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Abstract
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Disciplines
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Evaluation of State Legislative Programs to Assist Beginning Farmers

by

James Lowenberg-DeBoer and Michael Boehlje

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Between 1976 and 1981 many state legislatures debated and implemented programs to aid beginning farmers by subsidizing credit or giving tax incentives to landowners to sell or lease their land to young farmers. The interest in beginning farmer programs was in response to a public perception that starting a family farm was becoming increasingly difficult. This article describes the programs in Minnesota, Louisiana, Texas, North Dakota, Iowa, Georgia and Indiana; places the programs in the context of federal legislative and regulatory activity; and analyzes how well the legislation and implementation of the state programs fit the goal of reducing barriers to entry in agriculture.

**Barriers to Entry**

Compared to many other American industries few barriers to entry exist in agriculture. There are no licensing requirements and capital requirements are relatively modest. However, unlike those who seek careers in most other industries, farmers are expected to provide both their labor and a substantial amount of the capital that they use. As labor became a smaller portion of total farm inputs and capital a larger part, the public perception grew that the low net worth entrant was at an
increasing disadvantage and the family farm system, in which a person provides both labor and capital for the farm business, was threatened.

The public debate on barriers to entry in the media and in the legislatures has centered on access to credit and entry level capital requirements. This view has especially focused on the high cost of farm real estate. Sherman and Webb of the Conference for Alternative State and Local Programs wrote, "The price of purchasing a farm today is the single biggest obstacle to young families and individuals getting started in farming," (p. 1). A survey in 1978 by the North Dakota Department of Agriculture of 218 beginning farmers found that the high cost of farmland was most frequently identified as a major problem for beginning farmers. The second and third most frequently identified problems were the high cost of equipment and the lack of credit (North Dakota Department of Agriculture, p. 31). Similar views were expressed by farm and religious leaders in congressional hearings on beginning farmer problems in 1976 and 1981 (U.S. House of Representatives, "Beginning Farmer Assistance Act Hearings," and U.S. Senate, "Hearings on the Young Farmers Homestead Act").

Researchers in agricultural economics have identified a broader range of concerns. Boehlje and Thomas group the barriers to entry into four main categories: capital requirements, managerial requirements, risk bearing ability and resource control. They point out that agriculture has changed rapidly from a labor intensive to a relatively capital intensive industry. Prospective farmers who do not receive substantial family or other aid face a difficult task of gaining control of sufficient capital. As farms grew larger and more complex, managerial requirements also increased. All the skills needed by a commercial
farmer can no longer be acquired by the traditional agricultural ladder from hired man to landowning farmer. Agriculture is a risky business for all farmers, but beginning farmers face a special problem because they usually do not have the financial resources or the experience necessary to cope with risk. Resource control is a problem because most types of farming require some land, but land is often firmly in the hands of established farmers.

Recent studies of barriers to entry have confirmed the importance of managerial ability, risk bearing ability and resource control in the entry process, while some studies question the focus on increasing capital requirements as the primary barrier to entry. In a study of opportunities for young farmers in southern Minnesota, Thomas and Jensen found that for the excellent manager prospects were bright, while the average manager was more likely to face a future of low income and financial difficulty. In the mid-1970's, LaDue(a) analyzed census data and found that the chances of a prospective farmer finding the needed farm resources had declined. Kaiser's study of financial strategies used by beginning farmers suggests that risk is an important factor limiting the options of young farmers.

While the growth of farm capital use is obvious to anyone familiar with U.S. agriculture, the importance of that increase for beginning farmers is less clear. The entry level capital requirements may not have grown as much as average capital use on farms. Changes in lending practices have affected the availability of borrowed capital to young farmers. In the late 1960's Epperson and Bell found that the importance of collateral in farm loan decisions made it difficult for beginning farmers to gain control of the capital they needed. In a study of
farmers who started between 1914 and 1950, Brake and Wirth found that credit was becoming an increasingly important part of the entry process and that the number of entrants who received family help declined over time. A study of young PCA borrowers by Herr and Obrecht found that entry level capital is often far less than the average farm capital requirements. They estimate that for beginning grain farmers only about one fourth of the average amount may be needed if land can be rented or operated jointly with others. In a study of conditions faced by entering farmers between 1945 and 1977, LaDue(a) found that while capital accumulation prior to entry was difficult throughout the period, liberalization of credit terms had tended to offset the increase in capital requirements. Lowenberg-DeBoer analyzed data from young farmer records in 1910, 1930, 1950 and 1978 and found that gaining control of adequate capital may have become more difficult for those who started as tenants, but the hypothesis of increasing difficulty was not supported for those who started as owner operators. Both LaDue and Lowenberg-DeBoer found that repayment capacity after entry has not deteriorated over time.

Federal and State Legislation

Broad Eligibility State Credit Programs

State programs with direct implications for entry into farming have been legislated in Minnesota, Louisiana, Texas, North Dakota, Iowa, Georgia and Indiana. Programs in these states differ in their commitment to beginning farmers. Legislation in Iowa, Minnesota, Texas and North Dakota is narrowly focused on beginning farmers, while Louisiana, Georgia and Indiana legislation includes a larger group of farmers including those who are already established in farming. The programs in these
seven states should be distinguished from two other groups of state agricultural credit programs: 1) the revenue bond based general farm credit programs, and 2) the older farm credit programs based on school land funds or other state revenue sources. Included in the first group are loan programs with broad eligibility standards and no special goal to aid new entrants. Such programs were enacted in 1980 and 1981 in Alabama, Nebraska, Arkansas, Tennessee, Virginia, South Carolina, and Colorado. In addition, in Oklahoma a bond based program was developed under the umbrella of existing industrial revenue bond legislation, and in Louisiana a program was attempted under the Louisiana Public Facilities Authority. The Louisiana bond based program was entirely separate from the loan guarantees offered by the Louisiana Farm Security Program which is administered under the state department of agriculture. All of the bond based programs share the desire to tap the markets for tax exempt bonds to provide real estate and nonreal estate financing for farmers at interest rates below those of commercial lenders.

In the second group of state programs are those, such as the Wyoming Farm Loan Board and the Oklahoma Commissioners of Land Office, which invest part of the income from rental and mineral royalties on state lands in farm loans. These programs are older than the state tax exempt bond legislation, Oklahoma's being in existence since 1907 and Wyoming's since 1921. The programs in both groups may benefit beginning farmers, but the legislation on which they are based does not explicitly mention aiding beginning farmers, nor do the eligibility standards indicate concentration on those entering agricultural production.
Federal Context

The recent development of state legislation should be analyzed in the context of the federal debate concerning beginning farmer programs and the attempts by the federal government to control the growing use of tax exempt bonds to fund such programs. In the United States policies concerning beginning farmers have long been the realm of the federal government. A primary goal in the creation of both the Federal Land Bank and the Farmers Home Administration was to help young men move up the agricultural ladder from tenant to owner-operator. The pioneering work of the FmHA in developing 100 percent loans, cash flow lending, management supervision, and nonreal estate loans with terms of over one year were particularly important in giving entrants the financial tools needed. During the 1950's and 1960's the availability of the FmHA programs was often accepted as adequate public provision for beginning farmers. In this period of economic adjustment in agriculture, policy debate was more often directed toward helping existing farmers leave or adapt their operations, than toward helping young farmers.

The 1970's were marked by increasing criticism of federal policies that affect beginning farmers. The Farm Credit System, which includes the Federal Land Banks, Production Credit Associations, and the Bank for Cooperatives, was seen by critics as neglecting young farmers in favor of more secure loans to expanding established farmers (U.S. Senate, Hearing on the Farm Credit Act of 1971, p. 178). By this time the FmHA had grown to a giant agency which administered not only loans to small and low income farmers, but also credit for rural housing, industrial development, public facilities and economic emergencies among farmers who were not traditional FmHA clients. To some it appeared that the needs of
traditional FmHA clients, such as young farmers, were lost in the scramble to cope with the responsibilities of the new programs (USDA, Time to Choose, p. 118). There was the feeling that the added programs drained funds and staff time away from the FmHA's original goals. The FmHA Economic Emergency loan program begun in 1978 was a special target of criticism because it dropped the "family sized farm" criteria and raised the loan limits (Center for Rural Affairs, 1980, p. 2).

During the 1970's federal legislative activity on beginning farmer issues intensified. Efforts were made to reform existing federal programs or to create new programs. An element in the debate on the Farm Credit Act of 1971 was improvement of the Farm Credit System (FCA) service to beginning farmers. The Commission on Agricultural Credit, a group appointed by the Federal Farm Credit Board to prepare for the 1971 legislation, recommended that a special lending program be set up by Production Credit Associations (PCA's) and Federal Land Banks (FLB's) for young farmers (U.S. Senate, Farm Credit Act of 1971 Hearing). The commission suggested that the FCA commit staff time to developing financing arrangements that fit the needs of low equity young farmers and to providing management counseling for young farmers. The commission recommended against subsidies for beginning farmers, such as lower interest rates. The 1971 legislation did not explicitly create a young farmer program, but some of the recommendations were implemented administratively by the FCA.

