CAPITAL FOR THE AGRICULTURE OF THE FUTURE

James S. Plaxico and Glenn J. Knowles

The rapid growth in value of farm assets and the explosive increase in farm debt over the past three decades are well known facts to agricultural economists. The current "financial stress" has become a survival crisis for some farmers, and the commodity programs that were once reasonably effective are now at best inefficient. The sequence of events that led to our present agricultural dilemma may be debated, but it is clear that: (1) the current economic-financial environment of agriculture bears little resemblance to that of the pre-1970's; (2) the direction for the future is clouded by uncertainties; and (3) the manner by which the current financial dilemma in agriculture is resolved will have a major impact on the scenario for the longer term future.

A major characteristic of the current economic-financial environment is that forces outside agriculture play a dominant role in determining the current and future state of the agricultural industry and the welfare of agricultural producers and investors. Some of those major forces are the emergence of remarkably well integrated international capital and commodity markets, drastically restructured domestic financial markets, an expansive domestic fiscal policy confronted by a restrictive monetary policy, a less than buoyant world economy, and continued instability in world energy markets. One consequence is that the U.S. economy and U.S. agriculture are no longer effectively isolated from impacts of international markets. Rather, the United States is a part of what may best be characterized as a one economy world, and U.S. agriculture is an integral part of an international food system.

In this paper, some of the major forces shaping the agricultural environment for financing agriculture over the remainder of the century are examined. Emphasis is given to identifying the major variables and institutions affecting the system and the apparent options available. Major implications are summarized and appropriate research and education emphasis areas are suggested.

IMPACT OF INTERNATIONAL MARKETS

The emergence of internationally integrated financial and commodity markets and the growing importance of agricultural trade have and will continue to have profound impacts on agriculture and agricultural capital markets. Furthermore, the competitive forces of international markets will exert pressure on domestic agricultural product and input prices. Rural communities, institutions, and farmers are no longer sheltered from the competition in national and international financial and commodity markets.

Movement towards flexible exchange rates set the stage for a major restructuring of the international financial system. Concurrently, but not coincidentally, commodity markets were also undergoing significant change. Many countries were relying on the commodity markets as a source of foreign exchange earnings. While the term "petrodollars" conveys this notion of the integration of capital and commodity markets, a similar transition was occurring in agricultural markets. Shocks to balance of payments positions attributable to the commodities markets necessarily quickened the pace of this evolution and forced institutional changes in domestic markets.

Under a regime of fixed exchange rates, current account (trade of goods and services plus net earnings on foreign investments, and net transfers) deficits were matched by capital account (money lent or invested) surpluses or by central banks adjusting reserves. In the past, changes in balance of payments positions were due primarily to shifts in trading preferences. Currently, under floating exchange rates, with minor and infrequent

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central bank interventions, current account deficits must be offset by capital account surpluses. The floating exchange rate is the equilibrating mechanism that forces a balance in total payments.

The current account deficit in the United States in 1984 was around $120 billion, and is projected to be the same in 1985, as compared to a surplus of $6 billion in 1981. The United States will therefore be importing a large amount of capital from abroad. By historical standards, the dollar is priced high relative to trade weighted averages of other currencies. The basis for this situation is largely a change in investment preferences (Feldstein) and relative savings rates, thus a new importance has been placed on the capital account in the balance of payments. The effect is that the dollar is strong, but not overvalued. The reasons for the increased attractiveness of U.S. investments has been lower perceived risk, lower expected inflation, and large budget deficits in the United States.

What are the implications of this new international order for U.S. agriculture? First, the potential supply of capital to agriculture is greater than it would have been if capital markets were not internationalized. The budget deficits, instead of only crowding out domestic capital, also influence the larger pool of international capital. This includes U.S. investments abroad. U.S. banks claims abroad were $25 billion in 1983, down from $111 billion in 1982. Without the infusion of foreign capital, interest rates would be higher and financial stress in agriculture would be more severe than now.

