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Source: *Economic Development and Cultural Change*, Vol. 39, No. 4 (Jul., 1991), pp. 773-789
Published by: The University of Chicago Press
Stable URL: http://www.jstor.org/stable/1154594
Accessed: 15-09-2017 06:58 UTC

# Recent Experience with Cooperative Farm Credit in Israel*

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Governments and aid agencies in many developing countries channel credit to agriculture. The goal is to promote development, help the poorer peasants, encourage innovations, and eliminate the reliance on the local allegedly monopolistic moneylenders. Credit is deemed appropriate for achieving these goals since it is easy to administer, its effect is immediate, and it can be directed to the desired groups in the population. However, experience has shown that credit programs tend to fail.[1] Subsidized credit introduces inefficiencies, most of the credit goes to the richer farmers, and it encourages capital intensification and replacement of labor by machinery—hardly the goals governments aim for.[2] Cooperative credit was introduced in several places to improve distribution of subsidized loans and to increase repayment rates, but most of these efforts also failed.[3] These failures of outside intervention can be explained within the perspective of modern theory, which has improved our understanding of (and increased our sympathy to) the working of rural credit markets and their institutions in poorer countries.[4]

Israel is not a poor country; its agriculture is well endowed with capital and is technically advanced, and while informal (gray) credit markets exist, most of the financial services are provided by commercial banks. Still, there are many similarities between the basic structure and problems of the credit market in Israel and those of developing countries. Central among them is the problem of control, which lies in the basis of the theoretical analysis and is of major practical importance both in rural credit markets for developing countries and in the cooperative-intensive Israeli farm sector. In this article we summarize lessons drawn from many years of experience with cooperative agricultural credit in Israel. The discussion is limited to the sector of the moshavim, cooperative villages of family farms; the experience of the large-scale communal kibbutzim is not considered at this stage.


0013-0079/91/3904-0033$01.00

**Background and Summary**

Eighty percent of Israel's agricultural product comes from cooperative farms. A major form of cooperation in agriculture has been financial. It flourished for a long time, but financial cooperation has recently been in deep trouble and will need massive public assistance to overcome its difficulties. It is now too early to predict what kind of cooperation, if any at all, will emerge from the crisis. Yet, important lessons can be learned even from this incomplete experience.

In a nutshell, inflation in Israel accelerated steadily from a yearly rate of 12% in the early 1970s to more than 500% (annualized) for the first half of 1985. It was then halted by an abrupt change of direction in government policy, and since then inflation has run at approximately 20% per year. The rising prices were fueled by expanding supply of credit, much of it imported, market interest rates lagged behind inflation, and real rates were negative for most of the decade ending in 1985. These conditions encouraged overinvestment and discouraged saving. But interest rates also lagged when inflation decelerated in 1985, and, as a result, real rates skyrocketed. Agricultural cooperatives, as well as many other business enterprises, collapsed.

A financial crisis breaks out when lenders realize that the real economic value of the debtor's assets is too low to service the outstanding debt. In general, three groups of factors are involved in the creation of a crisis: (*a*) The basic fault: included here are the factors that reduce the income streams and hence the value of the assets—a decrease in the price of the product, increase in input cost, increase of the long-run rate of interest. In Israeli agriculture (as we shall show), the basic fault was due to undersaving, overinvestment, and overcapacity on the farms and in regional cooperative enterprises. (*b*) The trigger: this is the change in the economic environment that exposes the basic fault and triggers the crisis. In Israel, this was the abrupt rise in the rate of interest.[5] (*c*) The manifestation of the crisis: it always takes the form of a financial failure. Banks and other lenders that share the risk with the borrowers will precipitate a crisis in an effort to salvage at least part of their capital.

A high proportion of equity capital cushions the crisis, and firms with a high ratio of equity to assets are more likely to weather difficulties, although possibly at some loss to their owners. Extensive reliance on loans, on the other hand, with fixed interest and tight repayment schedules, increases the variability of the net residual incomes, financial stress, and risk. Agriculture with its small units, and particularly cooperative agriculture, is especially vulnerable: it cannot raise equity by stock issues in the capital market and expansion relies entirely on the sources of the families or the members in the cooperatives and on debt financing. Saving and accumulation of equity are thus particularly important in agriculture.

Indeed, agriculture in Israel enjoyed many years of low, even negative interest rates, in which the real value of its debt was eroded. If the capital gains due to the erosion of the debt had been retained, equity capital would have increased. But most farmers and cooperatives did not exploit this opportunity; in agriculture, low interest rates resulted in overinvestment and overreliance on debt financing. Partly this was an intended policy—removal of equity to enjoy inflation-related tax benefits; partly these were investment and consumption based on ample supply of credit. At any rate, excessive expansion of investment and credit was a myopic and dangerous policy, gambling with the property of the farmers. And despite the opportunities for accumulation of equity, debt to assets ratios increased and the stage was set for the coming crisis.