In 1975 Senator George McGovern introduced the Young Farmers Homestead Act, which was modeled on the Saskatchewan Land Bank Act (Statutes of Saskatchewan, 1972, Chapter 60). The McGovern bill would have empowered the Department of Agriculture to create a public corporation
which would buy farm real estate for lease or sale to young farmers. The prospect of the federal government as a farm landlord found little support in Congress. Similar legislation was introduced in the House in 1976 and reintroduced in the Senate in 1977 by McGovern without success.

In the late 1970's and early 1980's federal legislative activity went in two directions: the reform of existing farm credit institutions and enabling legislation for the creation of state beginning farmer programs. In 1978 concern for beginning farmers was instrumental in establishing the FmHA limited Resource Loan which serves beginning, small, and low income farmers who cannot meet the eligibility criteria for regular FmHA loans. A major element of the program is interest rate subsidies which allow an applicant to show repayment ability on a smaller cash flow.

In 1980 the Farm Credit Act Amendments required the FCA to develop a coordinated approach for dealing with young farmers. This requirement for a FCA young farmer program was written into the law because of dissatisfaction with the administrative implementation of the Commission on Agricultural Credit's 1971 recommendations. Critics charged that the special loan programs for young farmers that had been started by some FCA districts were inadequate to begin with and had been largely abandoned by 1980 (U.S. House, Hearing on the Federal Conservation and Farm Credit Act Amendments, p. 367). Rules for the program required under the 1980 Act were published in October of 1981 (Federal Register 1981, pp. 53021-53023) and focus on developing a framework within which local associations can develop "capital resources with which to withstand risk and staff resources capable of providing specialized servicing" that would be part of such a program. In the rules a young farmer is defined
as someone under 35 years of age and a beginning farmer as someone who
has assumed full control and risk of an agricultural operation for five
years or less. Net worth and gross sales standards for beginning farmers
were left to the district, as were many of the details of the program.
As of July 1982 no district has taken formal action in implementing the
program.

At the same time that federal farm credit legislation was being
changed, state legislatures were coming under pressure to fill the per-
ceived gap in aid to beginning farmers. The interest at the state level
led to the introduction of a series of federal bills that would smooth
the way for state young farmer programs. In 1979 Senator Gaylord Nelson
introduced the Family Farm Entry Assistance Act, which would have created
a federal program to guarantee the loans made by state programs. In 1980
and 1981 similar legislation was introduced in the House under the title,
"Beginning Farmer Assistance Act." None of the three bills progressed
beyond the committee hearing stage. Administration opposition to the
Beginning Farmer Assistance Act stemmed from what it saw as a duplication
of existing FmHA programs, the problems with guaranteeing the tax exempt
bonds used by some state programs, and the possibility of guaranteeing
loans to some farmers who had previously been rejected by the FmHA (U.S.
House, Beginning Farmer Assistance Act Hearings, pp. 16-17).

The most recent federal action to aid beginning farmers is a pilot
program being developed under the administrative initiative of Secretary
of Agriculture John Block to "recruit volunteers from knowledgeable
active and retired farmers and ranchers who will act as guidance coun-
selors and provide direct, on-site farm or ranch management assistance"
(Block, p. 2). This "New Full-Time Family Farmer and Rancher Development
Project is being implemented in 81 counties under the administration of the FmHA. It is expected that beginning farmers participating in the program would receive FmHA financing.

**Tax Exempt Bond Regulation**

Attempts to use tax exempt small issue industrial revenue bonds for farm financing have led to special problems for state programs. The first problem was the change in FmHA policy on guaranteeing such bond issues. In 1980, Oklahoma, Alabama and Louisiana issued tax exempt bonds for farm credit with FmHA guarantees. However, latter attempts by other states to gain similar guarantees were unsuccessful. The Georgia program and an early version of the Iowa program (both described below) never made loans because of the lack of an FmHA guarantee. The broad eligibility Oklahoma and Alabama programs subsequently found some private interest in insuring their bonds, but whether private insurers could be found for the programs which concentrate on higher risk beginning farmers is questionable.

In August, 1981 a second problem developed which has stopped state public offerings of tax exempt bonds for farm credit. IRS ruling 81-216 withdrew tax exemptions from small industrial revenue bonds issued in groups. Previously, it had been possible to lump together several bond issues of less than $1 million to cut legal, printing and marketing costs. The costs of separate public offerings of bonds issues under $1 million are seen as prohibitive. Private offerings, such as those in the Iowa Individual Bond Program, are still feasible because of reduced costs associated with private sale. The Tax Equity and Fiscal Responsibility Act of 1982 changed the rules for grouping tax exempt bond...
issues (P.L. 97-248, Sec. 214) and may allow the revitalization of some state bond programs.

State Programs

Minnesota: The oldest of the state beginning farmer programs is the Minnesota Family Farm Security Program enacted in 1976 (Minnesota Statutes Annotated, vol. 4, sec. 17-42, subsections 41.51-41.62). The program guarantees real estate loans, subsidizes interest payments and, in a provision added in 1978, exempts interest on seller sponsored loans from state income taxes. The guarantee provision indemnifies the lender for 90 percent of the loss of principal and interest in case of a default. The guarantee is backed by a $10 million fund created out of state revenues in 1976 when the state budget was showing a surplus. As of the end of 1981, some 318 loans with a total value of $56 million had been guaranteed. Up to $100 million in loans can be guaranteed with the original fund. Both commercial and seller sponsored loans can be guaranteed, but in practice most of the guarantees are on seller sponsored arrangements. Up to March, 1982 the program had experienced three defaults. Because of the redemption period on foreclosures, the effect of the defaults on the guarantee fund are not known, but declining land values make losses possible.

A second component of the program is an interest payment adjustment of four percent, which is available if the loan maturity is not more than 20 years. For example, if the interest rate is 12 percent, the effective rate for the applicant becomes eight percent with the balance being paid by the state. The interest payment adjustment is initially arranged for 10 years and may be extended for another 10 years. If the applicant's net worth rises to over $135,000, he is no longer eligible for the
payment adjustment, though the guarantee remains in force. At the end of
the payment adjustment period the interest subsidy must be repaid in a
lump sum without interest. The actual subsidy in the payment adjustment
is the interest free use of the state's money during the adjustment
period. The payment adjustment can be seen as a variation on graduated
payments which allow lower loan repayment during the early years of a
farmer's career. The payment adjustment is funded by appropriations by
the legislature.

The tax incentive provisions operate by allowing interest from
seller sponsored loans to be excluded from taxable income at the state
level. The exemption applies for the life of the contract for deed,
though exemption for new purchases is periodically reviewed by the state
legislature. The current provision is effective until January 1, 1986.

The key eligibility requirements for the Minnesota program are:
1) a net worth of not more than $75,000, including nonfarm assets; 2) the
applicant must have equipment and capital to operate the proposed farm or
have a written agreement for a line of credit to provide those needs;
3) farming must be the principal occupation of the applicant; 4) the
applicant must demonstrate a need for the guarantee; and 5) the applicant
must agree to participate in a farm management education program.
Applicants are refused if nonguaranteed loans are available or if
assistance is available from the applicant's parents or the parents of
the applicant's spouse. Financial statements are required from both the
applicant's parents and the spouse's parents. There is no formal defini-
tion of the full-time farming requirement; some applicants with part-time
off farm jobs or full-time winter jobs have been accepted. The guaran-
tees are granted only to individuals, though the operation of the farm
may be organized otherwise. There is no formal limit on the amount of the loan guarantee per applicant; guarantees have ranged from $27,000 to $460,000. The program is controlled by a seven member board, which reviews all applications.

**Louisiana:** The mechanism of the Louisiana Family Farm Loan Program (Louisiana Revised Statutes, Title 3, Chap. 3A, Sec. 251-259) is similar to that of the Minnesota program, but the eligibility standards of the Louisiana program are much broader. The 1980 Louisiana program includes 90 percent guarantees on commercial and seller sponsored loans up to $250,000 and an interest payment adjustment of one half of the interest payment. No tax incentive provisions are included in the Louisiana program.

