

## STRUCTURE AND REFORM OF AGRICULTURE IN ISRAEL

*Yoav Kislev\**

*Editors' Note:* Throughout Central and Eastern Europe and the successor states of the USSR, forms of cooperative agriculture will persist for some time, even with private ownership of land and strengthening of the market economy (see Brooks, this volume). Within the region many agriculturalists expect new producers' cooperatives to be economically viable in a market economy. The Israeli experience is one of the few in which collective agricultural production on a large scale has been attempted in a market economy open to world trade. As Yoav Kislev argues, the experience has not been wholly negative, but neither does it support the view that agricultural producers' cooperatives can be strong, durable, and competitive forms of organization in a market economy.

Israel's agriculture has been subjected to excessive cooperation and common action, mostly due to government policy. Forty years ago the government made membership in cooperatives the only option available to new settlers, and it failed to create the conditions for individual action when circumstances changed. The government encouraged cooperatives to overexpand, and it forced common action, through, for example, monopolistic marketing boards.

The record of cooperation in Israeli agriculture is not wholly negative. Cooperation and active governmental policies contributed significantly to the impressive achievement of the sector: the creation of a sophisticated and technically advanced agriculture producing abundant amounts of food and fiber for home and export markets. At the same time, however, cooperation and government intervention propelled agriculture into substantial difficulties during the last several years. Rather than presenting a balanced view of Israeli agriculture, this paper focuses on recent experience and problems.

### GROWTH AND INFLATION

Israel is a small country with a population of 4.5 million. Half of the country is desert, and half of the 430,000 hectares of cultivated area is under irrigation. Israel is a middle income country with per capita GNP of \$9,500.<sup>1</sup> Agriculture contributes 3.5 percent of the Net National Product and 10 percent of the country's exports, and employs 5.2 percent of the labor force.

---

\* Yoav Kislev is professor of agricultural economics at the Hebrew University, Rehovot, Israel.

<sup>1</sup> Unless stated otherwise, all dollar amounts are current U.S. dollars.

After the war of independence of 1948, the newly established state had to struggle for economic survival, and absorb a large number of immigrants who came almost simultaneously with the flight of 600,000 Arab refugees. By the mid-1950s, Israel had embarked on a path of economic growth that continued at record rates for twenty years. Growth slowed significantly after 1974.

The country had two periods of severe inflation. The first was in the early 1950s when a fledgling government strove to finance war and reconstruction with a small tax base and a poor administration. Prices increased 56 percent in 1952. The second wave of inflation started in the mid-1970s and accelerated thereafter. It halted in 1985 after reaching an annual rate of close to 800 percent. Since then, inflation in Israel has been approximately 20 percent per year. The rising prices in the inflationary periods were fueled by an expanding supply of credit, much of it imported.<sup>2</sup> Market interest rates lagged behind inflation, and real rates of interest were negative for most of the years between 1974 and 1985. These conditions encouraged overinvestment and discouraged saving. Interest rates also lagged when inflation decelerated in 1985; consequently, real rates reached extremely high levels. Agriculture was much affected by these macroeconomic and monetary developments. The sector enjoyed growth and rising incomes when credit was in ample supply, but found itself in a deep crisis when inflation halted.

#### **AGRICULTURE: FOUR DECADES**

The 1950s began with food shortages and rationing. The foreign currency constraint eased early in the decade and agricultural expansion, through settlement and increased utilization of factors of production, became possible. The number of moshavim (family-owned farms in cooperatives) and kibbutzim (communes) more than doubled, as did the cultivated area. The total irrigated area quadrupled, and output grew tenfold in the following four decades. Terms of trade and real output prices improved until approximately 1965, but followed a downward trend thereafter (table 15-1).

Exports expanded in magnitude and diversity during the 1970s, and production and marketing became increasingly sophisticated. Investment in the rural sector increased substantially toward the end of the 1970s. In the kibbutzim, a great part of the investment was in manufacturing enterprises. This surge paved the way for the later crisis.

The beginning of the 1980s differed little from the preceding decade. Gradually, however, the agricultural sector stagnated; productivity did not rise with investment, and agriculture, particularly its cooperative sector, accumulated a debt burden it was later unable to service. The crisis erupted in July 1985 when, as part of anti-inflationary policy, credit was severely squeezed and rates of interest sky-rocketed.