The increased importance of the capital account in the balance of payments is a two-edged sword. The demand for capital in the United States has forced a high value of the dollar by historical standards, but not overvalued vis-a-vis other currencies. Thus, U.S. agricultural exports are less competitive in international markets. While the agricultural trade balance in fiscal 1984 was up slightly from the 1983 level, it was far below the level in 1981, and the U.S. share of agricultural trade was down.

An increase in net national savings in the United States will be necessary to reduce the exchange rate of the dollar and simultaneously balance the capital and current accounts. Increasing the supply of capital to the private sector by decreasing federal budget deficits would help, but the present outlook is that it will take some years for these deficits to decline to the $100 billion range. In the long run, an increase in private savings will be required to eliminate trade deficits. A surplus of capital funds abroad, largely from petrodollars, from Japan whose maturing economy and high savings rates will increase their net international investment, and from less demand by developing countries who must resolve their current debt repayment problems first, may help keep the U.S. capital account in balance.

One disturbing facet of the high value of the dollar is the resurgence of a protectionist climate in the United States. Protectionism could be detrimental to U.S. agriculture since other countries will retaliate against our exports and spur foreign countries on to self-sufficiency in food production, thus further diminishing U.S. agricultural exports. In addition, it could slow the flow of capital into this country, thereby exerting upward pressure on interest rates.

DOMESTIC FINANCIAL MARKETS

The late 1970's and early 1980's have brought unparalleled changes in U.S. financial markets. Financial institutions, instruments, and practices comprise financial markets at local, national, and international levels. The function of financial markets is to provide for a system to channel savings into investments, bear risks, and provide for efficient transactions and payments (Barry). In the public interest, financial markets have long been subjected to close scrutiny by a variety of regulatory agencies. Regulations and legislation affecting financial markets have traditionally restricted geographic expansion of financial institutions, limited the scope of services provided by the different institutions, controlled interest rates paid on the various classes of deposits, established capital and liquidity requirements, and set loan limits.

From an uncontrolled industry in the early history of the country, restrictions were imposed gradually on financial markets. During the crisis depression years, in order to stabilize financial markets, restore public confidence, and improve the survival probabilities of financial institutions, financial markets were subjected to an array of regulations and several new financial institutions were established. Social, economic, and technological

developments during the 1970's created pressures to alter and relax the regulatory climate. After numerous reviews and analyses of likely implications, Congress passed the Depository Institution Deregulation and Monetary Control Act (DIDMCA) of 1980 and the Depository Institute Act (DIA) of 1982.

In general, DIDMCA and DIA provide for a phasing out of interest rate ceilings on deposits, authorize interest bearing transaction accounts, and give federally chartered thrift institutions authority to make consumer, commercial, and agricultural loans as well as to provide transaction accounts. The overall effect of the legislation and regulatory directives of the early 1980's has been described as "providing for a level playing field" for competing financial institutions. Clearly, the array of financial services that the different institutions offer has been broadened, the various institutions are less specialized, and competition among institutions has been greatly enhanced.

The Congress, to date, has elected to defer to the various states with respect to regulations concerning geographic expansion of banking activities. Several states have recently enacted legislation permitting limited branch banking and multi-bank holding companies. Numerous banks have loan production offices in various states and the Comptroller of the Currency in October 1984 approved several consumer or "non-bank" banks with branches in several states. However, full service (deposits and commercial loans) interstate commercial banks are not now authorized, although the concensus prediction is that interstate banking is imminent.

The implications of the decontrol of financial markets and the restructuring of institutions are far reaching. Small savers have access to market rates of interest that previously were available only to large savers through unregulated jumbo C.D.'s, and the various interest bearing transaction accounts provide a form of cash management to consumers and small business firms. With unregulated interest rates, savers can "shop" for the best combination of interest rates and other service. As a consequence, deposits may be less stable within individual institutions and within the various geographic regions, and the overall cost of money to lenders has been increased.

In effect, removal of interest rate ceilings has transformed local financial markets to national and international markets. When all depository institutions of a given class were required to pay identical rates on deposits, small savers deposited their funds in local institutions which in turn created a pool of loanable funds available to local farmers and other business people. In general, it appears that to date local financial institutions have effectively competed with money center institutions so that there has been no massive movement of rural area deposits to metropolitan areas. However, loan demand during the post deregulation period has not been unusually strong.

