limited to Portugal; other countries experiencing this phenomenon include Bangladesh, Belize, Egypt, Greece, South Korea, Pakistan, Sudan, Turkey, and Yugoslavia.

CREDIT POLICY AND SOURCES OF FUNDS
FOR INVESTMENT

Chart 1 portrays a simple graphical model of the supply and demand of funds for agricultural investment. The real interest rate i is drawn on the Y-axis, and the X-axis measures the quantity of loanable funds Q. The demand for loanable funds DD depends on the rate of return to investment in agricultural production, the borrowers' transaction cost for obtaining and changing financial resources into physical capital, and the rate of taxation on returns to capital (Baumol, 1968). The borrower transaction and tax costs are assumed constant across borrowers to allow concentration on the rate of return to investment. The further assumption of diminishing marginal returns to investment allows the demand curve to have a downward slope.

The total supply of funds for investment in agriculture ABF is composed of two elements, the supply of funds from own-resources ABC and the supply

Chart 1.—Supply and Demand of Funds
for Agricultural Investment
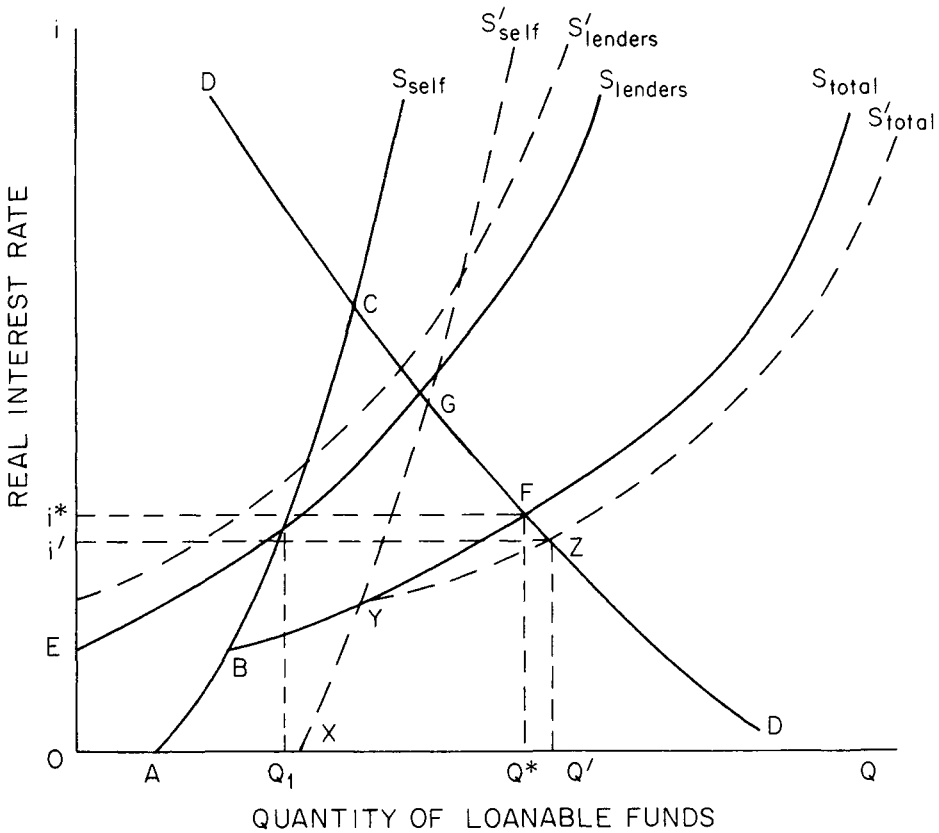
of funds from lenders EG. The supply of funds from lenders is drawn with a positive intercept to reflect positive lender transaction costs and risk premia. These costs are assumed invariant with respect to the size of loan.[1] As the rate of return in agriculture increases, ceteris paribus, financial resources are drawn away from the nonagricultural sector. The steepness of the lender supply curve thus depends on the rate of increase in the rate of return to nonagricultural investment as funds are withdrawn from that sector. If the rate of return to

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[1] Bottomley (1975) and others have pointed out that both risk of default and administrative costs are likely to vary inversely (in percentage terms) with the size of loan and economic characteristics of the borrower. Monopoly profit opportunities for the lender may also vary inversely with the size of the loan.

nonagricultural investment increases rapidly, for example, the supply curve in Chart 1 will assume a steep slope.

The supply of self-finance funds for agricultural investment AC depends on the total assets of farmers and their willingness to reallocate asset portfolios given a ceteris paribus change in the rate of return to agricultural investment. The allocation of the portfolio reflects a number of considerations– farmer income levels, the need for liquidity, risk, alternative investment opportunities (such as interest rates on time deposits), and the propensity to save (Donald, 1976, ch. 5). The supply curve for self-finance is assumed less elastic than the curve for lender funds to reflect the salient fact that self-finance does not always dominate lender-financed investment. Finally, the curve is drawn with a negative intercept. If labor resources are fixed in agriculture (at least in the short and medium run) and capital inputs cannot be completely eliminated from the production technology, investment to replace depreciated capital is necessary even if the rate of return to investment is negative.