The key difference in eligibility between the Louisiana and Minnesota programs is that Louisiana requires an individual's net worth in agricultural land to be not more than $100,000. Under this standard a person with substantial equity in livestock, equipment and improvements, or in nonfarm assets, could qualify for the guarantee and payment adjustment. If the net worth rises to over $200,000 in farmland, the payment adjustment is discontinued, and the guarantee continues. As in the Minnesota program, the interest payment adjustment requires a loan term of not more than 20 years and must be repaid in a lump sum without interest at the end of the adjustment period. The payment adjustment is limited to not more than the value of half of the interest payment at the initial interest rate of the loan and is funded by state appropriations. The Louisiana guarantee is not backed by a guarantee fund. When defaults occur the Family Farm Council, which controls the program, must request funds from the legislature to pay the lender. The State Marketing
Commission has successfully operated a program for agriculturally related business with a similar guarantee arrangement for over 40 years. The first applications for guarantees were accepted in the spring of 1982.

Texas: Another variation on the Minnesota loan guarantee and payment adjustment program was enacted in Texas in 1979 (Vernon's Annotated Texas Civil Statutes, Article 55g). The program includes 90 percent guarantees and a four percent interest payment adjustment. Eligibility standards for the program include a net worth of not more than $100,000, farming or ranching as a primary occupation and creditworthiness. Net worth is defined to exclude the value of an applicant's residence and include assets owned by the applicant's spouse and dependents. The interest payment adjustment must be repaid at the end of the adjustment period with six percent interest. If the applicant's net worth rises above $150,000 he is no longer eligible for the payment adjustment. The payment adjustment requires a loan term of not more than 20 years.

Implementation of the Texas program has been delayed by funding problems. The original intent of the legislation was that a $10 million guarantee fund would be created by selling tax exempt bonds and that the fund would be invested so that the difference between the interest rate paid on the tax exempt bonds and the interest rate on the fund would cover the payment adjustments. However, this procedure was disallowed under the IRS arbitrage regulation which prohibits investing the proceeds of tax exempt bonds at yields substantially higher than the rate of interest on the bonds (Internal Revenue Code 1.103-13). In 1981 the legislation was amended to change the way in which the guarantee fund was invested to meet IRS regulations; however, no money was appropriated to cover the payment adjustments that would no longer be funded by interest
on the fund. The guarantee provisions of the program were suspended until September of 1983.

North Dakota: North Dakota has a many-faceted group of programs for beginning farmers. The programs are: a joint FmHA and Bank of North Dakota lending agreement to provide 100 percent financing; a tax incentive program to encourage landlords to sell or lease their land to beginning farmers (North Dakota Century Code, 57-38-67 to 57-38-70); a Minnesota style guarantee program for seller sponsored loans (North Dakota Century Code, 54-17-29 to 54-17-31); and the North Dakota Agricultural Development Act (North Dakota Century Code, 4-36-01 to 4-36-27) which empowers the Industrial Commission to use tax exempt bonds for farm credit.

The oldest of these programs is the 1978 North Dakota Beginning Farmer loan program, which allows a beginning farmer to purchase farmland by borrowing up to 65 percent of the funds from the Bank of North Dakota and the remainder from the FmHA. For the first five years of the loan the Bank may reduce the interest rate by two percent on its portion of the loan and for the first two years principal payments may be deferred by the Bank. This program is made possible by the unique institution of the Bank of North Dakota, which is the only state owned bank in the United States. The Bank was established in 1921, during the Non-Partisan League period in North Dakota politics. The largest depositor at the Bank is the state of North Dakota. The interest payment reduction part of the program is indirectly funded by the state because the interest reduction lowers the Bank profits that would otherwise be returned to the state treasury. Between July 1, 1978 and September 14, 1981 the program involved 395 loans with a total value of $25,999,275. In many ways the
Bank's joint program with the FmHA is more like the joint Federal Land
Bank and FmHA program than like the loan programs in other states.

The second part of the North Dakota program is based on the Begin-
who enters into a lease of three years or more on 20 acres or more with a
qualified beginning farmer can exempt all the rental income from the
lease up to $25,000 from his North Dakota taxable income; a landowner who
sells 20 acres or more to a beginning farmer can exempt for the year of
the sale all of the income realized after capital gains treatment from
his state income taxes; and a landowner who enters into a contract for
deed for 80 acres or more with a beginning farmer can exempt all the
interest income from North Dakota income taxes if the contract has a term
of more than 15 years and the interest rate is not more than the IRS
minimum. Key factors in the eligibility for this program are a net worth
of less than $100,000 and that at least half of the applicant's income is
or will be from farming. The net worth calculation does not include the
applicant's house. In 1980, 456 taxpayers claimed deductions of
$2,656,331 under the Acts.

In 1981 the North Dakota legislature established a 90 percent
guarantee program for seller sponsored loans of up to $200,000 on real
estate and $125,000 on loans secured by personal property. The loans
must have terms of not less than 15 years and interest rates of not more
than the IRS minimum. The eligibility standards are the same as those of
the Beginning Farmer Assistance Acts. A $2,000,000 fund has been
established to back the guarantees, but no guarantees had been made as of
May, 1982.
Also in 1981 the North Dakota Agricultural Development Act was passed. Proceeds from tax exempt bonds issued under the act are to be used to finance farm real estate, farm equipment, and other depreciable agricultural property. Loans are to be made through local lenders. Eligibility is not limited to beginning farmers. Implementation of the Act has been delayed by the IRS rule 81-216 on grouping tax exempt bond issues.

Iowa: The original Iowa Family Farm Development Act of 1980 (Code of Iowa, Chapter 175) created the Iowa Family Farm Development Authority (IFFDA) to issue public offerings of tax exempt bonds and use the proceeds to finance real estate and nonreal estate purchases by beginning farmers. The lack of an FmHA guarantee and the IRS ruling on grouping tax exempt bonds prevented the implementation of the original program. However, a 1981 amendment to the Act, empowered the IFFDA to issue individual beginning farmer bonds. A separate tax exempt bond is issued for each loan and placed privately with the local lender who made the loan. The statutory maximum loans of $500,000 on real estate and $125,000 on depreciable property are well under the $1 million criteria for tax exempt industrial revenue bonds. Private placement of the bonds reduces or eliminates costs due to printing, marketing, and legal fees.

The sequence of events under the individual bond program is: 1) the beginning farmer and lender agree on the loan amount and terms subject to IFFDA approval; 2) application is made to the IFFDA; 3) the application is reviewed by the IFFDA board; 4) a bond is issued for the loan amount and placed with the lender; and 5) the bond proceeds are lent to the farmer. The loan is serviced by the lender. Bond redemption is solely dependent on repayment of the loan; the bond does not become an
obligation of the state or the IFFDA. The beginning farmer must pay a
$50 application fee and a program participation fee of one percent of the
loan.

Eligible farmers must have a net worth of not more than $100,000.*
The net worth is defined as the assets of the applicant's spouse and
dependents, including the family residence. They must have access to the
operating credit, equipment, and livestock needed in their operation.
They must demonstrate that they could not secure the loan without the
IFFDA program. The minimum loan is $20,000. Loans are made only to
individuals, not partnerships or corporations. The IFFDA cannot be used
to finance sales between certain family members or to refinance existing
debt. The loan terms are decided by the farmer and lender, but the terms
may not be more severe than similar loans that do not involve the IFFDA.
Loans under the program began in the spring of 1982.

**Georgia:** In 1980 the Georgia legislature amended the Georgia
Residential Finance Authority Act to empower the Authority to issue tax
exempt bonds for farm financing (Code of Georgia, Chapter 99). The
program was never implemented because of problems with obtaining FmHA
guarantees. The program would have made loans for real estate, equipment
and farm improvements. Eligibility for the program was limited to those
with net worths of not more than $100,000, excluding the value of
farmland and improvements. The legislation also requires that loans
would be repaid with farm income and applicants would receive at least 50
percent of their income from farming if the loan were made.

**Indiana:** Legislation creating the Indiana Agricultural Development
Authority was passed in 1981 (Indiana Statutes, 15-7-5-1 to 15-7-5-41).
Implementation of the program has been delayed by the lack of FmHA
guarantees and the IRS ruling on grouping tax exempt bonds. The lending under the program is to be for both real estate and nonreal estate purchases and will operate through local lenders. Although the legislation mentions credit for "young and new farmers" as a purpose for the program, eligibility for the loans is not limited to beginning farmers.

Analysis of State Programs

The analysis of the state beginning farmer programs must confront at least three questions. First, are state governments the right group for dealing with barriers to entry in agriculture. Is there reason to believe that private organizations or another level of government would be more effective? Second, if the states are going to be involved in beginning farmer programs, which approaches are most appropriate for them? Have states chosen the most cost-effective approaches? Third, given the credit and tax incentive approaches already selected by state legislatures, have the programs been implemented in ways consistent with the goal of reducing barriers to entry for family farmers?