Agriculture, and particularly cooperative agriculture, was thus the victim of inflation and the measures implemented to halt it. It was lured into overinvestment and excessive leverage by availability of cheap credit under inflation and found it could not service its debt when the real interest rates shot up. There was, however, a deeper factor involved. Basically the crisis is the result of control failures in cooperative agriculture—failure of the cooperatives to control borrowing by their members, failure of the members to control the associations' officers, failure of the banks to control the cooperative borrowers, and above all failure of the government to control the affairs of a sector in the financing of which it was intensively involved. These failures reflected, on the one hand, the weaknesses inherent in the cooperative structure with its group decisions, internal politics, and the public good nature of its operation and, on the other hand, the inflationary environment and government policies that encouraged investment and intensive reliance on debt financing.

**The Moshav and Second-Order Cooperation**

A moshav (plural, moshavim) is a farming community in which all farms are family owned and operated, and all farmers are members of the multipurpose, democratically run, village cooperative. In principle (practice varies) the cooperative association in the moshav purchases all farm supplies for its members and markets their farm products. It may also own and operate a variety of service facilities and manage directly some jointly operated productive enterprises. In addition, the association encompasses all municipal and many social functions in the village.

Moshavim are members in two types of second-order cooperatives: supply cooperatives (requisite societies, purchase organization) set up to purchase farm requisites for their member moshavim, and regional service enterprises (feed mills, slaughterhouses, transportation services, and others). Both types operate on a regional basis,

though some nationwide cooperatives also exist. The supply cooperatives act also as spokesmen of their regions in government offices; they engage in intensive lobbying and have acquired a strong political standing.

The basic structure and mode of operation of the moshavim and the supply co-ops are similar, though differences in size, scope, and complexity create significant differences in the organizational problems the cooperatives face at the primary and the secondary levels. But we shall mostly overlook the differences in this short survey and focus the discussion on the major common characteristics. The regional service enterprises, whose nature is more that of industrial complexes than of regular farm cooperatives, will be discussed separately.

Moshavim were settled on national land that cannot be used as collateral; cooperative credit was therefore a natural alternative to a commercial credit market that could perhaps function efficiently if farmers had full property rights to the land they cultivated. Indeed, starting with the transfer of suppliers' credit to their members, both the moshav and the supply cooperative expanded into full-scale financial intermediation. In the last 2 decades and up to the eruption of the current crisis, the associations in the moshav and in the supply cooperative were first and foremost credit associations.

**Financial Intermediation**

The pivotal role of credit intermediation in the activities of the moshav and the supply cooperative is demonstrated in their balance sheets, as shown in table 1.[6] Members' debit balances are by far the largest assets the associations hold—76.6% of the total in the moshav and 60.9% in the supply cooperative. The moshav and the regional co-op raise capital and transfer it to their members. The associations also function as clearing houses, accepting deposits from members with financial surpluses (members' credit balances as in table 1) for use by others. The supply co-op and its moshavim are strongly linked through credit, as shown in table 1, and through joint ventures in the regional service enterprises.

The government was the major source of long-term credit and the major lender in the early stages of the development of moshavim.[7] Government credit was generally supplied on concessionary terms, and its minuscule share (see table 1) is a reflection of both inflationary erosion and the growing availability of alternative sources of finance.

Financial reports in the moshavim were prepared in historical values, and equity capital is under-represented. It was estimated that, if adjusted for inflation, equity will reach between 15% and 30% of the value of the associations' liabilities. But even then, items reflecting financial intermediation will dominate the cooperatives' balance sheets.

TABLE 1

BALANCE SHEET COMPOSITION OF A MOSHAV ASSOCIATION AND A SUPPLY CO-OP, SEPTEMBER 30, 1981 (in % of Total Assets)

| Assets | Moshav | Supply Co-op | Liabilities | Moshav | Supply Co-op |
|---|---|---|---|---|---|
| Fixed assets | 3.7 | 3.5 | Equity | .7 | 3.0 |
| Long-term investments and loans to members | 3.5 | 13.7 | Long-term debt | 4.2 | 19.5 |
| Inventories | 4.0 | . . . | Short-term loans | .6 | 34.5 |
| Accounts receivable: | | | Short-term loans from supply co-op | 76.9 | . . . |
| Nonmembers | 12.2 | 3.6 | Suppliers' credit | 4.1 | 21.8 |
| Regional enterprises | . . . | 18.3 | Members' credit balances | 13.5 | 21.2 |
| Members' debit balances | 76.6 | 60.9 | | 100.0 | 100.0 |
| Total | 100.0 | 100.0 | | | |

SOURCE.—Pinhas Zusman, *Individual Behavior and Social Choice in a Cooperative Settlement* (Jerusalem: Magnes Press, Hebrew University, 1988).