Government policy instruments affect the equilibrium $(i*, Q*)$ by causing shifts in the demand and supply curves. Taxes on output cause the marginal value product of capital to fall, so that the demand curve shifts downward (leftward). The result is a lower rate of return and a fall in the amount of investment.

Credit rationing and interest rate control policies cause shifts in the supply curves. Increases in lender transaction costs or encouragement of an urban bias in lending cause an upward (leftward) shift in the lenders' supply curve. The result is a decline in the quantity of investment funds and a potential increase in the rate of return to agricultural investment.[2]

A second policy instrument involves the interest rate on savings deposits. The net impact of interest rate policy on the supply of funds for investment is not clear. Interest rates that are held artificially low or negative in real terms presumably reduce savings in favor of current consumption. The supply curve of lender funds therefore shifts downward. The disincentive to save also reduces the aggregate size of the farmers' asset portfolios by encouraging current consumption and causes a similar (downward) shift in the supply of self-financed funds. But, in addition, reduction of interest rates on savings will cause a reallocation among the components of the portfolio (Gonzalez-Vega, 1983). Rather than place assets in financial markets, farmers may increase their allocation of assets toward agricultural and nonagricultural investments in order to maximize expected returns from their portfolios. Indeed, if interest rates on financial assets are negative in real terms, investors would be expected to eliminate financial assets completely from their portfolios except for liquidity needs.

The supply of lender funds may also be affected by restricted rates on time deposits. Informal lending arrangements that allow transfers of financial

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[2] In addition, government interest rate policy and credit allocation procedures will determine whether marginal rates of return actually increase.

resources from wealth holders to those with more profitable investment opportunities (the "friendly loans" made to an investor by relatives and neighbors) will be encouraged when interest rates on savings are low. This phenomenon provides a (limited) amount of allocational efficiency in rural financial markets, as assets of wealth holders move to investments with higher returns than those provided by own-investment opportunities or formal financial markets.

The net supply of funds for agricultural investment may thus increase under repressive interest rate controls. For the net effect to be positive, the reallocation of assets toward agricultural investment must be larger than the negative impact of lower interest rates on savings and the supply of loanable funds. This circumstance is illustrated in Chart 1 by the dotted line supply curves. Low interest rate policies cause the supply of funds from lenders to decline, while the supply of sekf-financed funds for agricultural investment increases. The new total supply of funds is indicated by supply curve XYZ. Relative to equilibrium levels, total investment in agriculture increases and the interest rate declines.

While total investment in agriculture may be increased when inflows of financial wealth coexist with low interest rate policies, misallocation of funds in agricultural areas will continue as long as wealth differs among individuals. Individuals with access to emigrant remittances and off-farm earnings will be encouraged to invest in agriculture and local nonagricultural opportunities, but those without access to financial assets may be unable to make investments, even if profitable opportunities are present. The financial system is less able to seek out the best opportunities for rural investments when interest rates are distorted. In addition, inefficient savings mobilization obviates the potential allocation of funds to more profitable nonagricultural investments outside of the rural areas. Thus national average rates of return to investment will be below their potential maximum.

AGRICULTURAL FINANCIAL MARKETS IN PORTUGAL

Funds for investment in Portugal are subject to a number of policy-induced distortions. Interest rates throughout the economy are controlled for both lending and savings. Ceilings on total credit have been used since 1977, and quantitative controls on credit represent the principal tool of macroeconomic policy. The application of these controls has varied in response to short-run difficulties with inflation rates or the balance of payments. Tight credit controls were imposed in 1978 and 1979 as part of the first macroeconomic reform instituted in cooperation with the International Monetary Fund. Credit volume remained roughly constant in nominal terms and declined sharply in real terms. With the balance of payments under control by 1980, the government turned to an expansionary policy in hope of encouraging growth without inflation. These desires proved untenable without concomitant reductions in government spending, and inflation increased to about 20 percent per year in 1981–82. Credit controls again became a key element of national policy in 1983, and increases in credit volumes were sharply curtailed.

Table 1 shows recent movements (1980--82) in total formal credit to agriculture; formal credit is defined as loans extended by commercial banks, savings and investment banks, and agricultural credit cooperatives. Agricultural credit comprises about 3.5 percent of total lending by these agencies, and volume has expanded at rates similar to those of aggregate lending— somewhat higher than average in 1980 and lower than average in 1981. Cooperative lending has increased rapidly from a small base, in part because it has not been subject to credit ceilings imposed by the Bank of Portugal (the central bank).

Banks compete for shares of the aggregate rationed credit. All non-foreign banks are nationally owned, but retain a substantial degree of operational autonomy. Individual bank rations are determined quarterly, based on the volume of time deposits and the allocation of credit to preferred sectors— agriculture, tourism, exports, housing, and investments with large shares of domestic value-added. The allocations are made without reference to particular preferred sectors. While all banks lend to agriculture, only two commercial banks maintain agricultural lending services. These two banks, along with the agricultural credit cooperatives (CCAMs) and the government savings bank that deals exclusively with preferential lending (CGD), dominate commercial lending to agriculture.