The debt burden continues to create uncertainty about the sector's prospects. Agriculture may emerge in a few years reformed, stronger, and healthier, but the pill may also be too hard to swallow.

---

<sup>2</sup> This was partly recycled oil money which was made available on convenient terms to Israeli banks.

Table 15-1. *Israeli Agriculture: Key Data, Selected Years 1955-88*

Year	Irrigated Area (thousands of hectares)	Employment (thousands)	Gross Capital Stock Index (1976=100)	Net Domestic Product Index (1975=100)	Terms of Trade <sup>a</sup> (1976=100)	Real Output Price Index <sup>b</sup> (1976=100)
1955	890	102	35	19	—	—
1965	1,510	114	69	51	119	99
1975	1,800	80	95	95	100	102
1985	2,327	89	112	177	90	85
1988	2,156	80	109	172	95	66

— Not available.

a. Ratio of output to input price index.

b. Output price deflated by the consumer price index.

Source: Israel 1989.

## GOVERNMENT INTERVENTION IN AGRICULTURE

Israel is a free market economy mixed with government intervention that is especially intensive in agriculture and in the capital markets. The government's goals in agriculture are to support farm income, to improve food supply, and to maintain the rural population. Throughout the years, Israel's agriculture was built mostly by penniless immigrants ignorant about farming practices; public support for agriculture had many dimensions beyond agricultural production. The government intervenes in planning, the supply of public services, price support, and trade. The government is involved in almost all aspects of farm life, particularly in cooperative agriculture.

Agricultural production policies are chiefly implemented by marketing boards. These are semi-democratic bodies, with nominated members representing growers, traders, and consumers. The boards are responsible for control of production, marketing, exports, and the distribution of subsidies linked to product prices. (Investment capital and water are also subsidized, but not through the marketing boards.)

Planning and subsidizing go hand in hand. Only livestock products are subsidized on a regular basis and livestock production is controlled quite effectively. Efforts to control the production of nonsubsidized vegetables and fruits have mostly failed. The rate of support determines the effectiveness of planning in agriculture. Subsidies have not been stable; product price supports in 1986 were only one-tenth of their 1984 level. Such wide fluctuations may not occur in the near future, especially if inflation is kept at its current levels. In any case, agriculture cannot expect to enjoy the same kind of support it enjoyed in the past. The government budget is now tighter, and a significant part of the funds allocated to agriculture will be used in the future to alleviate the financial burden of the sector. Agriculture will, moreover, not be the critical sector in the absorption of a new generation of immigrants.

The government's intervention was most successful in the livestock industry. Most of the time the goals of ample supply at stable prices and reasonable income to growers were achieved. Planning failed, however, in major policy areas. An optimal water policy was not implemented. Not only did the government not prevent cooperative agriculture from sinking into debt, it contributed directly to the accumulation of excess capacity and thus to the current crisis in Israel's agriculture. The government has dealt ineffectively with marketing boards and agricultural exports, citrus in particular, and rejected innovation. The government was similarly ineffective in dealing with structural problems in the moshavim and prevented long overdue changes from occurring.

These "government failures" are not incidental. They reflect the government's yielding to myopic pressure of farm groups guided by narrow rationality (Zusman and Rausser 1991), arrogant rejection of professional advice, basic mistrust in the market process, favoritism (often motivated by good intentions), and inability to implement necessary but painful changes. The government has modified its ways only when dragged into deep difficulties, or it has clearly and demonstrably lost the ability to enforce its policy. Water management, the Citrus Marketing Board, and the financial crisis in cooperative agriculture are relevant examples.

## WATER

There is no private ownership of water in Israel. Water is a common resource, and belongs by law to the state, which controls its use. The national system of reservoirs and conduits connects all important sources and users in a single network; the system both stores water and moves it from the rainy north to the dry south.

The government allocates pumping quotas and user's rights. Water charges are set by the government in consultation with a parliamentary committee in a process open to political pressures (skillfully applied by the agricultural lobby). Irrigation water is subsidized at two levels; the operating costs of the national water company and of regional suppliers are supported, and the national system is not charged for the capital cost of the main conduits, which are constructed with public funds.