NOTE.—The data for the supply co-op are for the regional cooperative in the "Mountain Region" (a fictitious name). The data for the moshav are for an average association in a sample of 13 moshavim in the same region. Balance sheets are prepared in historical values, not adjusted for inflation. The financial reports of the cooperative in the moshav are for the association, not for the whole village. Information on individual farms is not included and is generally not available.

The supply cooperatives thus succeeded to establish for their members the moshavim—and the moshavim, for their members, the farm operators—financial services with steady lines of credit and convenient saving facilities. Because of proximity and familiarity, asymmetric information, which is generally of major importance in credit markets, is not a significant problem in cooperative agricultural credit in Israel. Still, interlinkage of credit and marketing is practiced, farmers are expected to channel the proceeds of their marketed products through the moshav association, and it receives the market revenue through the supply co-op. Interlinkage forms part of the institutional set-up that replaces collateral for loans. Proximity, central purchasing of inputs, product marketing, and financial interdependency should, in principle, allow close monitoring and control of the member borrowers.

**Advantages and Weaknesses of Financial Cooperation**

The "classical" discussion of the theory of cooperatives struggled with the definition of the goals of the cooperative firm and its behavior.[8] Difficulties created by the cooperative's egalitarian democracy were recognized but not formulated explicitly and not examined analytically. In the modern approach the cooperative is seen as a collection of individuals, each guided by personal tastes and interests, but all agreeing to perform jointly certain economic functions.[9] This contractual perception enables theoretical analysis which enhances our understanding of two central facets of the cooperative model of action: (*a*) Laws and regulations governing cooperative life are often compromises and are not necessarily first best, Pareto efficient. This subject is treated at length by P. Zusman and will not be elaborated further here. (*b*) Members in cooperatives—in our case farmers in a moshav or moshavim in a supply co-op—are not subordinates in a centralized hierarchy; they are free to act within wide limits. By treating explicitly individual behavior and group decisions, the modern, contractual perception of cooperation throws new light on the advantages of cooperative credit intermediation and particularly on its weaknesses.

*Advantages.* With cooperation, members in the moshavim, and moshavim in the supply co-ops, enjoy economies of scale in loan processing, professional financial management (particularly important in a high-inflation high-tax economy such as Israel), and a stronger bargaining position in the credit market (as well as in other markets).

Perhaps the greatest advantage of cooperative credit, both in the moshav and in the supply co-op, lies in risk pooling implemented in two ways. In the short run, the association can use its own resources to smooth over the credit needs of its members. Outside lenders do not have to deal with transitory difficulties of individual borrowers.

A more fundamental mode of risk pooling is mutual liability and

guaranty. Members in the moshav sign mutual guaranty agreements for the moshav association, and representatives of moshavim pledge similarly for loans raised by the supply co-op. The social pressure to comply with cooperative norms is strengthened under mutual liability arrangements. The probability of association default is reduced. Banks evidently recognize the advantage inherent in this arrangement, as credit is often conditioned on renewal of mutual liabilities.

*Weaknesses.* Several kinds of structural difficulties afflict the moshav and the supply co-op. (*a*) Moral hazard—members may tend to invest on their farms and in the moshav's enterprises in risky projects knowing that with a mutual liability arrangement they will be bailed out should the returns on the investment be disappointing. (*b*) Free riders—a member in the moshav, or a moshav in a supply co-op, may choose to market a farm product privately, thus weakening the association's standing in the credit market. (*c*) Agency cost—banks and other lenders view the cooperative associations as their agents and expect them to protect their interest (by limiting credit to failing members, e.g.), but the associations are guided by their own interests which are not always identical to those of the lenders. Similarly, officers in the associations may be tempted to expand operations and to assume risks which prudent members would avoid. (*d*) Horizon problems—members may favor short-term gains in expectation that in the long run they may exit, leaving those who stay to carry the remaining debt.

Enforcement of the moshav's norms and rules—in practice, mainly enforcement of the interlinkage arrangements of collective marketing through the moshav and through the supply co-op—is critical to its continued functioning as a credit cooperative. However, compliance with the moshav's code requires high standards of cooperative ethics and will to enforce. Conceivably, interdependence of the degree revealed in table 1, and close monitoring due to interlinking of credit with product marketing, would allow effective control. However, this was not the case. Particularly where interdependence was strong, the moshavim and their members had only limited access to alternative sources of credit and, consequently, the cooperatives were committed to continue funding their members. Their elected officers could hardly afford the dire financial, social, and political consequences of members' bankruptcies.