Agricultural credit is distributed predominantly to the central and southern regions of Portugal—the Ribatejo, Alentejo, and Algarve (Map 1). These regions are dominated by relatively large (50 to 300 hectares) mechanized farms, specializing in grains, livestock, grapes, citrus, or other fruit crops. In 1982, these regions accounted for 76 percent of medium- and long-term credit (19 million contos or U.S.$178 million; $1 = 107 escudos, the average exchange rate during 1982; and 1,000 escudos = 1 conto). Although data for the regional distribution of short-term credit are not available, credit experts suggest that the shares of the southern and central regions in short-term credit allocation are at least as large as their shares in longer-term credit. The remaining 25 percent of formal credit—about 6 million contos—went to the northern areas, which are dominated by small, multiple-crop farms, averaging about two hectares in size. Farm income in the north is often supplemented by off-farm activity, and substantial shares of production are retained for home consumption. Principal products from this area are potatoes, grains, dairy products, grapes, and other fruit crops.[3]

Lack of profitable investment opportunities does not seem to provide an important explanation for the small volume of formal credit extended to northern agriculture. The following tabulation estimates private profitability for nine representative production systems in Portuguese agriculture in 1981 (Procalfer, 1982). Private profitability represents the difference between total revenues

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[3] Vogel (1981) provides evidence that rationing of credit in Costa Rica was most severe for small farmers. He argues that the observed low delinquency rates on small farmer loans result not only from good surveillance but also from severe rationing, limiting loans to the best credit risks.

Table 1.—Credit Granted in Portugal,
Total and Agricultural by Maturities: 1980–82
(*Millions of escudos*)*

	Commercial banks	Savings and investment banks	Total	Agricultural credit cooperatives
Total credit maturity: 1980				
Up to 1 year	1,401,748	146,878	1,548,626	
1 to 5 years	89,794	27,114	116,908	6,700[a]
Over 5 years	23,420	86,337	109,757	
Agricultural credit maturity: 1980				
Up to 1 year	52,944	6,459	50,403	
1 to 5 years	3,412	661	4,073	6,700[a]
Over 5 years	704	1,487	2,191	
Total credit maturity: 1981				
Up to 1 year	1,679,557	168,136	1,847,693	
1 to 5 years	164,420	42,213	206,633	9,400
Over 5 years	47,498	119,151	106,649	
Agricultural credit maturity: 1981				
Up to 1 year	57,351	7,456	64,807	
1 to 5 years	7,177	1,271	8,448	9,400
Over 5 years	2,387	1,695	4,082	
Total credit maturity: 1982				
Up to 1 year	1,985,078	143,468	2,128,546	
1 to 5 years	229,226	57,747	285,973	16,800[b]
Over 5 years	50,271	113,562	172,833	
Agricultural credit maturity: 1982				
Up to 1 year	72,894	11,412	84,306	
1 to 5 years	9,722	1,125	10,848	16,800[b]
Over 5 years	2,568	1,768	4,336	

Source: Unpublished data from Fenachem (the national agency for the agricultural credit cooperatives in Portugal) for cooperatives, Bank of Portugal for other.

*Conto = U.S.$19.96 in 1980, $16.26 in 1981, and $9.35 in 1982.

[a] June 1981.

[b] November 1982.

Map 1.—Regions of Portugal

Map showing the regions of Portugal with cities marked:

ENTRE DOURO E MINHO — Viana do Costelo, Braga, Porto

TRAS OS MONTES — Braganca, Vila Real

BEIRA LITTORAL — Aveiro, Viseo, Coimbra

BEIRA INTERIOR — Guarda, Castelo Branco

RIBATEJO E OESTE — Leiria, Santarem

ALENTEJO — Portalegre, Lisbon, Evora, Beja

ALGARVE — Faro
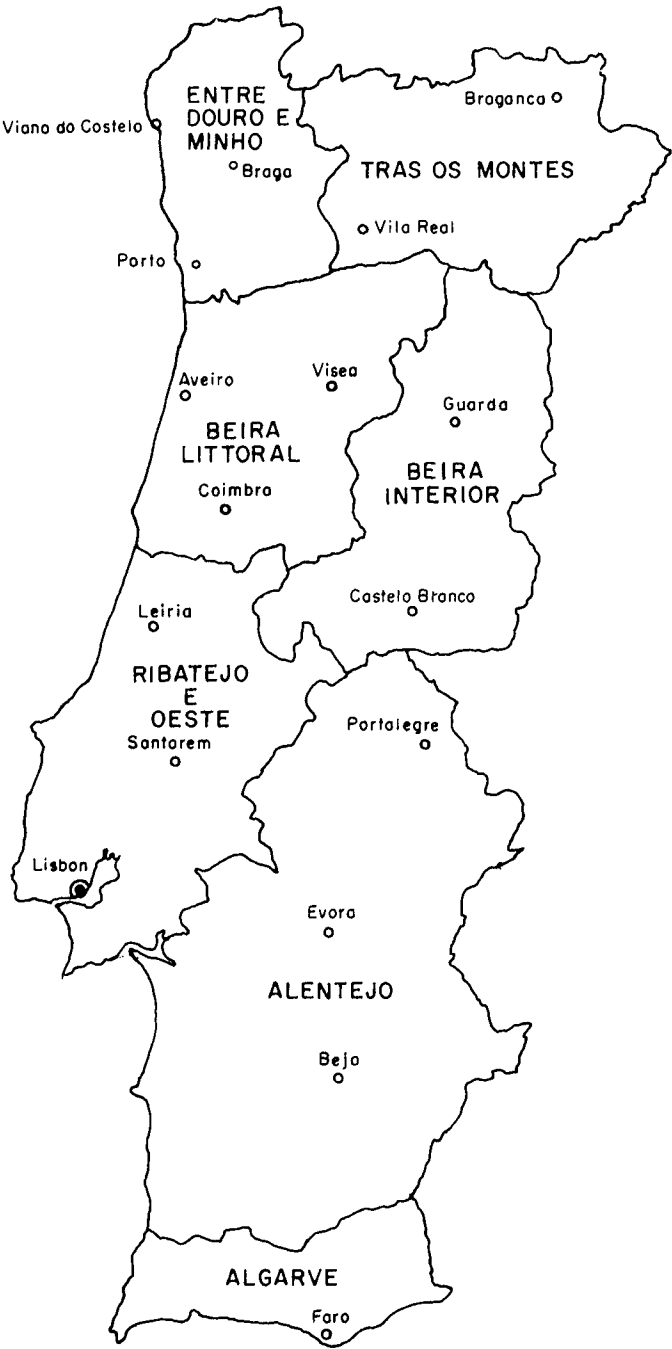
and total costs (capital costs are estimated at 2 percent in real terms, and market-equivalent values are imputed to all non-marketed inputs and outputs).

Area, activity	Private profitability
North	
Milk, traditional	2.0
Corn, traditional	0.0
Milk, modern	6.5
Ribatejo	
Corn, modern	4.6
Sunflower	7.2
Alentejo	
Wheat, AB soil	6.0
Wheat, CD soil	2.5
Sunflower	0.3
Sheep	201.2

With the exception of the Alentejo sunflower system, average private profitabilities are high for the systems of the Ribatejo and Alentejo. These results reflect both underlying comparative advantage and a set of government policies that provide large net subsidies to most agricultural systems. Traditional corn and traditional milk, the dominant grain-livestock systems of the north, offer low or near zero profitabilies. In contrast, the modern milk system in the north has high profits, which also result from a combination of underlying efficiency and favorable policies.

The technical change from traditional to modern milk production on small farms in the north comprises a host of innovations—herd improvement, milking and storage equipment, and the introduction of silage—and thus involves substantial investment.[4] Such investments yield large profits. Vineyards (not shown in the tabulation) also appear to offer profitable investment opportunities. Commercial bank data on the distribution of loans in the dairy-oriented northern districts of Aveiro, Braga, and Viana do Castelo, for example, indicate that about 11 percent of total credit was intended for viticulture, with most of the remainder for machinery, animals, pasture improvement, and other dairy-related activities.

Given the dominance of traditional technologies and the large relative profit advantages provided by the change to a modern milk production system, the shares of the northern regions in formal credit allocation appear small. Survey data from 198 farms showed that actual investment levels are significantly

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[4] Rao (1970) provides one of the first detailed investigations demonstrating that highly profitable investment opportunities exist in small-scale agriculture, and that small farmers use credit for production investments to exploit such opportunities.

higher than those suggested by the data for formal credit allocations. Data for equipment purchases and bank credit during 1977–83 were used to estimate the relative importance of informal investment, that is, investment financed by informal credit or family savings. The ratio of informal to formal investment derived from a sample survey was then applied to aggregate data on formal credit in order to estimate aggregate informal investment in the north. (The survey data were drawn from the dairy-oriented districts of Aveiro, Braga, and Viana do Castelo, while many of the other northern districts are more heavily dependent on viticulture, tree crops, and pasture-based sheep and goat production; in the absence of more complete data, attractive profitabilities and rates of return are assumed to prevail for these products.)

The results of the sample survey confirm that the northern areas demonstrate substantial demand for credit and investment. Total investment in equipment and machinery among the sampled farmers amounted to about 50,000 contos ($467,000) in 1982 prices, representing an average expenditure of 450 contos ($4,200) per investing farm.[5] The most frequently purchased items were intended for use in modernizing dairy technologies or vineyards—tractors, small mowers, rototillers, and pesticide equipment. Formal credit (including credit obtained from savings and investment banks) accounted for only 14,000 contos, or about 24 percent of the total; the remainder was self-financed or borrowed from friends and relatives.