"Water carries the subsidy to the end of the pipeline," is the argument often made in support of water subsidy as a means of promoting farming in remote regions. Water subsidization, however, does more than promote farming. It changes the pattern of agricultural production in Israel. Cotton, the country's most important field crop, would have virtually disappeared if water were charged at cost. Similarly, much of the citrus production would have been eliminated. Subsidization increases the demand for water and the political pressure both to allocate more water and to invest in the development of water supply.

The Water Authority, the agency in charge, is run mostly with farmers' interests in mind, and it often yields to short-run pressures. The consequences have been overutilization, hydrological deficits, the intrusion of sea water into the coastal aquifers, the contamination of reservoirs, and a reduction of the carry-over capacity of the system. These detrimental effects are accumulating only gradually and are hard for nonprofessionals to detect and comprehend, but now (summer 1991) the combination of three dry years and poor reserves had forced drastic curtailment of supply with harmful effects on farms, particularly on orchards. The crisis was

aggravated when the Authority delayed its response and announced cuts in supply after the planting of summer crops.

## THE CITRUS INDUSTRY

Citrus fruits, particularly oranges, were the economy's most important export at the beginning of the 1950s; at that time the area planted with citrus occupied half the irrigated land in the country. In the 1950s, the citrus area expanded; new orchards were planted as demand increased in Europe and as irrigation, skills, and availability of capital in Israel increased.

In most recent years, however, the industry has declined (table 15-2). Orchards were uprooted and exports of fresh fruits decreased over the last fifteen years to half of their previous volume. Part of the decline in tonnage reflects a shift from the bulky traditional varieties to newer, more expensive types, but most of the reduction is the result of cuts in production and diversion of fresh fruit to processing.

*Table 15-2. Selected Israeli Citrus Industry Statistics*

<i>Statistic</i>	<i>Average 1976-79</i>	<i>1983</i>	<i>1988</i>
Orchard area (thousands of hectares)	42	37	36
Export of fresh fruit (thousands of tons)	925	700	452
Percentage share of total production	61	45	40
Value of exports (millions of 1986 U.S. dollars)			
Fresh fruit	428	248	189
Processed fruit	210	226	344
Terms of trade of fresh fruit in export (ratio of FOB price to input price index)	100	87	89

Source: Kislev 1990

In cutting production, farmers reacted to changes in the terms of trade that deteriorated at the farm gate further than indicated in table 15-2. Growers are the residual claimants in the flow of revenue from consumers downward, and as prices in Europe declined due to an increasing supply of fruit (by Israel and its competitors), the processors, packers, and shippers continued to cover their costs.

Moreover, fruit handling costs are high. Until recently the Citrus Marketing Board was made up only of packers. Although some of them are growers in their own right, it has been and still is the interests of packers that dominate the Board. Consequently, the packing and shipping industry is run as a cartel with overcapacity and inefficiency.

By law, all marketing of citrus, both domestic and export, is handled by the Board. The Cotton Board is the only other board that directly handles the marketing of its product. The majority of the boards control their markets to some extent but are not involved directly in

commercial operations. The Citrus Board accepts the fruit from the packers and ships it to Europe lower grades are delivered to processors. Relatively small quantities go to the local consumer markets where monopoly prices are charged. The growers receive pooled prices that reflect quality and harvesting time. The Board is also responsible for pest control and planning of areas, regions, and varieties. It functions as the industry's political lobby and participates in the financing of research and its direction.

Under the leadership of the Board, the Israeli citrus industry missed two major trends in the world markets in the last decades. Israel lagged in developing and adopting new varieties of citrus, particularly easy-to-peel types and sweet grapefruit, and the industry ignored a shift in consumption from fresh fruits to reconstituted concentrated juice. Consequently, by the time the Israeli growers came to the markets with the new varieties, prices were already down to competitive levels, and Israel did not even try to develop orchards exclusively for processed fruit of the kind grown by the major producers of concentrates in Florida and Brazil.