These difficulties are reflected in the behavior of members of cooperatives. A reasonable rough measure of the financial exposure of a member is the ratio of outstanding debt to monthly sales through the cooperative ("credit months"). During the period 1977–81, 13 out of 24 moshavim in the "Mountain Region" of table 1 exceeded 12 credit months and for relatively long durations.[10] Moshavim with 55 and 42 credit months were observed in another supply co-op.[11] Similarly,

more than a few farm operators owe their moshav cooperative associations several times their yearly production capacity. Moshavim or individual farmers with such heavy burdens of debt compared to their production capacity will never be able to repay their loans or service them adequately. Heavy debt burden does not happen overnight; it evolves gradually. Moshavim or individuals with 55 or 42 credit months testify to the weakness of their cooperatives, a weakness that breeds permissiveness and lax financial discipline.

Evidently the cooperatives did not function efficiently as financial intermediaries; they could not enforce credit rationing, they allowed cost of debt to increase when conditions changed, and they encouraged negative selection of investment projects, thus increasing the risk in their portfolios—a risk that all their members shared.[12] This behavior is not incidental; it stems from the nature of cooperation, and it is the result of the distorted incentive system created by the mutual guaranty arrangements. Moral-hazard behavior and weakness of cooperative control increase the risk to the lender and may even outweigh the advantages of cooperative credit. This indeed has happened as a result of the last crisis—lenders have recently been reluctant to extend credit to moshavim and second-order cooperatives even for loans backed by mutual guaranties.

**Regional Enterprises**

Regional service enterprises were ordinarily organized as limited liability cooperative associations, and their establishment was financed mainly by development grants and soft-term loans. Their membership consisted of moshav associations, mostly potential patrons of the service offered. Often the regional supply co-op was also a member, and in all cases it provided the enterprises in the region with short-term finance and purchasing services. Strong economic connections developed between the two kinds of regionals—the supply co-op and the service enterprises—a relationship that proved detrimental when the recent crisis erupted.

Zealous adherence to rural development by public agencies, easy access to credit through the supply cooperatives, and strong political regional lobbies resulted in overexpansion of service enterprises. This occurred particularly in the 1970s when credit was in ample supply and economic optimism ran high. Consequently, in the early 1980s many service enterprises operated under capacity—50%–60% by the estimate of the state controller. Not unlike firms in a cartel, regionals scrambled to get their share in the service enterprises and the expected benefits they were to yield. The final outcome, however, was that many of the enterprises did not cover their operating costs.

The supply cooperatives, assuming the role of the financiers of last resort, found themselves financing not only operating losses but

also debt service of the regional enterprises. As early as 1981, the share of credit to the regional enterprises in the assets of the co-op, shown in table 1, was 18.3%; it grew substantially thereafter. In another co-op we found that a regional slaughterhouse, which started operation in 1981 with equity equaling 25% of the value of its capital,[13] accumulated losses right from its start, and by 1985 its debt reached 2.5 times the value of its assets, most of that short term and to the supply co-op. This was an extreme case but not atypical. When the enterprises went bankrupt in 1985, they took the supply co-ops down with them.

**Cost of Debt**

Perhaps the greatest damage that inflation inflicted on the Israeli economy was the distortion of the cost of capital. Real interest rates varied markedly; cost of borrowing was at times extremely high while at other times, and for other loans, it was very low. For more than a decade, since the early 1970s, real rates of interest for most sources of credit were negative. This was particularly true for government-supported development loans until they were linked to the price index and tax-deductible interest payments were adjusted to inflation (these measures were introduced in 1978 and 1982, respectively). In a preliminary survey of eight cooperatives, both village and regional (fig. 1), we found that average effective real cost of outstanding debt was zero in 1971, and it declined gradually thereafter as interest lagged behind the accelerating inflation; it was minus 40%–50% per year in 1984. When inflation was halted in 1985, interest again lagged, and this time average real rates jumped to plus 15%–20%. Current cost of credit fluctuated even more and varied greatly between sources; in 1984 the real rate of interest on the subsidized government-directed short-term credit was minus 59%. In 1985 the real cost of overdraft facilities, one of the most expensive sources, was plus 100% per year.

**Credit Supply to Agriculture**

It has often been claimed in Israel that agriculture suffers from shortage of credit. However, examination of the available information reveals that credit has been in ample supply. Between 1970 and 1987 credit to agriculture increased more than it did for the economy at large and more than for industry (table 2). While the share of agriculture in net domestic product of the business sector has been 6%–7%, over the last 2 decades its share in the volume of credit was higher than 10%. With inflation, financial leverage increased. In 1986 the ratio of outstanding economy-wide credit to GNP was twice its 1969 value; in agriculture the corresponding ratio increased by a factor of 3.8. The ratio of credit to net capital increased in agriculture between 1969 and 1986 by a factor of four (fig. 2), while in industry it rose over the same