Deregulation has raised interest rates to borrowers due to the disappearance of cost free deposits and increased rate volatility reflecting national and international financial market conditions. At the same time, deregulation and access to national and international markets permit capital to flow to geographic areas offering the most favorable terms. Thus, funds available to banks for local lending are no longer limited to locally generated savings and deposits. As financial institutions consolidate and restructure, larger effective lending limits will permit banks to more adequately serve large scale commercial agriculture. An often voiced concern is that deregulation and restructuring will cause capital to flow to the financial centers so that local interests will be less well served. However, there is a paucity of hard evidence in support of this view.

THE COOPERATIVE FARM CREDIT SYSTEM

The Farm Credit System (FCS) held 44 percent of the farm real estate debt, 20 percent of the non-real estate debt, and 33 percent of total farm debt on January 1, 1985. Thus, the FCS is currently a major, if not the dominant, source of debt capital for agriculture. The FCS long ago developed a structure that facilitates utilization of national and international capital markets to provide loanable funds to agriculture, along with a nationwide distribution system. In many respects, the architects of the FCS created an institution with many of the attributes and advantages that commercial bankers are currently seeking through restructuring. The FCS has a very strong capital base, as compared to other lenders, but has limited loan diversification options.

In anticipation of a decade of further change, the FCS initiated an extensive study

and planning process, designated Project 1995, with the objective of designing and implementing thoughtful change. The various analyses and reports flowing from Project 1995 examine the likely future environment for the FCS, identify major issues, and suggest alternative strategies. Project 1995 will apparently be a continuing process of strategic planning at all levels in the System. In reading the various Project 1995 summary documents, one can easily conclude that greater market penetration may be a major objective of the System.

In the Project 1995 report relating to financial markets, the agency status issue is addressed (Farm Credit System, 1984a, p. 30). Options are identified in the event loss of agency status becomes a reality. The options are defined in terms of clientele to be served and funding source options. The removal of agency status for the FCS has been evaluated by Lins and Barry. The agency advantages over other lenders in acquiring loanable funds enumerated by Lins and Barry include the implicit government backing of securities, certain regulatory exemptions and preferences, and limited tax exemptions. They cite arguments for and against removal of agency status.

An affirmative act of Congress would be required to remove the FCS agency status. Given the current financial stress in agriculture, loss of agency status or imposition of a "user fee" for the FCS appear to be remote possibilities. If the current situation persists, an explicit guarantee would appear to be a more likely possibility. Such a guarantee could assure an orderly flow of funds to qualified borrowers, despite continuing stress on the System and the industry.

FCS borrowers are in the unique position of being equity owners of their creditor. During a period of financial stress, this dual relationship has the potential to create a problem for the System. If borrowers are aware of loan loss sharing obligations, and if the association capital base is eroding, there may be a tendency for the better credits to migrate to other lenders, thereby placing further stress on the institution. Depending on the specifics of the loan loss agreement, the district and the System could also be affected.

EQUITY CAPITAL

The preceding discussion suggests that financial markets for agricultural debt capital are well developed. The same is not the case for agricultural equity capital. Currently, agricultural equity markets are highly localized, informal, and probably inefficient. The same is the case for the long term asset leasing markets. Institutional barriers, such as the prohibition of alien and/or corporate ownership of farm land, no doubt account in part for the lack of a formal organized market in agricultural asset equities. However, other factors such as the extra-market value placed on land, the desire to "preserve the family farm," and similar agricultural fundamentalist views are no doubt contributing factors.

As suggested earlier, decontrol of financial markets has increased financial risks in agriculture and in other industries, and we are aware of no evidence that business risks in agriculture have been moderated. This would suggest a need for a market for spreading the agricultural equity risk over a broad base. Clearly, the investment banking industry and other financial service entities have in place the instruments to provide equity investment opportunities in agriculture on an organized market base that would provide liquidity. However, such markets will develop only if agricultural equity instruments provide returns comparable to other investments with similar risk and liquidity characteristics. Although the future course of events with respect to ownership structure is far from clear, it seems inevitable that there will be a trend toward separation of the ownership and operating functions.