Any study of programs for beginning farmers must recognize that such efforts are hard to justify on strictly economic grounds. In most commercial enterprises, barriers to entry become a public problem only when those barriers reduce competition and encourage the development of monopoly. In agriculture the number of producers has dropped rapidly in the last few decades, but the number is still relatively large. Monopoly is a small danger in the production of most farm products. In agriculture the problem is not just barriers to entry, but barriers to the entry of a certain kind of producer, the family farmer. In fact, several
states have erected legal barriers to the entry of other kinds of farmers, i.e. corporate farmers and those who are nonresident aliens.

The reasoning behind this concern for family farmers is diverse. Food activists and environmentalists see the family farm as a vital part of a reliable, sustainable food system (Cornucopia Project). American political thinkers from Thomas Jefferson to the present day have emphasized the importance of independent family farmers in maintaining democratic institutions. Social scientists have pointed out the importance of relatively small family farms for the health of the rural community (Heady and Sonka). Some agricultural economists have emphasized the ease and low social cost of innovation on family farms (Raup, pp. 305-306).

Family Farming, a Public Good

A common note in this chorus of reasons for supporting family farms is the view that family farms are a kind of public good. In this perspective family farms are good, not only for the farmers, but also for the rest of society. A formal definition of a public good is a good for which "no one's satisfaction is diminished by the satisfaction gained by others, and it is not possible for anyone to appropriate a public good for her own personal use..." (Henderson and Quandt, p. 298). Some of the perceived benefits of family farming fit under this definition. If food shortages result from the demise of family farming, all society will suffer, not just those who did not support the family farm. One person's feeling of security that comes from a reliable nationwide food supply is not diminished by another person's feeling of security. In a competitive market system the public benefits of the induced innovation on family farms cannot completely be appropriated for personal use by an individual.
farmer because competitors also adopt new technologies, thereby increasing production and eliminating the profits due to innovation (Cochrane, pp. 387-393). Consumers as a whole benefit from these innovations, and in a market economy the benefits cannot be restricted only to supporters of family farms. The political and social value of a rural economy based on independent family farmers cannot easily be restricted to those who are willing to pay for their support.

Very few goods are purely public goods and the benefits of family farming are no exception. Family farming certainly has great private benefits for the farm family. In addition, the public benefits of family farming may not be as important a part of the picture as family farm advocates paint them. Nonetheless, the phenomena of programs for beginning farmers can be better understood by analyzing the benefits of family farming as a public good.

Role of Private Organizations

Like other public goods, maintenance of a family farm system through lower barriers to entry could be produced by voluntary organizations or by government. Because of the free-rider problem, the role of individual firms in aiding beginning farmers is likely to be small, even when the firm has a vital interest in maintaining a rural economy based on small family operated units. For instance, if a rural banker initiates an aggressive program to advise and lend to young farmers, he may reap some of the benefits by developing a clientel for his services, but other local business and, if the family farm advocates are correct, the whole nation would derive some benefit. In addition, there is nothing to prevent the young farmer from switching banks once he is established.
Groups of firms or individuals could play a role in helping young farmers. It has been proposed that rural churches create programs that would help retiring farmers in their memberships sell or lease land and other farm assets to younger church members who want to start farming (Center for Rural Affairs, 1982, p. 11). Implementation of the Commission on Agricultural Credit's recommendations for specialized financing plans and management advice by PCA's and FLB's could help.

Another possibility is for farm organizations and agricultural lenders to join forces on the model of the French SAFERs (Societe d'Amenagement Foncier and d'Establissement Rural) which buy farmland for resale to young farmers or farmers whose holdings are too small to be efficient. Unlike the Saskatchewan Land Bank model in which a government agency buys land for lease or resale, the SAFERs are private, nonprofit corporations in which local and national farm organizations and farm lenders are shareholders (Strong, p. 176). Though the SAFERs receive government support in the form of interest subsidies on funds borrowed to buy land, grants for some administrative costs, and certain legal powers in the real estate market, they nonetheless provide an example of private sector involvement in a program that assists beginning farmers.

Action by a group of individuals or firms would reduce the free rider problem compared to action by individual firms. For example, if the Farm Credit System (FCS) developed special credit terms to be used by low equity entrants, it would reap more of the benefit than if such terms were developed by a single private bank. As the dominant and in some cases the only farm lender in some areas, the PCA's and FLB's as a group could expect to retain much of the agricultural lending business developed, though individual FLB's or PCA's may gain or lose. If the
farmer moved, he would probably move into the area of some other FCS member association. But even with a nationwide organization such as the FCS, much of the benefit would still spill over to other organizations and individuals.

Whether the benefit of helping beginning family farmers which can be appropriated by an organization is enough to induce that organization to act is open to question. Recent history does not encourage optimism. The problems of beginning farmers are not new, but no major private program to assist them has yet emerged.

Level of Government

As with other public goods, government provision of aid for beginning farmers has the advantage of being able to eliminate the free rider problem. However, in a federal system the question then becomes which level of jurisdiction is best suited to handle the task. Four basic criteria for the choice of an ideal jurisdictional level have been identified by Tullock. First, the ideal level of government internalizes a large percentage of the externalities created. Second, the ideal level is large enough to realize most of the internal economies of scale for producing the public good. Third, the ideal jurisdiction is small enough so that each citizen has a maximum amount of input, while at the same time being large enough so that the citizen is not overwhelmed by the information demands of making decisions on a myriad of tiny governmental units. Fourth, the ideal jurisdictional level has the shortest possible chain of bureaucrats between the legislative decision and the consumer of the public good.

Unfortunately, in the case of beginning farmer programs, all the criteria do not point to the same jurisdictional level. Criteria one would tend to favor programs at the national level. The benefits of
innovation, food security or the political strengths of the family farmer
would be hard to contain within a state or other local boundary, though
regional approaches might work. For example, benefits of agricultural
innovation in North Dakota might benefit people in Montana where produc-
tion conditions and crops are similar, but are less likely to have an
effect in Georgia where crops and conditions differ substantially.
However, in the United States government on the multistate regional level
is not well developed so it is unrealistic to expect regional beginning
farmer programs.

The second criteria would favor national programs in some cases and
state or local programs in others. For instance, economies of scale in
financing may favor nationwide programs for farm credit, while a tax
incentive or a guarantee program may achieve optimum efficiency on a
smaller scale. Empirical work is lacking on exactly how costs change
with change of jurisdictional level, but in some cases states can use
inexpensive, simple procedures that would be unworkable at the federal
level. For example, it would be hard to duplicate, at the federal level,
a Louisiana style guarantee program in which no guarantee fund is
required, but default payments are referred directly to the legislature.

The third and fourth criteria would tend to favor small units of
government, perhaps smaller than the state level. Small refers to both
the geographical area and the number of voters. Within a relatively
small geographic area voters are more likely to have similar problems
with similar solutions. By reducing the number of voters per unit, each
voter has more say. In some states farming conditions differ enough
between parts of the state that a program which is ideal in one area may
be of little use in another. For instance, in North Dakota a program to
provide direct loans for farm equipment might be helpful in the cash grain area of the Red River Valley, but less useful in the ranching areas further west. In addition, the voters in one area of a state might favor young farmer programs, while those in another area do not. In that case more voters would be satisfied by substate jurisdictions than by state level programs. Programs on the substate level would be simplified by the fact that in many states, county or multicounty development agencies already have the power to issue bonds and implement other authorities which are the focus of many state beginning farmer programs.

If the cost of meeting each one of these criteria could be objectively measured, the task of selecting the ideal jurisdictional level could be handled by summing the costs and choosing the lowest cost alternative. Unfortunately, no such objective measure of cost exists and subjective measures are influenced by political opinions and private costs and benefits. "States rights" advocates would probably argue that the advantages of government closer to the people outweigh any possible gain from economies of scale at the national level, while those concerned with the rights of minorities are likely to favor national programs regardless of the extra bureaucratic costs involved.

Realistically, the choice of jurisdiction may be more dependent on the power of the interest groups at various levels of government. Research by Noam indicates that interest groups tend to favor legislation at the level of government at which they have the most influence. Neumann suggests that a ruling consensus can be maintained at the federal level by dropping controversial programs to lower jurisdictional levels where they may be implemented in those areas where sufficient support exists. In that light, the enactment of beginning farmer legislation in
states where agriculture is a major part of the economy and where agrarian political movements have done well in the past should come as no surprise.

Another view holds that the production of public goods at more than one level of government is advantageous, in that it creates a kind of competition. Scott analyzed the regulation of banking under state and federal agencies and found that "the dual banking system prevents the formations of a single industry cartel policed through the rules and powers of a single government agency" (p. 35). Similarly, beginning farmer programs at both state and federal levels may be more effective than a single program. A diversity of programs means that an individual is more likely to find a program fitted to his specific needs. It is possible that agencies can benefit from each other's mistakes and successes; an approach can be tried in one state before committing the whole nation.