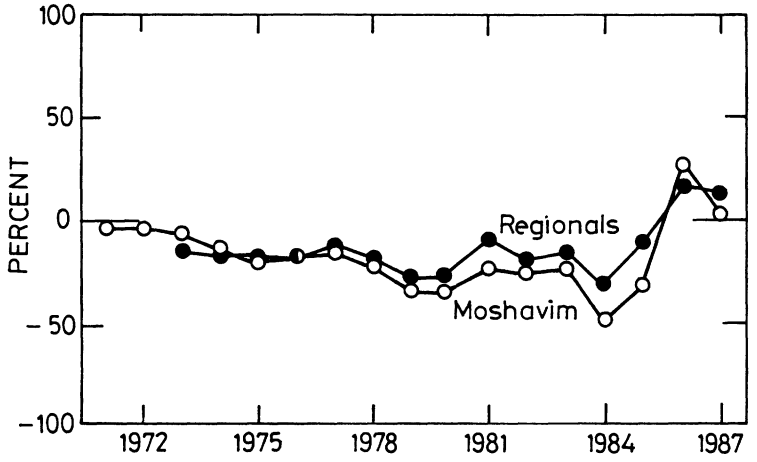


FIG. 1.—Real rates of interest: four Moshavim and four regionals

period by only 20%. As we have seen, credit was underpriced, and the low and negative real rates of interest, encouraging demand, evidently contributed to the feeling of shortage.

Another claim often made in Israel relates to inadequate term structure of credit. Not enough long-term loans were available, and investment projects had to be financed by short-term credit, creating a financing gap between the expected life of the assets and the duration of the loans. Again, with negative real interest rates and easy access to short-term credit, many farmers and cooperatives knowingly financed investment with short-term loans and knowingly created financing

TABLE 2

OUTSTANDING BANK CREDIT (End of Year)

| | INDEX OF REAL VOLUME OF CREDIT (1969 = 100) | | | CREDIT TO PRODUCT RATIO | |
|---|---|---|---|---|---|
| | Economy | Agriculture | Industry | Economy | Agriculture |
| 1970 | 138 | 136 | 124 | 31 | 48 |
| 1974 | 236 | 209 | 219 | 48 | 76 |
| 1979 | 351 | 335 | 327 | 57 | 101 |
| 1984 | 427 | 491 | 352 | 57 | 177 |
| 1987 | 535 | 655 | 402 | 67 | 182 |

SOURCES.—Bank of Israel, *Annual Bank Statistics,* various years, and the Research Department of the bank; Central Bureau of Statistics, *Statistical Abstracts of Israel,* various years.

NOTE.—The economy-wide credit to product ratio is the ratio to GNP (the public sector is included both in the numerator and the denominator of the ratio); in agriculture, the ratio is to the sector's product. The credit to product ratios in the first line of the table are for 1969.

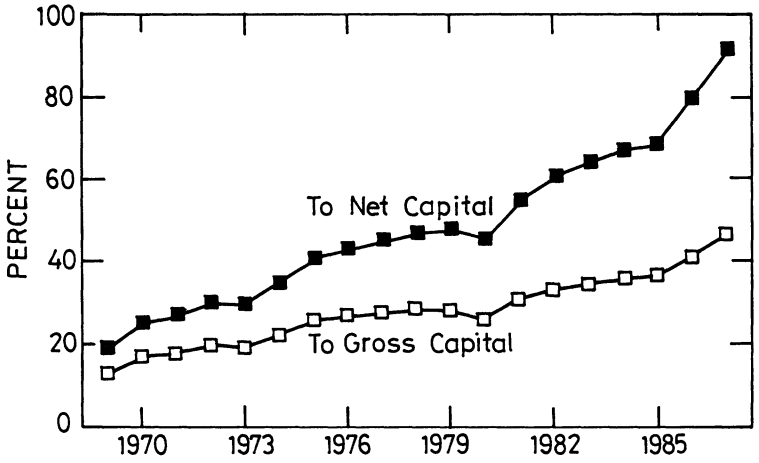


FIG. 2.—Financial leverage in agriculture: ratio of debt to capital

gaps. In part, however, the government was also responsible for the financing gaps. Government-approved development loans were often supplied with delays, forcing reliance on short-term finance. In periods of inflation, delays create not only temporary but also permanent gaps in financing due to the inflationary erosion of the real value of the loans, which were late to arrive. In addition, loans at nominal interest rates that reflected inflation even partly were of shorter than their specified duration. In real terms they were retired earlier than specified, and investors had to turn to short-term credit to finance the gaps thus created.[14]

Whatever the origin of the financing gaps, farmers and their organizations turned to the government for help, usually with the appropriate political backing. There were many cases, in recent periods almost one every year, of "conversions"—rescheduling of loans. Short-term credit was replaced by long-term loans, mostly on concessionary terms. The recurrence of the conversion episodes, sometimes general and sometimes specific to certain farms or regions, was one of the major reasons for the widespread belief that agriculture would not be allowed to fold. However, the remedy was not always effective. In many cases farmers and cooperatives returned to the preconversion maturity structure just several years after rescheduling.