Extrapolation of these findings to northern demand for medium- and long-term formal credit suggests a total investment for the north in 1982 of about 30 million contos.[6] Even without estimates of the use of short-term credit for investment purposes or estimates for informal investment outside the north, annual agricultural investment in Portugal exceeded 50 million contos ($467 million) or about 17 contos ($160) per hectare. These estimates suggest that farmers are investing far more than is apparent from official lending figures.

CREDIT POLICIES AND SOURCES OF FUNDS

The above figures indicate that agricultural investment in the north is of a magnitude comparable to that in the southern and central regions. The latter regions accounted for more formal credit (19 million contos), but have substantially less access to sources of funds for self-finance. Off-farm employment and emigration are far less common in these regions, and agriculture is generally a full-time rather than a part-time occupation.

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[5] Investment in buildings and animals are made frequently with own-resources and thus do not reflect clearly the impact of constraints in financial credit markets. Vehicle purchases were excluded because of their limited role in northern farm production.

[6] Total investment financed by formal credit in the north was 7.4 million contos. Self-finance accounts for the difference between credit extended (6 million contos) and investment value. Informally financed investment was roughly three times as large as formally financed investment (22.7 million contos versus 7.4 million contos).

Deposits in emigrant accounts earn interest rates equal to real interest rates in foreign credit markets. These accounts remain active only while the worker maintains his emigrant status. Within a year after the emigrant returns permanently to Portugal, the account must be closed, and the funds are subject to domestic credit policies. A disaggregation of remittances is shown in Table 2, where the country totals for 1982 are presented by the district in Portugal to which the funds were remitted.[7] The breakdown is by no means an exact indicator of regional availability of emigrant funds, because an emigrant from a rural area might choose to place his or her funds in Lisbon (or elsewhere). With this qualification, however, the data present a pattern of quite widespread placement of emigrant remittances throughout Portugal. Some concentrations are apparent; the districts of the northwest—Aveiro, Braga, Coimbra, Leiria, Porto, and Viana do Castelo—received 35 percent of remittances, reflecting the importance of this region as a source of emigrants and recipient of remittances. In addition, the autonomous island regions, the Azores and Madeira, together received one-sixth of total remittances.

The final column of Table 2 adjusts remittances for the size of economically active population of each distrct to approximate the annual flow of remittances to agricultural families (the north averages about one economically active worker per farm). Because a disproportionate number of emigrants come from agriculture, these numbers probably understate remittance flows to the agricultural sector. The results demonstrate a marked difference between north and south. With the exception of Coimbra, the annual average remittance per domestic worker to northern districts exceeded 70 contos. Remittances were substantially lower for the southern and central districts, apart from the urban-industrial areas of Faro and Santarem. This pattern is consistent with the observed importance of family and self-finance investment in the north. Given an average investment per farm in the north of 450 contos, farms in the northern districts could rely entirely on self-finance with only three to six years worth of remittances.

Examination of the farm survey data for relationships between size of investment and emigration experience did not produce statistically significant results. The data in the following tabulation suggest why these associations are absent—both self-finance and informal lending are prominent sources of funds.

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[7] Information about remittances by emigrants is relatively complete. The Bank of Portugal collects data on amounts reported by banks to have been remitted by emigrants. These figures are lower bound estimates because there is nothing to prevent emigrants from sending or carrying funds to Portugal and using them directly or putting them into deposits without reporting their emigrant status. Special policies (interest rate advantages and access to subsidized credit) provide incentives to use emigrant accounts, so this leakage is probably minor. Moreover, given the absence of strict controls on foreign exchange and thus the lack of black markets for foreign exchange, there is no incentive for emigrants to make unrecorded transfers into (or out of) Portugal.

Table 2.—Emigrant Remittances to Portugal
by District Receiving Remittances
and Per Domestic Resident Employee, 1982
(Thousand contos)

District	Total remittances	Remittance per domestic resident employee
North		
Aveiro	14,664	.08
Braga	17,835	.08
Braganca	5,479	.10
Castelo Branco	8,864	.10
Coimbra	6,950	.05
Guarda	9,378	.14
Leiria	15,221	.12
Porto	18,614	—
Viana do Castelo	9,811	.10
Vila Real	7,608	.09
Viseu	9,618	.07
South and Central		
Beja	3,440	.04
Evora	1,387	.02
Faro	6,513	.06
Lisboa	23,376	—
Portalegre	961	.02
Santarem	8,506	.06
Continent	174,208	
Islands	34,160	
Total	208,394	

Source: Unpublished data from the Bank of Portugal and authors' estimates.