If more than one level of government is involved in a program, Olson suggests that the actual production of public goods be located at the level which minimizes cost, while external benefits to those outside that governmental unit are dealt with by grants.

The necessary condition for Pareto optimality is then local government of a size that minimizes unit costs, and central government grants that are just large enough to compensate the local government for the external benefits of its expenditures" (Olson, p. 485).

The Beginning Farmer Assistance Act (H. 2977) could be seen as such a sharing of costs. Under the legislation each state would develop its own beginning farmer program, but the federal government would guarantee loans made under those programs, in effect compensating the states for the spillover effects by sharing some of the cost.
Cost Effectiveness

Under the four criteria of internalizing benefits, exploiting economies of scale, maximizing citizen input, and minimizing bureaucracy, the choice of state jurisdiction for beginning farmer programs might be seen as a reasonable compromise. The next question is then which approach is most cost effective for those states. Policy options open to state legislatures can be categorized by the beginning farmer problem that will be dealt with. Approaches that have been tried for the resource control problem are: direct loans for real estate purchase, guarantees on real estate loans from private sources, state purchase and lease of farmland to beginning farmers, subsidizing savings by prospective farmers, and tax incentives to encourage landowners to sell or lease land to young farmers. Options for operating and fixed capital requirement difficulties are similar, with the exception that state purchase and lease of nonreal estate capital items would be administratively much more complicated than the credit or tax incentive programs. The extra staff and legal complications of maintenance and replacement of nonreal estate capital may make such a program infeasible. The problem of risk might be reduced with a government subsidized insurance program (Boehlje and Thomas, p. 25). Management problems might be approached through educational or advisory programs.

Cost Estimates—Real Estate Control: The approaches to real estate control differ substantially in cost to the state per beginning farmer. Table 1 gives estimates of the public sector cost of helping a beginning farmer gain control of a representative resource base, under Iowa conditions in 1981. Based on USDA estimates of the average Iowa farm, the analysis assumes the young farmer needs $520,598 of real estate (Economic
Table 1. Per farmer cost estimates for resource control programs, under Iowa conditions in 1981

<table>
<thead>
<tr>
<th>State cost in year:</th>
<th>Direct loan</th>
<th>Guarantee &amp; payment adjustment</th>
<th>Farmland lease &amp; purchase</th>
<th>Savings subsidy</th>
<th>Tax incentive for sale</th>
<th>Tax incentive for lease</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>69,600</td>
<td>70,000</td>
<td>26,000</td>
<td>6,500</td>
<td>1,800</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>17,200</td>
<td>41,400</td>
<td>0</td>
<td>6,500</td>
<td>1,800</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>16,800</td>
<td>41,400</td>
<td>0</td>
<td>6,400</td>
<td>1,800</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>16,400</td>
<td>41,400</td>
<td>0</td>
<td>6,300</td>
<td>0</td>
</tr>
<tr>
<td>5^</td>
<td>0</td>
<td>15,900</td>
<td>41,400</td>
<td>0</td>
<td>6,200</td>
<td>0</td>
</tr>
</tbody>
</table>

Federal cost in year:

| 1                   | 23,900      | 0                               | 26,300                    | 0              | 0                     | 0                      |
| 2                   | 23,500      | 0                               | 26,300                    | 0              | 0                     | 0                      |
| 3                   | 23,000      | 0                               | 26,300                    | 0              | 0                     | 0                      |
| 4                   | 22,400      | 0                               | 26,300                    | 0              | 0                     | 0                      |
| 5^                  | 21,800      | 0                               | 26,300                    | 0              | 0                     | 0                      |

Present value of all government cost^b: 169,000 63,900 288,300 26,000 51,000 4,700

^aCost for the direct loan, guarantee and tax incentive programs continue to the 20th year.

^bPresent value of costs to both state and federal governments per farmer for the life of the program.
Indicators of the Farm Sector, State Income and Balance Sheet Statistics, 1980, p. 154), which is about 268 acres at the 1981 average price of $1,941 per acre (Farm Real Estate Market Developments, p. 14). This USDA estimate includes part-time farms and larger-than-family farms, so the parameters of the actual average family farm may differ, but the cost comparison between approaches would show the same pattern if the capital estimate were higher or lower. The costs are for a program in operation; original development costs of the program are not considered.

The direct loan program costs assume a 20 year, 100 percent loan with a program participation fee paid by the farmer to cover administrative costs. Funds for the program are raised by the public or private sale of bonds. For simplicity it is assumed that the interest rate at which farm payments are amortized is the same interest rate paid on the bonds, as would be the case with private sale of bonds. The interest rate used is 9.19 percent, the rate on Aa municipal bonds in January, 1981 (Moody Investor Services, p. a10). This rate is also used for the present value calculations throughout the cost estimates. It is assumed that the bonds are paid off as loan repayment is made. The cost of the program to the Federal government is the tax revenue lost. Iowa tax rules do not offer an exemption for revenue bond interest, so no tax revenue is lost by the state. All cost estimates assume that bond buyers (and landowners if a subsidy to sellers is involved) are in upper income brackets, hence the uppermost marginal tax bracket is used, 50 percent for federal taxes and 13 percent for state taxes. None of the cost estimates include losses due to default. The cost of the first year of a direct loan program would be:
$520,598 bonds outstanding
x 0.0919 interest rate
$47,843 total interest
x 0.50 marginal tax bracket
$23,921 tax revenue lost

In the subsequent year principal payments are subtracted from the bond values to find the amount of bonds outstanding.

This analysis of the cost of direct loan program uses the tax expenditure approach. That is, tax exemptions are considered public expenditures just as grants and subsidies are. If the public budget is seen as a process which must eventually balance, tax exemptions must be offset by higher taxes elsewhere or unmet needs in other programs. In modern economies the balancing may occur through inflation induced tax bracket creep or cuts in effective program budgets instead of direct tax increases or program cuts, but the effect of tax exemptions is felt nonetheless. In the direct loan case, it is useful to consider the alternative of direct young farmer loans by the FmHA, which raises funds by taxable federal bonds. Taxes on bonds sold to finance FmHA activities are available to fund public expenditures, while with state tax exempt bonds the funds would have to be raised elsewhere. The tax expenditure approach is also used in the analysis of the tax incentive for sale and lease of farm real estate programs.

The guarantee program estimate is based on a Minnesota style program. It is assumed that one dollar in the guarantee fund can be used to guarantee $10 in loans. An administrative cost of $352 per participant is based on the cost of the Minnesota program (Minnesota Farm Security Act—1981, p. 8). The tax exemption for interest is not included in this estimate since tax exemption is considered as a separate approach. A payment adjustment of four percent is used with repayment in
the 11th year. The guarantee fund is assumed to revert back to the state in the 20th year. Calculations use a 20 year, 100 percent loan amortized at the Federal Land Bank interest rate for the first quarter of 1981—10.6 percent (Melichar and Balides, p. 32). It is assumed that the guarantee fund is in a "safe" investment at seven percent interest. In reality the guarantee fund might be invested in other municipal bonds, so that the interest rate on the fund could match the interest rate used for present value analysis. But it seems likely that there is some opportunity cost in maintaining the fund so a seven percent return is used. State cost in the first year of the program would include creation of the guarantee fund, administrative cost, and the payment adjustment.

The payment adjustment in the first year is:

\[
\begin{align*}
\text{\$520,598 principle outstanding} \\
\times 0.04 \text{ adjustment percentage} \\
\text{\$20,894 payment adjustment}
\end{align*}
\]

Total cost in the first year is:

\[
\begin{align*}
\text{\$52,060 guarantee fund} \\
+ \text{\$352 administrative cost} \\
+\$20,894 \text{ payment adjustment} \\
- \text{\$3,644 return on the guarantee fund} \\
\text{\$69,662 state cost, first year}
\end{align*}
\]

It is assumed that the guarantee fund is created at the beginning of the first year, while other payments are made at the end of the year. In the 20th year, the guarantee fund is returned to the state. The state cost in the second year is:

\[
\begin{align*}
\text{\$352 administrative cost} \\
+\$20,484 \text{ payment adjustment} \\
-\$3,644 \text{ return on guarantee fund} \\
\text{\$17,192 state cost, second year}
\end{align*}
\]

The present value of total cost over the years is \$63,900. The guarantee program without the payment adjustment would have a present value of cost
of $13,400. The present value of the cost of a payment adjustment program without a guarantee is estimated at $54,000.