With negative interest rates and ample supply of credit, investment expanded to the range of negative returns. Returns on capital in agriculture, which were 6%–7% in the mid-1970s, decreased gradually and were minus 4% in 1987. Detailed information on investment in consumption assets is not available but, as visitors to moshavim (and kibbutzim) could easily observe, houses grew and the number of cars increased. It seems that at least part of the capital gains due to negative cost of capital were channeled to consumption.

**Government**

The particular circumstances of the early stages of development in Israel, in which penniless immigrants were settled with public assistance on national land (many of them in the early 1950s), created special fosterage relations between the moshavim and the public agencies. Over time many of the newly settled operators acquired farming skills, and cooperation also became well established; but the view, held not only by farmers, that it was the role of the government to maintain the welfare of the farming sector and the expectation that the government would shoulder this responsibility did not wane.

Cooperation when agriculture expanded, was, and still is, supported by the government; for example, new immigrants were settled in moshavim as a matter of policy, and land and water were allotted to the moshav to be distributed equally among the members. Today production quotas are allocated on a village basis, and the moshav decides on internal distribution; government agencies usually consult with the cooperative association in the moshav on the allocation of long-term loans to farm operators.

The most profound public involvement has been in regulating credit. By deciding on the allocation of subsidized credit, the government affected regional development, product mix, and farmers' income. The dependency on the government and the expectation that it will bail out farmers and moshavim in trouble created moral hazard problems, not unlike those that mutual guaranty created in moshavim and regional cooperatives. Lacking the usual mechanism of collateral, the government turned to close monitoring—"concentrated credit." In a program started in the early 1960s, a moshav or a kibbutz concentrated all its financial activity in a single bank, and credit was supplied, either for investment or for short-term need, only with the approval of a steering committee consisting of representatives of the bank, the Ministry of Agriculture, and other public agencies.

Joining "concentrated credit" was voluntary and moshavim were lured by additional loans. And indeed, within a few years most of the moshavim in the country participated in the program. However, the increasing credit supply in the 1970s, and particularly the convenient sources offered by the regional cooperatives, eliminated the advantages of concentrated credit for the moshavim, and the program folded in the mid-1970s. Thus the problem of moral hazard in the moshavim was in fact recognized, and tools were created to overcome it, at least partly, but the will to maintain a strict policy could not withstand the flood of available credit. (Concentrated credit is now proposed again in reaction to the current crisis.) Moreover, the government supported the supply cooperatives and encouraged them to expand their role—they often received directed credit on favorable terms, were assisted in the establishment of the regional service enterprises, and were made

parties to development loans by advancing short-term credit to bridge over the delays in government-approved loans. Evidently, even before the recent acute crisis, and despite the experience with recurrent financial difficulties and loan rescheduling in the moshavim, the dangerous implications of unconstrained operation of financial intermediaries were not understood or perhaps they were understood but not acted on by the government.

**Crisis**

On July 1, 1985, the government adopted a package of policy measures designed to curb inflation, which was then running at 500% per year. Wage and price rises were halted by decree, government outlays were curtailed in order to balance the budget, credit supply was squeezed—the banking system's reserve ratio rose by more than 75% between 1985 and 1986—and the exchange rate was pegged. These measures created an unprecedented increase in the real rate of interest; it reached 100% (annualized) on some kinds of credit. The rise in interest increased the cost of capital to holders of nonlinked credit, but the real burden of index-linked loans with fixed real interest rates also increased. Loans are mostly linked to the "index known," which means in Israel that linking is with 1-month delay; when inflation is stopped, indexation calculation goes on for 1 additional month (the indexation on a 2-year loan taken on July 1, 1984, was calculated for 13 high inflationary months and 11 low inflationary ones, while the loan was kept for equal periods of high and low inflation). This factor alone increased the real value of index-linked debts by 10%–20%.

Once creditors realized that agriculture, particularly cooperative agriculture, could not continue to service its debt with the exceedingly high, postreform real rates of interest on short-term loans, and that the government could not bail the sector out any more, the crisis erupted. Private lenders and commercial banks were not willing to extend additional credit and insisted that first loans be repaid. This was impossible, and most regional cooperatives and many of the associations in the moshavim collapsed. Farm production has continued, often with private credit arrangements (wholesalers, e.g., pay in advance for farm products) and the farmers' own resources. But this cannot be a complete solution to the crisis. In most cases, the available sources will be insufficient for investment in equipment and machinery, and farmers will find it hard to renew their production assets; and, in addition, banks and other creditors are still demanding repayment of their loans. For most members in the cooperatives the heavy burden is not their own debt but their share in the mutual liabilities—their share in covering the debt of several heavy borrowers in the moshav and the debt of the regional enterprises.