The reduction in terms of trade and the disillusion with cooperative action in recent years have fueled a "growers' mutiny". Farmers have grouped into associations struggling for free marketing and competition in exports. Perhaps naively, they are willing to give up the advantages of their monopoly position in the local market, the bargaining power of the Board in the export markets, the economies of scale in shipping and handling, and much of the expertise accumulated through the years in the Citrus Marketing Board. To date, they have achieved only two minor gains. The Ministry of Agriculture abolished planting permits in citrus as well as in the other tree crops. By a decision of the supreme court, growers may now ship their products directly to manufacturing plants, and escape service charges of the packers and cross subsidization of exports from domestic sales. Other cases are pending before the court. If these small changes signal the direction, the Board will gradually lose its grip on the industry.<sup>3</sup>

#### THE FINANCIAL CRISIS IN COOPERATIVE AGRICULTURE

Eighty percent of Israel's agricultural product comes from cooperative farms. A major form of cooperation in agriculture has been financial. Financial cooperation flourished for several decades, but has found itself recently in deep crisis, the roots of which lie in the structural weaknesses of cooperation, in government action and inaction, and in macroeconomic factors, particularly inflation and the policies adopted to fight it. Debt settlement agreements have recently been reached, but it is doubtful that the sector will be able to honor its obligations.

*Moshavim and kibbutzim.* A moshav (plural moshavim) is a farming community in that 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 farm enterprises.

---

<sup>3</sup> The Citrus Board was recently stripped of its monopoly power; starting with the marketing season 1991/92, competing firms will export directly.

A kibbutz is a commune. Members work together and receive from the kibbutz food, shelter, health care, education, clothing, and a relatively small monetary allowance that they may spend at their discretion. In principle, a kibbutz member owns his or her personal belongings but no other property.

Differences in the degree of cooperation induced many other operational differences between kibbutzim and moshavim. Two examples are noteworthy:

(a) As the labor force left agriculture, members of the moshavim shifted mostly to part-time farming and found additional employment off the farm. The kibbutzim, on the other hand, invested at their own risk in the creation of employment opportunities for their members in manufacturing and services.<sup>4</sup>

(b) Since in the kibbutzim consumption is communal, the management of a kibbutz has much larger control over the consumption level of its members than the cooperative association in the moshav. The modern kibbutz, however, cannot lag too far behind the country's standard of living, or members, particularly young members, will leave. Some are already leaving (not all for economic reasons, to be sure).<sup>5</sup> These considerations dictated and still dictate much of the behavior of the kibbutzim in economic and financial affairs.

Moshavim and kibbutzim are members of two types of second-order cooperatives; supply cooperatives set up to purchase farm inputs for the moshavim and the kibbutzim, and service enterprises (feed mills, slaughter houses, transportation services, and others). Both types of supply cooperatives operate on a regional basis, though some nationwide cooperatives also exist.

*Financial Intermediation.*<sup>6</sup> Starting with the transfer of suppliers' credit to their members, both the moshavim and the supply cooperatives expanded into full-scale financial intermediation. This tendency was reinforced by the fact that most farm land in Israel is nationally owned and moshavim and kibbutzim cannot use it as collateral. The pivotal role of credit intermediation in the activities of the moshav and the supply cooperative is demonstrated in their balance sheets in table 15-3. Members' debit balances were by far the largest assets the associations held 76.6 percent of the total in the moshav and 60.9 percent in the supply cooperative. The moshav and the regional cooperative raised capital and transferred it to their

---

<sup>4</sup> There is an interesting resemblance between the final outcomes. Only a third of the operators in the moshavim draw all their income from agriculture, and farming contributes on average a third of the total income in the kibbutzim.

<sup>5</sup> One dimension of the standard of living is an "exit allowance" which members are entitled to receive on leaving. It increases economic security, but kibbutzim cannot always keep this obligation, particularly now with tighter financial conditions and increasing departures.

<sup>6</sup> This section depicts intermediation as it was practiced before 1985. One of the consequences of the crisis has been a great reduction in the financial interconnection between cooperatives especially in the sector of the moshavim.

Table 15-3. Balance Sheet Composition of a Moshav Association and a Supply Cooperative, September 30, 1981 (percent of total assets)

ASSETS			LIABILITIES		
	Moshav	Supply Coop		Moshav	Supply Coop
Fixed assets	3.7	3.5	Equity	0.7	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	0.6	34.5
Accounts receivable:			Short-term loans from		
Nonmembers	12.2	3.6	supply cooperatives	76.9	..
Regional enterprises	..	18.3	Members' credit balances	13.5	21.2
Total Assets	100.00	100.00	Total Liabilities	100.00	100.00

.. Negligible.