The estimates for the land purchase and lease program were developed using the provisions of the Saskatchewan Land Bank program. The calculations assume that the funds for the land purchase are raised by public sale of bonds as is provided for under the Land Bank Act. Under U.S. conditions these bonds would be tax exempt. It is assumed that the purchase and lease authority would be similar to the Iowa Housing Authority and have many of it's bond issues rated Aa. On the basis of Carr's and Smith's argument that land bank programs inevitably pay more than market price for land, 10 percent was added to the real estate price. The lease rate was set at $101.80, the 1981 market rate (Farm Real Estate Market Developments, p. 19). Other costs are: a management fee of seven percent of the gross rent (Agri Finance Magazine, p. 21), a first year charge of five percent of the purchase price to cover the cost of the bond sales and land acquisition, a maintenance and insurance cost of two percent of the purchase price and a payment in lieu of taxes of $10 per acre. The cost to the state in the first year is:

<table>
<thead>
<tr>
<th>Cost Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment in lieu of taxes</td>
<td>$2,680</td>
</tr>
<tr>
<td>Interest on bonds, at 9.19 percent</td>
<td>$52,627</td>
</tr>
<tr>
<td>Management charge</td>
<td>$1,910</td>
</tr>
<tr>
<td>Bond sales and land acquisition cost</td>
<td>$28,633</td>
</tr>
<tr>
<td>Maintenance and insurance cost</td>
<td>$11,453</td>
</tr>
<tr>
<td>Cash rent</td>
<td>-$27,282</td>
</tr>
<tr>
<td>Total cost to state in first year</td>
<td>$70,021</td>
</tr>
</tbody>
</table>

In the second through the fifth year, the cost to the state is calculated as:
$52,627 interest on bonds
$1,910 management cost
$11,453 maintenance and insurance cost
$2,680 payment in lieu of taxes
-$27,282 cash rent
$41,388 cost to the state in second year

The annual cost to the federal government is:

$572,658 bonds outstanding
× .0919 interest rate on Aa municipal bonds
$52,627 interest payment
× .50 marginal tax bracket
$26,314 lost Federal tax revenue

The cost estimate assumes that the tenant opts to purchase the land in the sixth year, which is the earliest opportunity. The bonds are retired when the land is sold. The estimate in Table 1 assumes that the land is sold to the tenant at the price which the agency purchased it. If the land were sold at market value and real estate had appreciated five percent per year, the present value of the cost would be $195,600. The costs of owning and leasing the land could easily be higher than those estimated in Table 1 if land values were declining, the lease were set at a use value lower than market rate, or if capital improvements were required. The state would probably be under more pressure than the ordinary landowner to make some capital improvements, such as building soil conservation structures. Adoption of the European practice of allowing the agency to preempt sales between nonrelatives might lower the land cost for the purchase and lease program, but this is an unlikely development in the U.S.

The savings subsidy program estimates are based on the provisions of the New Zealand Farm Ownership Savings Act (Statutes of New Zealand, No. 45) which offers capital grants to young farm buyers who have fulfilled the conditions of special farm purchase savings accounts. The
The amount of the grant is a percentage of the savings amount and the percentage rises each year to a maximum of 50 percent of the savings at the tenth year (Hill, p. 43). The estimate assumes that the young farmer saves for ten years before he begins farming and is able to finance his purchase with 15 percent equity. In this case, the grant would be:

\[
\begin{align*}
\text{Name} & \quad \text{Value} \\
\text{Land Cost} & \quad 520,598 \\
\times \text{Equity Required} & \quad 78,090 \\
\times \text{Percentage from Grant} & \quad 26,030 \\
\end{align*}
\]

It should be noted that the grant is 50 percent of the savings, but 33 percent of the equity required. This would require the young farmer to save $52,060. With a seven percent rate of return, the entrant would have to save $3,768 annually for ten years. If riskier investments were approved for the farm ownership accounts, a smaller annual savings is required. At 12 percent interest, $2,967 savings per year is required. Another New Zealand savings subsidy scheme offers a tax credit of 45 cents per dollar saved toward farm purchase (Hill, p. 43). This tax credit program is likely to have limited applicability for state programs in the U.S. for two reasons: 1) the relatively low state tax rates at the income levels of most prospective farmers, and 2) the rarity in the U.S. of tenure arrangements comparable to the sharemilkers who seem to be the major users of the program in New Zealand. Sharemilking arrangements are livestock share agreements under which the landlord provides all or a portion of the dairy herd. Because New Zealand dairy management depends on year around grazing, equipment costs are low. Hence, with good management, a sharemilker can have a substantial tax liability that could be offset by the saving program benefits. In the U.S., tenure arrangements with comparably low tenant equity requirements are scarce.
The cost estimate for tax incentives to encourage the sale of farm-
land to young farmers is similar to the provisions of the North Dakota
legislation. Unlike the North Dakota legislation, the base estimate
assumes that all capital gains are tax exempt, while North Dakota rules
limit capital gain exemption to the year of sale. The cost calculation
assumes a 100 percent loan amortized over 20 years at a nine percent
interest rate, and the IRS minimum interest rate for sales over $500,000.
The calculation assumes that the landlord's basis is $272, the 1964
Census of Agriculture average value of Iowa land. Hence, the percentage
of capital gain is:

\[
\frac{(1,941 - 272)}{1,941} = .8599
\]

The effective tax rate on principal payments is:

\[
= \text{Percentage} \times \text{Percentage capital gain} \times \text{marginal gain taxable tax rate}
\]

\[
= .8599 \times .4 \times .13
\]

\[
= .0447
\]

The annual loan payment at nine percent interest and a 20-year repayment
period is $57,030. In the first year, $10,176 of that payment is
principal. Hence, the tax loss in the first year from excluding capital
gain on the land from taxes is:

\[
= \text{Principal payment} \times \text{effective tax rate}
\]

\[
= 10,176 \times .0447
\]

\[
= 455
\]

The lost tax revenue from the interest income tax exemption is:

\[
= \text{interest paid} \times \text{marginal tax rate}
\]

\[
= 46,854 \times .13
\]

\[
= 6,091
\]
The tax loss declines in subsequent years because an increasing portion of the payment is principal which is normally subject to relatively low taxes because of the capital gains exemption. If the exemption applies only to interest income, as is the case under the Minnesota legislation, the present value of the cost estimate is $42,900. If higher interest rates were allowed, the state tax loss would be greater, because more interest income is earned. If the 10.6 percent FLB interest rate for the first quarter of 1981 were used, the present value of the cost estimate is $59,600. Use of a downpayment would lower the tax revenue lost because interest income is reduced. No administrative cost is calculated because the program could operate through existing state revenue services with a minimum of added staff.

The costs of the tax incentive plan to lease land to beginning farmers is also based on North Dakota provisions. The lease is assumed to be for the minimum period of three years. The lease rate is the 1981 market average, $101.80 (Farm Real Estate Market Development, p. 19). The costs of land ownership are assumed to be a maintenance and insurance cost of two percent of the market value ($520,598) and property taxes of $10 per acre. Hence, the rental income is:

\[\text{rental income} = (\text{number of acres} \times \text{cash rent per acre}) - \text{property tax} - \text{insurance and maintenance cost}\]

\[= (268 \times 101.80) - 2,680 - (0.02 \times 520,598)\]

\[= 14,190\]

The lost tax revenue to the state annually is:

\[\text{lost tax revenue} = \text{rental income} \times \text{marginal tax rate}\]

\[= 14,190 \times 0.13\]

\[= 1,845\]
Comparison of Costs: When the costs of the various programs are compared, the enthusiasm of state legislatures for revenue bond based farm lending programs becomes clear. These programs are very low cost for the state. A farmland lease and purchase program which operated as outlined would be costly for both the state and the federal government. Guarantee programs are medium cost, but cost may rise rapidly if a substantial number of defaults occur. Without payment adjustments, guarantee programs are relatively low cost. If resource control is a goal without reference to land ownership, the tax incentive plan for leasing is the least cost. The savings subsidy plan is the lowest cost program to encourage real estate ownership.

However, the costs are not exactly comparable because the effectiveness of the programs are likely to vary. Unfortunately, the effectiveness is hard to measure and empirical work is scarce. The lease and purchase of farmland would offer the state more control and hence more potential for affecting barriers to entry, but this control comes with a high price. The other programs depend heavily on decisions by prospective farmers and landowners; for example, the savings program may be the lowest cost ownership program, but effectiveness of the program depends on the planning and self-discipline of prospective farmers.

In particular, the effectiveness of credit programs in aiding entry has been questioned. Research on the role of alternative financing plans in the entry process are not conclusive. Hanson and Thompson found that flexible repayment of principal and longer loan terms could significantly improve the debt carrying capacity of new farm businesses. Kaiser found that the availability of deferred principal payments or increasing payments had little effect on the optimal strategy of entering farmers.
Lowenberg-DeBoer found that under the most liberal conventional terms available from commercial lenders the purchase of farmland by beginning farmers has been difficult throughout the century, but there is little evidence that it was more difficult during 1978-1980 than it was earlier. Under the terms of 100 percent FmHA loans, he found that debt service was often even more precarious than with conventional terms because cash flows were not large enough to cover increased interest payments, even at subsidized interest rates. On the other hand, with the terms of the Minnesota Farm Security program, the debt service position improved by the interest subsidy and the use of conventional downpayment requirements.