CAPITAL REQUIREMENTS AND FINANCIAL STRUCTURE

Capital requirements in agriculture, in real terms, are determined by the rate of capital formation in the industry. When decision-makers elect to invest in technology to enhance output, to improve efficiency, or to augment industry financial capital, capital formation can occur at a rapid rate. Much of the capital in agriculture is specialized to the extent that it is difficult to transfer to other industries. However, real negative capital formation (disinvestment) may occur as a consequence of failure to maintain capital stocks as assets depreciate or by causality losses.

Capital requirements in agriculture can be met by cash flow (retained earnings) from the industry, by a net infusion of equity capital from non-agricultural sources, or by debt

capital. The financial structure of the industry refers to the mix of equity and debt capital in the industry at a point in time. It is well known that agriculture has traditionally been largely equity financed.

It should be clear, however, that capital formation at either the micro or the macro levels is not necessarily related to the demand for debt finance. As entities enter and exit the industry, the rate of capital formation may be zero although the demand for debt finance and the financial structure may change at both the firm and industry levels. Consider two producing units, "A" and "B", with the financial characteristics described below.

	"A"	"B"	"C"
Assets	$200,000	$100,000	$300,000
Debt	20,000	5,000	120,000
D/A	.1	.05	.4

If "B" exits agriculture and the assets are acquired by "A" to create "C", then debt required to finance the combined assets increases from $25,000 to $120,000 or a net increase of $95,000. This of course occurs because in exiting agriculture "B" has transferred $95,000 of equity from agriculture to another sector. A major point is that farm consolidations accomplished by farmers have a major impact on the demand for debt and/or equity capital even though the rate of capital formation is zero. The same results can occur if operating farmers use debt capital to meet cash operating cost requirements.

During the late 1960's, Melichar and Doll estimated the capital withdrawn from the farming sector by sellers, primarily retiring farmers and non-farm heirs. The Melichar and Doll estimates suggest that over the 1965-69 period real estate transfers accounted for almost 40 percent of total capital flow. It should be pointed out that capital withdrawals from the industry by departing farmers arising from the sale of non-real assets should be treated in the same manner as real estate. Likewise, equity investments in agriculture by non-farmers should be considered.

It is clear that capital formation less debt flow is not an adequate estimate of the use of cash flow requirements to finance a changing agricultural structure. The problem is particularly acute during periods of rapid farm consolidation or during periods of change in the ownership structure.

SUBSIDIZED CREDIT

Subsidized credit refers to loans made under terms more favorable than those available from private sources, and to loans that would not be approved by private lenders. In 1983, federal or federally assisted lending accounted for $86 billion, or 17 percent of funds advanced in U.S. credit markets (Lieblich). The subsidies associated with direct loans made by the Federal Government in 1983 have been estimated at $8.3 billion, with 70 percent of the subsidy value provided through loan programs of USDA. Farmers Home Administration (FmHA) loans for both real estate and non-real estate have been increasing in absolute amounts and relative to other lenders. The shift is particularly significant in the case of non-real estate loans where the FmHA share has increased from 4 percent in 1977 to 15 percent in 1982, 1983, and 1984. Thus, subsidized credit is a significant agricultural finance policy issue.

The Joint Economic Committee has defined a subsidy as *"any one-way government controlled income transfer to private sector decisionmaking units . . ."* (Lieblich). Credit subsidies may be designed to alter the structure of resource control, re-distribute income, stabilize prices, or alter production levels. In a very broad sense, FCS loans could be considered subsidized loans since agency status may reduce the cost of funds to FCS. Likewise, Commodity Credit Corporation (CCC) commodity and facility loans could be subsidized loans due to the non-recourse feature in the case of commodity loans and the possibility of terms more favorable than private sector loans in the case of facility loans. However, for purposes of this discussion, CCC loans will be ignored since they are primarily associated with the price support programs and FCS loans are excluded since they involve no direct government funds and are generally considered to be "bankable" loans. The discussion is further limited to FmHA farmer loans.