Individual machinery and equipment purchases (greater than 50 contos) are classified by source of funds. Bank credit was used for only 15 percent of the items purchased, although the bank-financed purchases were more expensive than average. Among informally financed investment, over 80 percent of the purchases were self-financed. Individuals using self-finance were further classified in terms of their access to off-farm earnings and emigrant remittances. Remittances directly account for 30 percent of total purchases. This classification neglects the indirect contribution of remittances to investment, since remittances provide a source of loans from friends and are also responsible for the creation of off-farm employment opportunities in construction and rural

industry. A final result that emerges from the tabulated data is the importance of access to some form of finance; only 6 percent of the purchases were financed exclusively from on-farm earnings. For the types of investment surveyed, no farmer mentioned merchant credit as a major source of financing.

Credit source	Number of investments exceeding 50 contos ($400)
Formal credit banks and agricultural credit cooperatives	18
Informal sources	124
1. Loans from friends	22
2. Self-finance	
a. Emigrant remittances	42
b. Domestic off-farm earnings	51
c. Farm earnings	9
Total	142

Transaction costs of formal lending appear to provide a key explanation for investor preferences for self-finance and informal borrowing. The transaction costs for the borrower, the farmer, include the time and financial expense of preparing and completing a loan application and assisting evaluation of the investment project after the loan has been granted. The lender, the financial institution, also incurs transaction costs when it reviews loan applications, obtains approvals of various government supervisory agencies, monitors loans, collects payments, and absorbs the costs of defaulted loans.

Transaction costs for borrowers and lenders are increased by government attempts to provide credit subsidies. In 1979 the government attempted to make formal credit more attractive to farmers and agribusiness by establishing a system of interest rate subsidies for agricultural loans, Sistem de Financiamento a Agricultura e Pescas (SIFAP), administered by Instituto Financeiro de Apoio ao Desenvolvimento da Agricultura e Pescas (IFADAP). The subsidy reduced the annual rate of interest paid on qualifying agricultural loans by 6.5 percentage points. The subsidy was reduced to 5.5 points after May 1983.

Several operational characteristics of this subsidy program have largely nullified the original intention of reducing the borrower costs of agricultural loans. Various lines of credit were established, which attempted to distinguish the agricultural use of the loan. The application for loans exceeding 2.5 million escudos requires a 40-page application form. Proposals for investment loans (those greater than one year in maturity) are evaluated not only by the financial institution involved, but also by IFADAP (sometimes at both the regional and national levels) and by the Ministry of Agriculture, Forestry, and Food (MAFA) in a time-consuming process that takes from 3 months to 2 years or more. Moreover, interest rate subsidies only become available after the principal installations or purchases have actually been completed, rather than at the

onset of the loan.[8]

This complicated set of procedures and practices has made transaction costs very high for lenders and borrowers alike. The government savings bank, CGD, reports that its average transaction cost for agricultural loans is 12 contos, about 2 percent of its average subsidized loan to agriculture. Given a banking margin of 4 percent, the difference between CGD's lending and deposit rates, only about 2 percent of loan value remains to cover defaults, and CGD reports default rates on agricultural investment loans substantially more than this. Any losses on agricultural loans must then be covered by the bank's earnings in other preferential sectors or by direct subsidies from the government budget. Commercial banks apparently avoid this problem by making larger agricultural loans (about 1,500 contos on average or 2.5 times as large as the CGD average), perhaps to less risky borrowers, and certainly to relatively large-scale farmers.

No known estimates exist of the total transaction costs to potential agricultural borrowers imposed by the cumbersome procedures of the subsidized interest program. Consultants, hired to prepare loan applications and assist in the long review process, usually charge 2 to 3 percent of loan value. Farmers, agricultural cooperatives, and lending institutions uniformly cite anecdotes and complain about the high non-monetary costs of the system in the form of delays and travel expenses. Many borrowers either avoid the subsidized program entirely or else borrow short-term (maturities of less than one year) to get around the complicated procedures of application and review.

While concrete quantitative evidence is lacking, one is led to the tentative conclusion that most, perhaps all, of the agricultural interest subsidy, at least for small loans, is offset by additional transaction costs resulting from the complicated procedures to manage the program. These limitations are particularly important for agriculture of the north, where investments are small. Pesticide sprayers, manure spreaders, mowers, and rototillers, all costing less than 300 contos, are primary components of the transition from traditional to modern cultivation techniques. In the farm sample survey, these items accounted for 20 percent of the value of equipment purchases. Consequently, the supply of funds curve for formal credit has shifted little as a consequence of credit policy.

In contrast, interest rate policies have had major impacts on the supply of funds. Prevailing interest rate structures and transaction costs are not so high as to preclude profitable use of formal credit in the north, but have instead encouraged the development of alternative sources of funds. Chart 2 delineates the behavior of interest rates and the inflation rate between 1974 and 1983. If transaction costs are assumed to offset credit subsidies, the maximum lending rate for long-term asset operations is a rough indicator of the nominal interest rate facing the agricultural borrower. For most of the period, this rate has been less than the inflation rate. In real terms, therefore, the cost of credit appears

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[8] Recent evaluations of SIFAP and IFADAP have been carried out by the Bank of Portugal, which supervises the program, the World Bank, and the Procalfer program; these studies contain detailed evaluations and recommended changes in the program.