While role of alternative credit plans is unclear, evidence does point toward farm rental problems as a more likely bottleneck in the entry process. Tenancy is the traditional entry path into agriculture for the low equity beginning farmer, but census data indicates that fewer whole farm units are being rented and some studies indicate a trend away from rental agreements with low operator equity, such as crop and livestock share rental, to cash rental which requires more operator capital and risk taking (Baron, p. 28; Harsbargen, Thomas and Rolfes, p. 5).

Furthermore, expanding established farmers are in a strong position in the rental market, just as they are in the real estate purchase market. In this light, the tax incentive for leasing may be seen as a step toward neutralizing some of the advantage of an established farmer. In a crop share lease agreement the landlord who rents to an inexperienced farmer assumes a greater risk of crop yield variability than if he rented to an established operator. Weeds and pests may not be properly controlled. The young farmer may have inadequate equipment for timely field
operations. Even in a cash rental agreement a landowner could fear the development of weed infestations. The reduced tax burden on rental income may offset this risk, but whether or not the tax incentive is large enough to be effective depends on the risk adversity of the landowner and his estimate of the risk involved.

The greatest variability in the resource control options may be in the political acceptability. Government sponsored land purchase and lease programs would conflict with American beliefs about the sacredness of private property. Tax incentive programs for sale or lease would be politically vulnerable as subsidies to landowners who are not usually considered a needy group. Direct loan programs have the advantage of involving private sector lenders. Savings subsidy programs, though little known in this country, might be politically acceptable because they would encourage savings at a time when concern is being expressed about the rate of capital accumulation in the U.S. A savings subsidy would also help more young farmers qualify for commercial credit.

Cost Estimates, Nonreal Estate Capital: The analysis of costs for alternative programs to help beginning farmers obtain nonreal estate capital follows a pattern similar to that of the real estate control programs (Table 2). All the estimates assume that the young farmer is to acquire the 1981 Iowa average stock of livestock, motor vehicles, and equipment worth $93,236 (Economic Indicators of the Farm Sector, State Income and Balance Sheet Statistics, 1980, p. 154).

The direct loan costs are calculated assuming a program in which administrative costs are covered by a participation fee paid by farmers, the repayment period is seven years, and the interest rate on the loan is 9.19 percent, the same as the interest rate on the bonds, as would be the
Table 2. Nonreal estate capital program cost estimates, per farmer under Iowa condition, 1981

<table>
<thead>
<tr>
<th></th>
<th>Direct loans</th>
<th>Guarantees</th>
<th>Savings subsidy</th>
</tr>
</thead>
<tbody>
<tr>
<td>State cost first year</td>
<td>0</td>
<td>9,000</td>
<td>12,400</td>
</tr>
<tr>
<td>Federal cost in year:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>4,300</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>3,800</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>3,300</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>2,800</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>2,200</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>1,500</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>800</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Present value of all government costs\(^a\) 14,300 2,800 12,400

\(^a\)Present value of costs for both federal and state governments per farmer for the life of the program.
case in private sale of bonds. The tax loss to the federal government in the first year is:

\[
\begin{align*}
\$92,236 & \quad \text{principal outstanding} \\
\times 0.0919 & \quad \text{interest rate} \\
\$8,568 & \quad \text{interest paid} \\
\times 0.50 & \quad \text{marginal tax rate} \\
\$4,284 & \quad \text{tax revenue lost in the first year}
\end{align*}
\]

Calculations for subsequent years assume that the bonds are redeemed as loan payments are made, so the principal outstanding is reduced by principal payments.

The guarantee program estimates were generated by adapting Minnesota Farm Security Program provisions to nonreal estate. No payment adjustment is used in the base estimate. The calculations use a seven year loan term, 100 percent loan, a 12.9 percent interest rate on the loan, and the guarantee fund invested at seven percent. The loan interest rate is the PCA rate for the first quarter of 1981 (Melichar and Balides, p. 32). The state cost of the program in the first year is:

\[
\begin{align*}
\$9,324 & \quad \text{guarantee fund} \\
-\$653 & \quad \text{return on guarantee fund investment} \\
\$352 & \quad \text{administrative cost} \\
\$9,023 & \quad \text{cost to the state in the first year}
\end{align*}
\]

If no payment adjustment is used, the guarantee fund returns $301 over administrative costs to the state in years 2-7. If a payment adjustment of four percent is used, the cost in the first year is $3,438 and the present value of all costs is $7,307. In all guarantee fund estimates it is assumed that the fund reverts to the state in the last year of the guarantee. If the cost of defaults were figured into the guarantee program estimates, the costs could be expected to rise by a greater percentage in the nonreal estate program than is the case with real estate. While real estate has generally appreciated in value, nonreal
estate could be expected to depreciate, so losses could be expected on many defaults.

The savings program estimates were generated by adapting the New Zealand Farm Ownership Savings Program provisions to nonreal estate. The calculations are based on $93,239 of nonreal estate property to be acquired with 40 percent owner equity. The full 50 percent grant after a ten year savings period is assumed. The cost of the program to the state under these assumptions is:

\[
\begin{align*}
&\text{\$93,236 nonreal estate property required} \\
&\times 0.40 \quad \text{percentage owner equity} \\
&= \text{\$37,294 equity required} \\
&\times 0.33 \quad \text{percentage of equity supplied by grant} \\
&= \text{\$12,431 grant}
\end{align*}
\]

This would require a prospective farmer to have saved $24,863 before starting farming. At a seven percent interest rate this would require saving $1,799 annually for ten years. At 12 percent interest the annual savings would need to be $1,417. If a savings subsidy plan were instituted for both real estate and nonreal estate capital, an annual savings rate of $5,566 at seven percent interest over ten years is required to save equity for the average Iowa farm. At 12 percent interest the annual savings must be $4,382. Raising the grant percentage could lower the savings required.

The effectiveness of programs to help young farmers acquire nonreal estate capital is closely tied to real estate control by those farmers. Except for a few farmers who start with intensive livestock production on a small land base, a nonreal estate capital program would be of little benefit without the availability of land. However, a nonreal estate capital program may reduce the problem of undercapitalization; a young
farmer with adequate equipment and livestock stands a better chance of renting land or borrowing money for real estate purchase.

Nonreal estate capital programs have the advantage of offering aid to the most vulnerable group of beginning farmers, low equity entrants who start as tenants. With increased use of equipment, specialized livestock facilities, and nonfarm inputs, the capital requirements for tenants have increased dramatically. Credit terms for nonreal estate purchases have also been liberalized, but compared to the terms used for real estate purchase, the equity requirements are high and repayment periods are short.

The political acceptability of programs for nonreal estate credit is likely to be mixed. To their political advantage these programs offer aid directly to the young farmer, not a landlord or a lender. But the priority put on nonreal estate capital is likely to be low because of the emphasis on farm ownership. This fixation on land ownership is likely to be especially strong among church groups, urban environmentalists, and other nonfarm organizations that support the family farm ideal, but may not have a clear understanding of commercial agriculture.

Costs Per Dollar Invested: Because entry level capital requirements can vary widely, it is useful to consider the costs of beginning farmer programs on a per dollar invested basis (Tables 3 and 4). Except for a small administrative charge in some programs which is determined on a per client basis, the cost of the programs is a constant function of the capital requirement. Hence, multiplying the public cost per dollar of capital that the young farmer is to control by the appropriate amount of entry level capital gives a reasonable estimate of the program costs for
Table 3. Real estate control program costs per dollar invested, per farmer under Iowa conditions in 1981

<table>
<thead>
<tr>
<th>State cash costs in year:</th>
<th>Direct loan &amp; payment adjustment</th>
<th>Guarantee &amp; payment adjustment</th>
<th>Farmland lease &amp; purchase</th>
<th>Savings subsidy for sale</th>
<th>Tax incentive for sale</th>
<th>Tax incentive for lease</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>0.1337</td>
<td>0.1345</td>
<td>0.0500</td>
<td>0.0126</td>
<td>0.0035</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>0.0330</td>
<td>0.0795</td>
<td>0</td>
<td>0.0124</td>
<td>0.0035</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>0.0323</td>
<td>0.0795</td>
<td>0</td>
<td>0.0123</td>
<td>0.0035</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>0.0315</td>
<td>0.0795</td>
<td>0</td>
<td>0.0121</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>0.0306</td>
<td>0.0795</td>
<td>0</td>
<td>0.0119</td>
<td>0</td>
</tr>
<tr>
<td>Federal cost in year:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>0.0460</td>
<td>0</td>
<td>0.0505</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>0.0451</td>
<td>0</td>
<td>0.0505</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>0.0441</td>
<td>0</td>
<td>0.0505</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>0.0431</td>
<td>0</td>
<td>0.0505</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5b</td>
<td>0.0419</td>
<td>0</td>
<td>0.0505</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Present value of all government cost⁴</td>
<td>0.3248</td>
<td>0.1227</td>
<td>0.5537</td>
<td>0.0500</td>
<td>0.0982</td>
<td>0.0089</td>
</tr>
</tbody>
</table>

Note:

⁴The cost per dollar of capital that the beginning farmer is to control, assuming that administrative cost is linear.