FmHA direct and guaranteed loans are the primary sources of subsidized loans in agriculture, although the Small Business Administration (SBA) is involved to a very limited extent. The loans of primary interest are the FmHA ownership and operating loans, as well as their disaster and economic emergency loans. Currently, the FmHA ownership loans are limited to $300,000 in the case of insured

(direct) and $400,000 in the case of guaranteed loans made by a third party. Farm operating loans are limited to $200,000 and $400,000 for insured or guaranteed loans, respectively. The disaster (natural) and economic emergency loans are limited to $500,000 and $400,000 respectively. FmHA direct loans carry interest rates based on the government cost of funds and guaranteed loans are made at rates charged other borrowers in the private sector. Economic emergency loan authority expired September 30, 1984.

Not surprisingly, FmHA has been criticized for making loans that are too large and too small, and for failure to foreclose soon enough and for foreclosing too soon. Much of the criticism of FmHA has been directed to the disaster and emergency loan programs. These programs have fewer restrictions than the ownership and operating loans, thus larger, more affluent farmers are eligible for the loans.

It is apparently the wish of citizens and the Congress that debt capital be made available to limited resource, primarily younger, individuals who desire to become established in agricultural production and who have a reasonable chance of succeeding. Clearly, such loans are high risk ventures. Thus, it is not prudent for the private sector, including FCS, to extend such loans. The relevant issue is how can society most efficiently channel debt capital to limited resource farmers.

Insured (direct) FmHA ownership and operating loans are subsidized by lower than private sector interest rates, and loans are made that would not be made in the private sector, thus involving a significant implicit risk premium. Also, continuing loan supervision is provided without cost to the client. In recent years, there has been a growing interest in and use of guaranteed loans. These loans are administered by private sector entities, are 90 percent FmHA guaranteed, and carry market interest rates. They are attractive to private sector lenders because the guaranteed portion of the loans are marketable in upstream financial markets and exposure is limited by the guarantee. Yet, there is an incentive for the lender to be judicious in extending loans since there is a significant exposure for the lender.

Disaster and emergency loan programs are difficult to administer. If, as appears to be the case, the public and the Congress are willing for the public to share the major natural and economic risks inherent in agriculture, again the issue is how the public can most efficiently assume its share of the risk. The alternatives available appear to entail some version of the current loan programs or an insurance type program. One attraction of an insurance program is that more debt does not appear, in many cases, to make a positive contribution to the affected individuals.

INFLATION, DEFLATION, AND STRUCTURE

Several analyses suggest that farmland prices are determined by anticipated returns from farming (e.g. Melichar, 1983). It has also been argued that farmland prices are determined mainly within the farm sector (Phipps). These results would seem to suggest that holding land as an inflation hedge or as a "collectible" would have little, if any, impact on land prices. Data, methodology, and interpretation limitations should suggest caution in accepting these conclusions (Plaxico and Kletke; Plaxico, 1979). However, regardless of the structure determining land prices, the impact of capital gains and losses on the size structure in agriculture is a relevant issue.

When land prices were rising during the 1970's, land investments were often thought of as being analogous to investments in a growth stock. For an established landowner, it was easy to expand by leveraging (monetizing) the increased equity in existing land holdings to acquire equity in additional land. Some economists suggested, and numerous expansionary landowners practiced, borrowing against an increasing equity to meet mortgage payment and other cash requirements. This was possible because many lenders, in spite of an otherwise declared policy, were quite willing to lend on the basis of assets with little regard for cash flow from operations. Thus, without doubt, available financing accompanied by low and even negative real interest rates stimulated farm consolidations and the consequent rapid increase in debt of expanding farmers.

More recently, land asset values have shrunk and the real rate of interest is relatively high. Thus, the opportunity to borrow against an increasing land equity is no longer available and lending institutions appear to have shifted from asset based to cash flow based lending. As a consequence, some landowners have

found it necessary to forfeit all or a part of their holdings due to their inability to meet payment requirements. One question is, how will these voluntary and/or mandatory forfeitures impact on the size structure?