substantially less than the rates of return to farm enterprise presented in Table 1. Further, agricultural lending offices of formal sector lenders are maintained in every agricultural district, giving almost all producers potential access to formal credit.
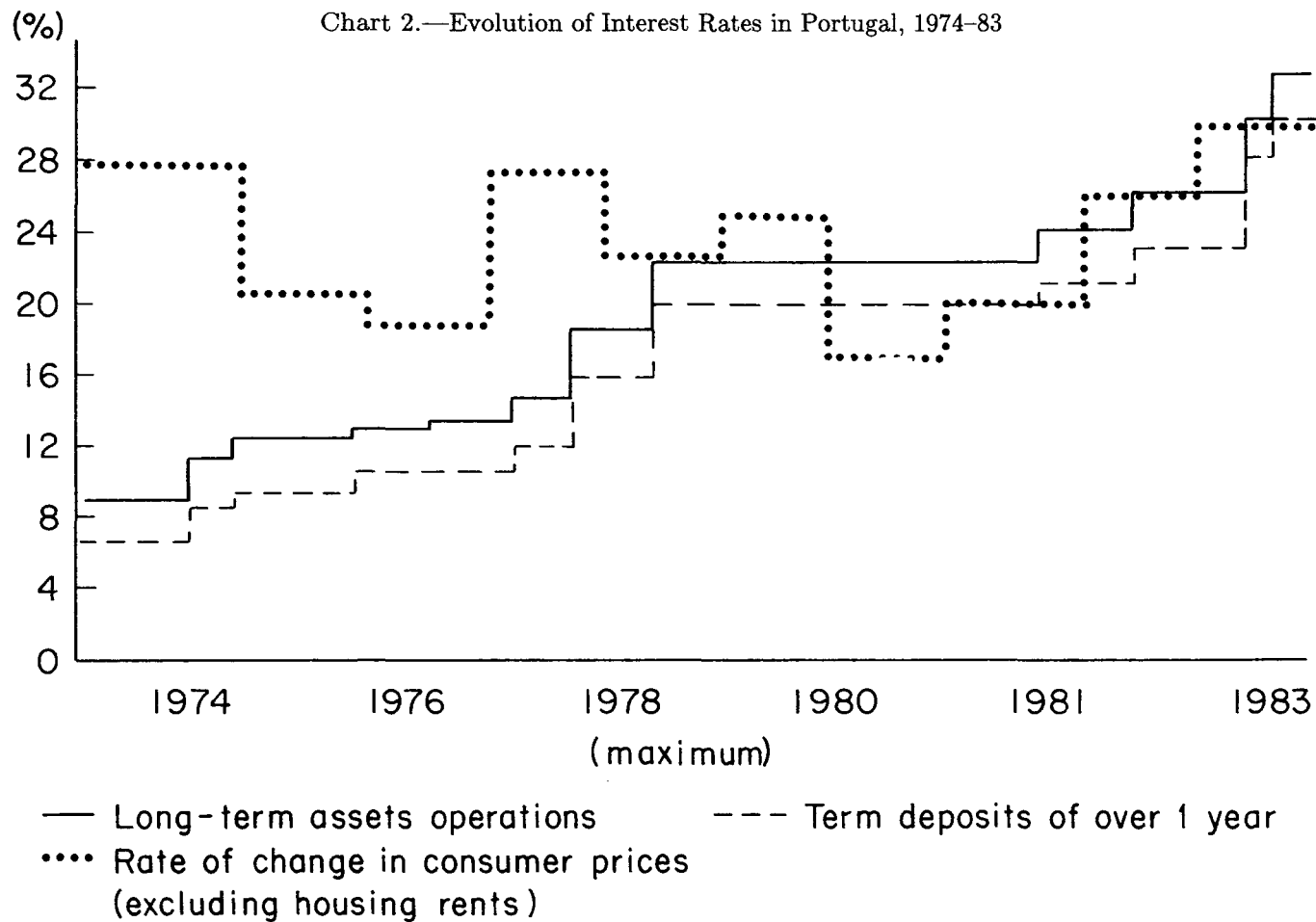
Rates on savings are even more negative in real terms than is indicated by Chart 2, because interest earnings are taxed at a rate of 19 percent. In 1983, for example, deposits in savings accounts appreciated by about 22 percent after taxes, while inflation was 29 percent. If interest rate subsidies are offset by transaction costs for most agricultural borrowers, the unsubsidized interest rate of 32 percent provides a measure of the cost of formal credit to agriculture. The difference between effective loan and deposit rates was thus about 10 percentage points, a margin apparently sufficient to encourage both self-financed investment and transactions in the informal loan market that appear so common in the north.

While most farmers maintain a savings account for liquidity needs, they appear well aware of the negative return on deposits. Other forms of savings—temporary investment in cattle, purchase of forestland for timber, and loans to relatives and neighbors—suggest an active search for alternatives to financial assets. Holders of wealth are clearly reallocating their asset portfolios, and in doing so both the supply curve for lender funds and the supply curve for self-financed funds are encouraged to shift outward. Lack of information about savings propensities and equilibrium rates of return to investment in Portugal prohibits an estimate of the negative impact of credit policy on the total supply of loanable funds to agriculture. But it is plausible that the net impact of credit policy has been to increase total agricultural investment.