Agriculture could not repay or service its debt in full; the question

was how to distribute the losses. Once this was realized, the government stepped in offering support in an effort to reach a debt settlement between the lenders, particularly the banks, and the moshavim. An agreement was formulated in 1988, but its implementation has been slow, as farmers still hope that they can gather political support for a more favorable settlement.

**Recapitulation**

Inflation created a special opportunity for agriculture in Israel and particularly for cooperative agriculture. With negative real interest rates and erosion of loans, agriculture could increase its equity capital and emerge from the inflationary period economically stronger. This did not happen; as we have seen, financial leverage increased in agriculture, returns on capital, and probably also savings, were negative,[15] and farmers sank deeper in debt, partly to finance investment in production assets (often with overcapacity), partly to finance housing and consumer durables, and partly to increase current consumption and standards of living. Considerations of short-run inflationary gains dominated long-run economic health.

Myopia is common; but it afflicts cooperatives more strongly than individuals and private enterprises because of the cooperatives' political structure and the ensuing characteristics, which lead to moral hazard behavior, free riding, agency costs, and horizon problems. But the cooperatives were not the only ones at fault. Credit was also distributed by the commercial banks; it was their money that was lent, and it was their responsibility to secure the loans and to control their use. Evidently they neglected this responsibility.

The main blame for the breakdown in agriculture, however, lies with the government. By its policy, which was a result of its effort to accelerate development and its yielding to political pressure, it created the false impression that it would bail agriculture out of any difficulty. Moreover, the government carries the major blame for overcapacity in agriculture. Farmers and regional officers naturally tend to increase their share in aggregate capacity. Since the funding of most of the development projects was with government approval and assistance, it was the duty of the government to examine the aggregate picture and to balance the desire to invest against the needs. This was not done; the decisions of the policymakers and even the recommendations of the Planning Authority of the Ministry of Agriculture encouraged overinvestment. Governments are often too weak and they yield to the pressure of short-run interests. As a result, the crisis in cooperative agriculture is largely the outcome of the favoritism it enjoyed for a long time.

Attempts were made to divide quantitatively the blame for the crisis, and the responsibility for its magnitude, among the parties—the

government, the banks, and the farm sector. A typical approach was to simulate financial development with alternative rates of interest and to attribute to macroeconomic policies excess debt over the level that the debt would have reached with "acceptable" rates of interest. Calculations of this sort overlook the role of credit cooperation in the creation of the debt, in reliance on short-term and risky sources of finance, and in the erosion of equity capital in agriculture. But then again, the cooperatives and the banks were encouraged—explicitly and implicitly—to follow risky and evidently reckless strategy by government action and advice. We are left, therefore, with the qualitative and somewhat subjective judgment that, though each of the sectors was responsible for its part in the creation of the conditions that led to the crisis, the major blame lies with the government.

Cooperation in general, and cooperation in credit in particular, has many advantages but, as we have seen, it also suffers from inherent weaknesses. It is not clear whether intensive cooperation in agriculture—if not heavily assisted by public funds—can succeed or even survive in the long run the economic test of competitive markets. But the test of the current crisis is much harsher. Even if it is basically viable, cooperation may now be destroyed because of the particular crisis conditions.

**Lessons and Recommendations**

The failure of cooperative agriculture was a failure of control. If cooperation in agriculture and particularly cooperation in credit is to survive and succeed, control has to be tightened. Control is expensive, however, and often inconvenient; both incentives and appropriate structures are needed to assure optimal control.

First and foremost, the government cannot and should not take explicit or implicit responsibility for agriculture or for cooperatives. Once the government sheds its responsibility, both farmers and lenders will know that they are the sole residual claimants for success and for failure. It will be in their direct interest to tighten control and to follow prudent economic policies. Mutual guaranties should be severely limited to reduce moral hazard behavior at the farm and in the cooperative; and external market control of cooperatives should be established wherever possible.

A necessary condition for effective control is the availability of accurate information. Financial reports, including balance sheets and income accounts, should be prepared and published regularly. The reports will have to be adjusted for inflation as prices are still rising in Israel at 15%–20% per year.

Supply co-ops will have to be limited to commercial activity; they should no longer act as financial intermediaries. The regional service enterprises ought to be incorporated into limited liability companies

with members of the owner-moshavim receiving marketable shares. Moshavim and their members should be free to patronize service enterprises of their choice, whether in their region or elsewhere.

Members in the moshavim should also be free to leave their cooperatives and to operate privately or to form alternative organizations, revealing and realizing in this way their preferences for stronger or weaker cooperation. Exit is expensive; it raises the average cost of services to the remaining members, but it is often the only way for patrons to enforce efficiency and for minorities to voice their opposition.[16] Lack of control may be more expensive.