*Note:* The data for the supply cooperative 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. Also, balance sheets are prepared in historical values, not adjusted for inflation. Finally, 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.

*Source:* Zusman 1988.

members. The associations also functioned as clearing houses, accepting deposits from members with financial surpluses (members' credit balances in table 15-3) for use by others. The supply cooperative and its moshavim were strongly linked together: through credit, as can be seen in table 15-3, and through joint ventures in regional service enterprises. The relations between the kibbutzim and their supply cooperatives were similar to those depicted in table 15-3 but there are no financial transactions between the kibbutzim and their members.

The supply cooperatives provide the moshavim and the kibbutzim finance services with steady lines of credit and convenient saving facilities. The moshavim provided their members with the same kind of services. Interlinkages between marketing through the cooperatives and credit operations provided the institutional setup that replaced collateral for loans in cooperative agriculture. In addition, virtually all members—individuals, kibbutzim, and moshavim—were parties to mutual guarantees and all were mutually responsible for loans raised by their cooperatives. Proximity, central purchasing of inputs, product marketing, and financial interdependency should have, in principle, allowed close monitoring and control of the economic affairs of the member-borrowers. For a period cooperative credit functioned efficiently (as witnessed by the increased capital intensity in agriculture compared to industry in table 15-4), but it failed the test of extreme economic circumstances in the inflationary period, and its weakness resulted in the recent crisis.

*Regional Enterprises.* These are second-order service cooperatives, the members of which are moshav associations and kibbutzim who use the service offered. Often the regional supply cooperative is also a member of the regional enterprise, and in all cases the two kinds

of regionals—the supply cooperative and the service enterprises—are strongly connected financially, a relationship that proved detrimental when the recent crisis erupted.

Zealous support of rural development by public agencies, easy access to credit through the supply cooperatives, and strong political regional lobbies all resulted in overexpansion of most of the service enterprises. This occurred particularly in the 1970s when credit was ample and economic optimism ran high. Consequently, in the early 1980s, many service enterprises operated at less than full capacity and could not cover their operating costs.

In the late 1970s and early 1980s, inflation eroded most of the debt of the regional supply cooperatives but circumstances changed with the financial markets' adjustment to the inflationary environment. The supply cooperatives assumed the role of financiers of last resort, and found themselves financing not only operating losses, but also debt service of the regional enterprises. A few of the enterprises collapsed and went bankrupt in the crisis of 1985, and took the supply cooperatives down with them.

*Table 15-4. Outstanding Bank Credit in Agriculture and Industry, Selected Years*  
(percent)

<i>Year</i>	<i>Volume of Real Credit</i>		<i>Ratio of Debt to Net Capital</i>	
	<i>Agriculture</i>	<i>Industry</i>	<i>Agriculture</i>	<i>Industry</i>
1969	100	100	19	52
1974	209	219	35	69
1979	335	327	48	75
1984	491	352	67	70
1987	655	402	79	64

*Note:* Real credit is the index of outstanding debt deflated by the consumer price index.

*Source:* Kislev, Lerman, and Zusman 1991.

*Government.* The government has always supported cooperation in agriculture. New immigrants were settled in the cooperative moshavim as a matter of policy. Land and water were allotted to the moshav and distributed equally between the members. Production quotas were allocated on a village basis, leaving internal distribution to the moshavim, and government agencies usually consulted with the cooperative association in the moshav on the allocation of long-term loans to farm operators.

The most profound public involvement was in credit. The government raised capital on the markets in Israel for its budgetary needs, thus crowding out private sources of investment. To remedy the shortage it created, the government distributed credit and subsidized it. Moreover, it was also often ready to offer additional credit to credit enterprises—farm cooperatives in particular—which ran into difficulties. The dependency on the government and the expectation that it would bail moshavim and kibbutzim out of trouble created moral hazards.<sup>7</sup> Cooperatives at all levels were willing to rely on large amounts of debt and banks

<sup>7</sup> Moral hazard arises in situations where economic agents do not bear the full consequences or benefits of their actions because of uncertainty or restricted contracts; broadly, the hazard is the action of economic agents in maximizing their own utility to the detriment of others.

were willing to lend, all trusting the government to save them in case of difficulty. These moral hazards were in fact recognized by the government, which made vigorous efforts to control the consequences in the 1960s. The will to maintain a strict policy could not withstand the flood of credit in the late 1970s, however. Moreover, the government itself encouraged uncontrolled expansion and overinvestment.