Few allocational problems of a fragmented capital market are solved by inflows of off-farm earnings. Many producers, particularly small farmers outside the north, do not have access to off-farm funds and usually face larger than average transaction costs. For this group, meeting the self-finance requirements of formal loans (about 20 percent) is made difficult by an interest rate on savings that is substantially negative in real terms. In short, allocation of investments within the agricultural sector remains inefficient because some farmers will have invested in low-return activities and others will have been denied credit they could effectively use. Moreover, because credit policy causes the national supply of loanable funds to decline, nonagricultural investment must decline by an amount larger than any increase in agricultural investment.

A final difference between alternative sources of funds involves their stability over time. In Portugal, emigrant remittances grew very rapidly between 1976 and 1980; the dollar value more than tripled, reaching $2.9 billion in 1980. Following the onset of the global recession, remittances declined, but only by 10 percent, falling to $2.6 billion in 1982. This relative stability derives in large part from the increasingly diversified pattern of countries from which emigrants send remittances. A substantial fall of remitted earnings from France and Germany from $1.9 billion in 1980 to $1.4 billion in 1982 (in large part due to depreciation of the franc and mark against the dollar) was somewhat

Chart 2.—Evolution of Interest Rates in Portugal, 1974–83

(%)

32

28

24

20

16

12

8

4

0

1974   1976   1978   1980   1981   1983

(maximum)

— Long-term assets operations   − − − Term deposits of over 1 year

•••• Rate of change in consumer prices
(excluding housing rents)

Source: Annual reports of the Bank of Portugal and Caixa Geral de Depositos.

offset by increases from non-European countries. Overall, European countries, which accounted for more than four-fifths of remittances before 1980, supplied only two-thirds in 1982. The amounts remitted from France, easily the single most important source of remittances to Portugal, peaked in 1980, when the $1.5 billion from France was 51 percent of all remittances, and then fell to $1.2 billion in 1982, or 45 percent of the total.

By drawing on emigrant remittances for financing of investment, farmers can avoid the effects of macroeconomic austerity programs that reduce real levels of formal credit available through the banking system. In this manner, the damaging effects of credit ceilings that indirectly limit agricultural lending can be circumvented by drawing from emigrant savings accounts. If economic recessions in countries where emigrants are employed occur with a periodicity different from that of macroeconomic austerity programs, the availability of emigrant remittances can serve as a stabilizing influence on agricultural investment. For Portugal, this stabilizing influence will be particularly important in the future if emigrant remittances (measured in dollars to allow for inflation and exchange rate movements) return to a growth path with the resumption of higher levels of economic activity in Western Europe, North America, and other areas that employ Portuguese emigrant workers.

CONCLUSIONS

Most studies of rural financial markets in developing countries emphasize constraints that reduce the access of the agricultural sector to formal credit for investment. Demand constraints from low output prices, urban bias, and transaction costs appear as prominent forces to constrain formal lending to agriculture. At the same time, however, artificially low interest rates for savings deposits limit flows of funds from agriculture into the formal credit market. These distortions, which reduce growth of natural income by repressing savings and investment, can encourage private sector responses that at least partially offset constraints on formal sector lending to agriculture. This effect occurs if inflows of financial resources to rural areas via emigrant remittances or off-farm earnings result in greater agricultural investments rather than increases in time deposits.

In terms of the graphical model depicted in Chart 1, interest rate policy in Portugal has resulted in very low or negative real interest rates on time deposits, causing a reduction in the formal supply of loanable funds (upward shift in EG). This decrease in the supply of funds for agricultural investment, however, seems to have been more than compensated by an increase in the supply of informal funds from emigrant remittances and off-farm earnings (a downward shift in AC). Facing unattractive real interest rates in financial institutions, rural savers have shifted their portfolios in favor of agricultural investments to achieve higher real returns. As a result, total agricultural investment could be greater, even though aggregate investment in the economy is less, in the face of distorting financial policies (a downward shift from ABF to XYZ). Self-finance

in Portugal is responsible for most investment in small-farm agriculture. The inflow of informal funds has helped small-farm investment to keep pace with that in the rest of the agricultural sector.

Potential retained earnings from farming do not appear large in northern Portugal and are probably even smaller in lower-income countries. Where emigration and rural industrialization are not significant phenomena, constraints on the demand for credit will probably provide the dominant distortions for the credit market, and agricultural improvement is likely to be below optimal levels. At the same time, however, emigration is becoming an increasingly prominent element of rural life in newly industrializing and developing countries. Emigration can be seen as a response to policies that have limited opportunities for agricultural growth. So long as emigrants do not lose permanent contact with the domestic rural economy, remittances may help to offset the disincentives to agricultural development that are created by distorting government credit policies.

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