The structural changes that we are proposing—and in many cases we adopt proposals that have already been made in Israel—are not easy to implement. Exposing the regional enterprises to market competition may seem extremely painful in the short run; and indeed the Debt Settlement Administration is attempting to cure the enterprises by erasing their debt and assuring capacity operation by tying moshavim to their services. In the long run this is a recipe for inefficiency. Similarly, in moshavim, exit is not simple. The exiting farmer may forfeit his allocation of land and water and, more probable, his production quotas and development loans. The implementation of the changes we are proposing will require modifications of both law and attitude in Israel.

## Notes

* This article draws on our report to the World Bank, "Experience with Credit Cooperatives in Israeli Agriculture," World Bank Working Paper WPS 156 (1989). The preparation of the article was partly supported by the United States–Israel Agricultural Research and Development Fund, BARD. We are indebted to Avishay Braverman for raising the issues discussed in the article, for assistance, and encouragement. Responsibility for the analysis and the opinions expressed is ours.

1. J. D. Von Pischke, Dale W Adams, and Gordon Donald, eds., *Rural Financial Markets in Developing Countries—Their Use and Abuse* (Baltimore: Johns Hopkins University Press, 1983); Avishay Braverman and J. Luis Guasch, "Rural Credit Markets and Institutions in Developing Countries: Lessons for Policy Analysis from Practice and Modern Theory," *World Development* 14 (1986): 1253–67; Dale W Adams, "The Conundrum of Successful Credit Projects in Floundering Rural Financial Markets," *Economic Development and Cultural Change* 36 (1987): 355–86.

2. For a successful experiment with rural credit (so far, at least), see Mahabub Hossain, *Credit for Alleviation of Rural Poverty: The Grameen Bank in Bangladesh* (Washington, D.C.: International Food Research Policy Institute, 1988).

3. Avishay Braverman and J. Luis Guasch, "Institutional Analysis of Credit Cooperatives," World Bank Discussion Paper (World Bank, Washington, D.C., 1988).

4. Clive Bell, "Credit Markets and Interlinked Transactions," in *Handbook of Development Economics,* ed. Hollis Chenery and T. N. Srinivasan (Amsterdam: North-Holland, 1988), 1:763–830; Joseph E. Stiglitz, "Economic

Organization, Information, and Development," in Chenery and Srinivasan, eds., pp. 93–160.

5. Deteriorating terms of trade were also blamed in Israel for inducing the crisis. The terms deteriorated steadily over the decades of the 1960s and the 1970s (at an average yearly rate of 2.4%), but this trend was reversed in 1981 and the terms of trade of agriculture have improved since then. They could not have caused the crisis in 1985.

6. For additional details, see Zvi Lerman, "Capital Structure of Agricultural Co-operatives in Israel," *Yearbook of Co-operative Enterprise 1989* (Oxford: Plunkett Foundation for Co-operative Studies, 1989).

7. We lump together government and other public agencies.

8. Clare LeVay, "Agricultural Cooperative Theory: A Review," *Journal of Agricultural Economics* 34 (1983): 1–44.

9. P. Vitaliano, "Cooperative Enterprise: An Alternative Conceptual Basis for Analyzing a Complex Institution," *American Journal of Agricultural Economics* 65 (1983): 1079–83; Pinhas Zusman, *Individual Behavior and Social Choice in a Cooperative Settlement* (Jerusalem: Magnes Press, Hebrew University, 1988).

10. Zusman.

11. Yoav Kislev and Arie Marvid, *A Supply Cooperative Mishorim* (in Hebrew) (Jerusalem: Magnes Press, Hebrew University, 1988).

12. On the theoretical basis for these arguments, see Joseph E. Stiglitz and Andrew Weiss, "Credit Rationing in Markets with Imperfect Information," *American Economic Review* 71 (1981): 393–410.

13. Kislev and Marvid. A large part of the equity accumulated was due to inflationary erosion of unlinked loans.

14. As an example, consider a 2-year loan of $100 at zero real interest; the yearly rate of inflation is 100%. There are two alternative payment schedules, and in both the principal is repaid at the end of the second year: (*a*) a 70% nominal rate of interest, paid at the end of the first and of the second year; (*b*) the loan is linked to the price index and the only payment is at the end of the second year. Debt service will then be as follows:

| | *Alternative a* | *Alternative b* |
|---|---|---|
| End of first year | 70 | . . . |
| End of second year | 170 | 400 |
| Present value at the beginning of the first year (discounted at 100%) | 77.5 | 100 |

The nonlinked loan carries a nominal interest lower than the rate of inflation and involves a grant of $22.5. But it requires, in the example, repayment of 35% of the principal at the end of the first year. This is the sense in which investors may be forced to short-term financing of their projects—loans carrying nominal interest rates are of shorter duration than their stated maturity.

15. Negative returns and consumption of capital gains may reflect optimal behavior when interest rates are negative, but erosion of equity capital can hardly be optimal.

16. A. O. Hirschman, *Exit, Voice, and Loyalty* (Cambridge, Mass.: Harvard University Press, 1970).