The initial impact of the current crisis appears to be that lenders are becoming large landowners. The ultimate impact on structure will likely depend on the period over which the current situation persists, the level to which asset values decline, lender strategy regarding disposition of farmland acquired, and who ultimately purchases the land. Lenders are currently confronted with a major policy decision regarding whether or when to foreclose on non-performing loans, and whether to hold foreclosed properties in inventory or to finance a sale to another operator. Foreclosure and immediate sale inevitably means a realized loss to the lending institution and possible further depression of collateral values. Failure to foreclose exposes the lender to the possibility of greater losses. Holding foreclosed property exposes the lender to the possibility of negative cash flows and further capital losses. Thus, there is no easy choice.

Debt is not uniformly distributed in agriculture. USDA has estimated that on January 1, 1984, 18 percent of farm operators had debt/asset ratios of 40 percent or higher. Yet, these operators held 56 percent of the farm debt and owned 14 percent of farm assets. Of farms with sales of $500,000 and above, 33 percent of the operators had debt/asset ratios of 40 percent or above, but these operators owed 60 percent of the debt of the group and owned 16 percent of the groups assets. Thus, these and other data sources show that a disproportionate share of the debt is owed by a relatively small percent of operators that are younger than average and operate larger units. It is important to recognize that a further decline in asset values will cause a further deterioration in ratios of highly leveraged individuals while in the aggregate the effect may be minimal.

Private estimates suggest that if the current farm income situation persists for two more years, 20-40 percent of commercial farms will fail. If this in fact occurs, a variety of scenarios are possible. If asset values decline to a point that production becomes profitable, non-farm based equity, such as corporate entities and pension funds, may view agricultural land as an attractive investment for earnings and capital gains. This would tend to tilt the structure toward larger units. If, however, established producers who did not expand rapidly during the 1970's view land, at or near current prices, as a good investment, the redistribution may be size neutral.

MANAGEMENT OF FINANCIAL INSTITUTIONS

Deregulation, volatility, and intense competition have had a profound impact on the management options of financial institutions. Prior to deregulation, local capital market deposits (loanable funds) tended to be highly stable. Thus, managers attempted to maintain a level of loans in relation to deposits that would optimize the overall portfolio in terms of institutional objectives. With deregulation, there is no easy relationship between deposits and loans since by adjusting rates, the deposit base of individual institutions can be adjusted, thus expanding available options. In short, it is now possible, and mandatory, that attention be directed to managing both the asset and the liability sides of the institution's portfolio.

With stable interest rates, it was often considered prudent for a financial institution to acquire long term assets (loans) on the basis of short term liabilities (deposits). It is that practice that has created difficulties in many savings and loan institutions. Thus, changing and volatile interest rates expose the financial institutions to extreme risks, unless the risk is passed to the borrower or risks are managed by properly managing both assets and liabilities.

The changing role of the managers of financial institutions is a relevant issue in agricultural credit from at least three perspectives. First, in order to assess the viability of an institution as an agricultural lender, one must appraise how agricultural loans fit in the institutions overall portfolio. Second, if survival of rural financial institutions as agricultural lenders is thought to be desirable, there is a major research and education opportunity in aiding institution managers to adjust to the role required in the contemporary environment. Third, there is a need for assessing ways that financial institutions might best manage the increasing risks in financial markets in some manner other than by simply shifting the risk to borrowers through variable interest rate loans.

FARM FINANCIAL MANAGEMENT

It is abundantly clear that good husbandry is not a sufficient condition for success in agricultural production given the current and probable future environment. Changes in the macro financial environment have created major challenges for managers, their advisors, and for academic financial experts. For example, the current period is the first period of declining asset values experienced by the vast majority of involved individuals. Thus, a major issue relates to how financial management and decisionmaking expertise can best be provided to production agriculture managers. Some of the alternatives are to expand extension education efforts directly to producers, to provide extension education for financial institution personnel who would in turn work with producer-customers, and to encourage development of third party consulting expertise that would be available on a fee basis to producers.