*Aggravating Policy Factors.* The roots of the current crisis in Israeli agriculture are in excessive expansion of investment and debt of the agricultural sector and particularly of cooperative agriculture in moshavim, kibbutzim, and their regionals. The deep crisis and the difficulties agriculture now faces were aggravated by several policy factors.

One of the anti-inflationary policy measures adopted in July 1985 that was particularly hard on the production sector was a severe credit squeeze that caused an unprecedented increase in the rates of interest (100 percent per year on overdraft facilities, for example) and a reduction in credit availability. These hastened and intensified the agricultural crisis.

Another such measure was an exchange rate pegging policy adopted to stabilize the local price system (creating a "monetary anchor"). In fact, there were three events of devaluation between June 1985 and December 1988; they amounted to a change of 34 percent in the nominal exchange rate of the dollar, while the consumer price index rose 84 percent over the same period. As a result of this and other factors, terms of trade of agricultural exports deteriorated by a third between 1980 and 1988 after improving 15 percent over the 1970s.

Simultaneously with the deterioration of the terms of trade, the real value of fresh agricultural exports (not including processed food) decreased by 10 percent between the second half of the 1970s and the 1980s. Citrus exports suffered particularly (table 15-2). Since the domestic demand for agricultural products expanded only slightly, the reduction in exports was severely harmful to agriculture. The sector's income fell substantially in the 1980s.

*Crisis.* The crisis erupted at the end of 1985 once creditors realized that agriculture, particularly cooperative agriculture, could not continue to service its debt in view of exceedingly high post-reform real rates of interest on short-term loans, and that the government could no longer bail out the sector. Most regional cooperatives and many of the associations of moshavim collapsed. Farm production has continued, often with private credit arrangements and the farmers' own resources. But this cannot be a complete solution to the crisis, and banks and other creditors are still demanding repayment of their loans. For most members of cooperatives their 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 enterprise.

Agriculture cannot repay or service its debt in full; the question therefore is how to distribute the losses. Once this was realized, the government offered support in an effort to reach a debt settlement between the banks, on the one hand, and the moshavim and kibbutzim on the other. Agreements have been formulated<sup>8</sup> but their implementation has been slow as

---

<sup>8</sup> The principal component of the debt settlement is a rescheduling of loans according to accepted measures of ability to pay. Two agreements have been signed to date, one for the moshavim and one for the kibbutzim. These are sector-level framework contracts. They have now to be implemented with every kibbutz and every

many in the sector still hope that they can gather political support for a more favorable settlement. But even if the debt settlement is approved and implemented with every kibbutz, moshav, and member of the moshav, the question should still be posed whether agriculture can be expected to service its debt.

*Will Agriculture Repay its Debt?* By the available estimates, agriculture debt at the end of 1988 was 6.5 billion<sup>9</sup> New Israeli Shekqalim (NIS), and the value of net capital was then 6 billion NIS (\$3.8 billion respectively at 1.6 NIS per dollar). Agriculture as a whole has, by these figures, no equity of its own. All its capital is financed by debt.

The debt settlement is an agreement to erase close to a third of the debt and to reschedule the remaining obligations for a period of fifteen to twenty years; the new loans will be linked to the price index and will carry low interest rates. Assume accordingly that agriculture is left with a debt of 4.3 billion NIS to repay over twenty years at 4.5 percent; the annuity will then be 331 million NIS. In other words, if agriculture's debt is actually repaid at this rate, the sector will redeem its equity capital over the next twenty years.