It is likely that the financial planning support system that eventually evolves will be some combination of the options cited. In any event, it is apparent that a quantum expansion of financial expertise in the public sector, primarily in the Land-Grant System, is indicated. Subject matter expertise will be required in financial analysis, financial markets, risk management, financial institution management, and related areas.

CRISIS MANAGEMENT POLICY

USDA reports indicate that the 17.7 percent of farm operators who had debt-to-asset ratios of 40 percent or more owed 56.2 percent of the farm debt January 1, 1984, or about $86 billion of the $153 billion owed to institutions excluding CCC. Presumably most, if not all, of the $24 billion held by FmHA plus some $1 billion of FmHA guarantees fall in the 40 percent or higher debt/asset ratio category, leaving perhaps $61 billion uninsured in the portfolios of other institutions. The economic survival of many of the operators with such high debt ratios, and who have limited non-farm cash flow, is clearly in jeopardy given the current economic state of agriculture. Further, it is difficult for lenders to prosper when their customers are having difficulties. Thus, a continuation of the current situation may lead to significant farm business failures and to failures of agricultural lending institutions, particularly small rural unit banks with undiversified portfolios.

If the current financial situation in agriculture is considered to be a temporary phenomenon, and it is considered desirable to improve the survival probabilities of farmers and/or lending institutions, a publicly supported program might be considered. One possibility would be a loan guarantee program for the problem farm loans held by commercial lending institutions. For example, given the foregoing estimates, a 90 percent loan guarantee program would appear to involve a *current* exposure of about $55 billion ($61 x .9). The program could involve market interest rates plus an insurance fund to be paid to the administering agency in order to capture the benefits of geographic diversification. The guarantee could be lifted or transferred to a private insurer when the crisis is alleviated.

Obviously, the program outlined is similar to recent FmHA programs, but it is not clear that FmHA should administer the program outlined. There are persuasive arguments for establishing a small new "independent and temporary" agency to avoid the conflict of objectives that would be involved in a FmHA administered program and to clearly separate it from subsidized credit programs. If the program were limited to producers that have a legitimate chance of succeeding, given an improvement in the agricultural economy, the ultimate cost could be modest and the program might be structure neutral.

CONCLUSIONS AND IMPLICATIONS

There have been major changes in the agricultural finance environment, in the structure of financial markets, and in the agricultural production sector. Further changes are in store. In general, the environmental changes have resulted in a more direct linkage of local, national, and international capital and commodity markets. The internationalization of agriculture has resulted in increasing volatility and has made it much more difficult to predict the course of economic variables. Financial markets and the agricultural sector are restructuring to better cope with the emerging environment. It seems clear that debt capital will be available to agricultural producers, deemed credit worthy, on a competitive basis at a cost reflecting opportunity costs in other industries

as well as volatility and other risk elements. The future is less clear with respect to the development of agricultural equity markets and the provision of financial expertise and services to agricultural managers.

Environmental and structural change place tremendous stress on the financial skills of agricultural production managers. The short run critical problem for leveraged managers is financial survival in the face of disinflation involving shrinking asset values, depressed commodity prices, and the apparent necessity of shrinking aggregate production capacity. How this crisis period is managed in the aggregate will, to a large extent, dictate future options.

Finance is one of the areas that has been endured with benevolent neglect in many land-grant institutions. Thus, it is not clear that the expertise exists to provide the research and education base for dealing with the current financial stress in agriculture. Over the longer run, a broad based program of finance research and teaching should be a priority concern. Apparently, the bio-technology (land based "star war" equivalent) is receiving strong emphasis. Although tangible applied results are unlikely in this decade or even this century, bio-technology is likely to generate major shifts in relative resource and product prices, thus putting even greater stress on the financial management function.

The manner in which financial expertise is made available in agriculture is uncertain and yet to be determined. It may be via the conventional extension structure. An alternative may be via independent consulting firms or by employees of financial institutions. Emergence of more agricultural production firms organized by financially oriented (vs. husbandry) individuals and groups may also be seen. Still another possibility may be an equity market-financial management package.

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