This is an impossible undertaking. For even if the calculated annuity is an overestimate, if part of the short-term debt is rolled over, and debt forgiveness is somewhat larger (in order to be able to maintain its part in the settlement agreements), agriculture will have to return to the levels of profits its enjoyed in the 1970s (table 15-5). In that decade, the operating profits were upward of 300 million NIS (at 1987 prices). At such levels, with replacement of only necessary capital assets, agriculture will be able to repay its rescheduled debts. But profitability has been falling in recent years, terms of trade that were improved several years ago are

*Table 15-5. Operating Profits in Israeli Agriculture, Selected Periods*  
(millions of NIS, constant 1987 prices)

Year	Output (1)	Purchased Inputs (2)	Labor		Depreciation (5)	Operating Profits (6)
			Own (3)	Hired (4)		
1965-67	2,116	829	854	292	188	-47
1975-77	3,927	1,792	1,094	374	302	365
1985-87	4,648	2,334	1,367	503	457	-13

*Notes:* Column (3) is imputed according to the sum of per laborer consumption and saving levels in the economy. Column (6) is (1)-(2)-(3)-(4)-(5). In 1987, the exchange rate was 1.6 NIS to US\$1.

*Source:* Lerman and Kosto 1990.

deteriorating again, technological improvements can be expected to slow down with the reduction of investment, competition in foreign markets is toughening, and domestic demand is expanding only slightly.

moshav (sometimes with every farm operator), separately.

<sup>9</sup> A billion is 1,000 million.

The parties to the debt settlements were aware of these difficulties, and based a great part of their optimism on structural changes to come in the wake of the crisis. The supply cooperatives will not engage in financial intermediation any longer. Regional enterprises will be limited to direct services to agriculture. Some enterprises will be closed down to reduce excess capacity and the kibbutzim will redirect labor from services to income-generating activities. Weak farms in the moshavim judged unable to repay their debts will be closed, and their factors of production distributed among the remaining members. Investment will be limited to necessary replacements and to carefully analyzed expansions.

Increased efficiency can improve the ability of a farm to repay its debt. This need not, however, be the same for an industry. In agriculture, it can reasonably be expected that if structural changes take effect and efficiency is improved, terms of trade will worsen and profitability will not increase. Moreover, the recent crisis resulted in the collapse of part of the agricultural support system and a reduction in the political willingness to budget subsidies for agriculture. It is unlikely that agriculture can now tax consumers (for this is what it amounts to) and gather the necessary profits needed to service its old debts.

If agriculture cannot cover its debt from profits, it may still do so from savings. At the recent levels (table 15-55, 1985-1987), farmers will have to divert 24 percent of their income—returns to their own labor—to debt service. This is unlikely to occur, particularly since the debt is not evenly distributed, and many will have to divert much larger shares of farm income to the repayments stipulated by the agreements. The situation is particularly difficult in many of the kibbutzim, and the necessary reduction of the standard of living may be more than their members will tolerate.

Still another alternative is for farmers to cover their debts from nonfarm sources. This is possible in the moshavim where most farmers are part-timers, but it is not clear that they can be forced to do so. The kibbutzim have to cover debts incurred by manufacturing and service activities as well as by their farming sector. They have no outside income of significant magnitude that can be diverted to the redemption of capital.

This pessimistic assessment is strengthened by slow implementation of the settlement agreements. Farmers in many of the moshavim have found that they do well without the cooperative associations that ceased to function after the crisis. They can conveniently work directly with banks and other lenders. Some have mobilized private resources, and they continue operating as if past debts will not have to be repaid. The situation is different for the kibbutzim that are hard-pressed. They have no free financial resources to put into productive activities, and because of their size must rely on banks for all their financial needs. Banks require implementation of the settlement agreement before they will renew lending to a kibbutz. Now that the government is a party to the settlement, however, the banks have eased pressure on delinquent debtors, suggesting that they expect eventual further intervention from the government. Thus, the crisis is far from solved.

## CONCLUSIONS

Israel's farmers are skilled and highly motivated. College education is the norm in the kibbutzim and many in the moshavim are also professionals with profound understanding of their work. Farmers are also accustomed to acting together, and cooperation and involvement in

public affairs come naturally to them. They react speedily to economic and technological changes, adopt new varieties and methods, and reach record yields. But they are also fast to seize opportunities that may turn out to be misguided from a larger, social, perspective. When the rate of interest was negative and credit seemed to be in unlimited supply, farmers invested excessively. When water prices are low, farmers develop their operations to make the best use they can of this resource, and also find ways to cooperate politically for the expansion of low-cost supply. On the other hand, when growers received pooled prices for citrus and quality was only partly rewarded, farmers curtailed production and did not reveal their technical ability in this line.

Past performance suggests that the potential of Israeli agriculture is quite high, and that the damage done by poor policy and unsuitable institutions is also large. This is particularly true for the cooperative sector where the strength of interdependence carries with it the dangers arising from moral hazard behavior. These dangers are compounded when the government intervenes to relieve farmers of the obligations they have incurred. A major responsibility therefore rests with the government. It must have the wisdom and the power to limit its involvement in agriculture, and to let farmers be responsible for better or for worse for their acts.

Farmers will act rationally and responsibly as individuals, but collectively they will easily follow myopic, even irrational, behavior. This difference between the individual and the collective stems from a naturally limited ability to internalize external effects. The examples cited above—excess supply of water in response to grass-roots political pressure and overexpansion financed by cooperative credit—testify to this behavior. This rationality grows stronger if free riding cannot be curtailed; as a result, the ethics behind cooperatives deteriorate.

Inflation created a special opportunity for agriculture in Israel. With negative real interest rates and erosion of loans, agriculture could have increased its equity capital and emerged from the inflationary period economically stronger. This did not happen. Financial leverage increased in agriculture, returns to capital and saving were negative, and farmers sank deeper into debt. Part of the debt financed investment in productive assets (often contributing to overcapacity), part financed housing and consumer durables, and part increased current consumption and standards of living. Consideration of short-run inflationary gains dominated long-run economic health.

The crisis is a clear example of the consequences of cooperative myopia. But the cooperatives were not the only ones at fault. Credit was distributed by the commercial banks; it was their money that was lent, and it was their responsibility to secure the loans and to assure adequate ability to repay. Evidently they neglected this responsibility. Moreover, they failed to recognize that the problem was escalating beyond the scope of the government's ability to solve it.

The government, too, failed to recognize the magnitude of the problem in time to initiate remedial measures, just as it failed to safeguard use of water, Israel's most precious natural resource. The government yielded to political pressure, and created the false impression that it would bail agriculture out of any difficulty. Moreover, the government carries major blame for overcapacity in agriculture, since the funding of most of the development projects was with government approval and assistance. Decisions of the policymakers and recommendations of the Planning Authority of the Ministry of Agriculture encouraged overinvestment. The crisis

in cooperative agriculture is therefore largely the outcome of the favoritism it enjoyed for a long time.

Cooperation has many advantages and significant weaknesses. Two preconditions are needed for cooperation to survive the market test. First, members must have high levels of cooperative ethics and be willing to give up short-run gains for the long-run benefits of cooperation. Secondly, in the final analysis, members must be responsible for their acts, individually or collectively. In the case of Israel, the mutual liability is now reduced to levels that members of cooperatives, farmers in the moshav, and moshavim and kibbutzim in the regional cooperatives can actually cover. It seems that private ownership of land will now be established so that farmers may have more to lose if they fail. They may gain if they succeed and accumulate comparatively large pieces of land. The organization of agricultural cooperation will now be rationalized in Israel. The crisis made the need for reforms clear to everyone. How much cooperation will be left after this crisis is resolved is yet to be seen.

#### REFERENCES

- Israel Central Bureau of Statistics. Annual volumes. *Statistical Abstract of Israel*, Jerusalem.
- Kislev, Yoav, Zvi Lerman, and Pinhas Zusman. 1991. "Recent Experience with Cooperative Farm Credit in Israel." *Economic Development and Cultural Change* 39, pp. 773-89.
- Kislev, Yoav, 1990. "Studies in the Development of Agriculture in Israel" (in Hebrew). In Y. Kislev, Ed., *Technology, Cooperation, Growth, and Policy: Studies in Agricultural Economics*, Jerusalem: Magnes Press.
- Lerman, Zvi, and Noam Kosto. 1990. "Profits and the Ability of Agriculture to Repay its Debt." In *Cooperation, Growth, and Policy Studies in Agricultural Economics*. Jerusalem: Magnes Press.
- Zusman, Pinhas. 1988. *Individual Behavior and Social Choice in a Cooperation Settlement*. Jerusalem: Magnes Press.
- Zusman, Pinhas and Gordon C. Rauser. 1991. "Organizational Equilibrium and the Optimality of Collective Action." Working Paper 9105, The Center for Agricultural Economic Research, Rehevet, Israel.