⁵The costs for the direct loan, guarantee, and tax incentive programs continue to the 20th year.

⁶Present value of the cost to both state and federal governments per farmer per dollar invested for the life of the program.
Table 4. Nonreal estate capital program cost per dollar invested\(^a\) per farmer under Iowa conditions in 1981

<table>
<thead>
<tr>
<th></th>
<th>Direct loans</th>
<th>Guarantees</th>
<th>Savings subsidy</th>
</tr>
</thead>
<tbody>
<tr>
<td>State cash cost</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>first year:</td>
<td>0</td>
<td>0.0968</td>
<td>0.1333</td>
</tr>
<tr>
<td>Federal cost</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>in year:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>0.0459</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>0.0410</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>0.0356</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>0.0296</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>0.0232</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>0.0161</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>0.0084</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Present value of</td>
<td>0.1536</td>
<td>0.0296</td>
<td>0.1333</td>
</tr>
<tr>
<td>all government</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>costs:(^b)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(a\) The cost per dollar of capital that the beginning farmer is to control, assuming that the administrative charge is linear.

\(b\) Present value of costs for both federal and state governments per farmer per dollar invested for the life of the program.
different capital requirements. If it is assumed that administrative and capital costs are relatively constant per farm regardless of the size of the program, these figures can also be used to estimate total program costs given the number of entrants to be assisted. For instance, if the entry level real estate capital requirement were $200,000 per farmer and 500 farmers were to be assisted, the present value of the cost of a guarantee program with payment adjustments would be about:

$$200,000 \times 500 \times 0.1227 = 12,270,000$$

The cash outlay of such a program in the first year would be about:

$$200,000 \times 500 \times 0.1337 = 13,370,000$$

These estimates could then be compared with the costs of other program options.

Risk

Many of the programs that have been considered for resource control or capital requirement problems have implications for risk management, but programs directly focused on dealing with risk have not been the subject of extensive public debate. Boehlje and Thomas suggest a subsidized insurance program to help young farmers deal with price, income, and production risks. A landlord or lender could be written into the policy as co-beneficiary, thereby increasing his willingness to lend funds or rent land. Such a program would also protect the standard of living of the farm family. Insurance to cover some components of farming risk is available from private firms, but the coverage is likely to be too costly to be practical for beginning farmers. The subsidization of Federal crop insurance could serve as a precedent for such a comprehensive insurance program. The cost of such a program to a state would depend on the degree of subsidization.
Management Problems

There is little doubt that management ability is an important factor in the entry process. Opportunities for formal training in farm management skills are abundant; most states have programs at land grant universities or vocational and technical schools. Less formal training is available from the extension service. The question remains why some prospective farmers do not take advantage of these opportunities.

Among some prospective farmers and their parents there is a lingering contempt of "book farming." Other prospective farmers may not be informed about the management challenges that they will face in a career in agriculture. Economic theory suggests another reason. The cost of capital for investment in education is higher for a low net worth individual than for an individual of high net worth, so the person with less equity will invest in less education (Layard and Walter, p. 318). This suggests that one way to encourage low equity prospective farmers to invest in more education is to reduce their cost of capital. Low interest loans have been a traditional answer to the problem. Boehlje and Thomas suggest a special educational loan program for those who seek farm careers. An alternative might be apprenticeship programs that combine classroom training with farm employment by qualified farmers. Such programs have a long history in West Germany and other parts of Europe. Employers could be encouraged to cooperate with such on-the-job training programs by tax incentives. Prospective farmers might be encouraged to seek out formal or on-the-job training by making it a prerequisite to other government aid. Such an approach is already used in Minnesota and Louisiana where enrollment in farm management training is an eligibility requirement for the state guarantee and payment adjust-
Institution programs. The cost to the state of adding new students to existing programs is likely to be low. The political acceptability of agricultural education has traditionally been high in the U.S.

Income Improvement

Programs to improve the income of young farmers are sometimes suggested as ways to solve many beginning farmer problems at once. With more income from higher prices or off-farm employment, the young farmer can accumulate more equity and hence gain control over more resources. With outside income or stable prices, risk is reduced.

The improvement of farm prices is not likely to be an option for state governments for several reasons. First, even if raising prices is effective in helping beginning farmers, the state level would not be the place to implement such a program. Most farm products in the U.S. are produced and consumed in more than one state and the markets do not stop at state boundaries. Second, a general improvement in prices would help the established farmer more than the entrant, because the established operator is likely to have a greater volume of sales. Third, higher farm prices are translated into higher land prices (Cochrane, p. 394), leaving the landless beginning farmer with an even higher capital requirement for ownership. Fourth, experience with price support and subsidy programs at the federal level shows that these are often expensive programs.

Improvement of off-farm employment opportunities for farmers and their spouses would be better suited to state level implementation. Many states already have tax incentive and financing programs to encourage employers to locate in rural areas. While research has indicated that off-farm employment opportunities can have a significant effect on the risk and return for beginning farmers (Kaiser, p. 411), such a program
has several problems. The employment opportunities could probably not be limited only to beginning farmers; it would be hard to justify such a program only on the basis of helping young farmers. The impact on other groups would have to be evaluated on its own merits. Commercial farmers may oppose such programs as encouraging "hobby farming" which they view as unfair competition. Family farm purists would not be satisfied—attempts by extension to help farm people seek out nonfarm employment opportunities have been labeled by Wendell Berry as a betrayal of the Land Grant College goal to preserve agriculture and rural life (Berry, p. 155). Others have been concerned that farmers and their spouses would become a captive labor force that is subjected to lower wages and poorer working conditions because their attachment to the land reduces their mobility.

Implementation

Given that states have decided to use a mix of credit and tax incentive programs, the question remains if they have implemented these programs consistent with the goals of reducing barriers to entry for family farmers. Many implementation problems revolve around limiting program benefits to those most likely to suffer from barriers to entry. Major provisions used to determine eligibility in the four states with active programs are: the net worth of the applicant, farm experience and training, the proportion of income from farming, and the lack of credit from other sources. Other rules cover acceptable loan and lease terms. No state uses age as an eligibility criteria.

Net Worth: A net worth eligibility test is used in all four states with operational programs. The net worth limit in all cases allows the young farmer to have at least a 50 percent equity in the average nonreal
estate resource (Table 5). However, any substantial real estate holding in addition to an average set of nonreal estate assets would quickly place the applicant outside the limit. The Louisiana net worth test, in which only farmland is counted, allows the applicant a relatively small holding. At the Louisiana 1981 average price of $1,519 per acre, an applicant could have full ownership of about 66 acres. The Louisiana test would allow someone who has inherited a farm too small to be viable to buy more land with a state guarantee. However, that small land holding could also be collateral in a real estate purchase. If the goal is to help beginning farmers, the Iowa, North Dakota, and Minnesota net worth levels are reasonable. They allow the entrant a substantial equity in nonreal estate assets, but restrict eligibility by landowners who are presumably less in need of aid. No state program has an explicit minimum net worth requirement, though screening by administrators, the program governing boards, and local lenders is likely to consider some minimum net worth necessary for success.

Farm Experience or Training: A requirement for farm experience or training is used in all four operating programs, but none of the programs define a minimum standard. In Iowa, Minnesota, and Louisiana initial selection is done by lenders, since the young farmer applies through or jointly with the lender, with the final choice left to an appointed committee of farmers, lenders, and other individuals who direct the state program. In the North Dakota tax incentive program the decision is left to the State Department of Revenue.

The logic behind such an experience or training requirement is clear. Public purposes are not served by putting an inexperienced, untrained person in charge of a complex business such as a commercial
Table 5. State program net worth limits and average asset values

<table>
<thead>
<tr>
<th>State</th>
<th>State program net worth upper limit</th>
<th>Average farm nonreal estate assets,(^a) 1981</th>
<th>Average total farm assets,(^a) 1981</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iowa</td>
<td>100,000</td>
<td>154,000</td>
<td>675,000</td>
</tr>
<tr>
<td>Minnesota</td>
<td>75,000</td>
<td>125,000</td>
<td>439,000</td>
</tr>
<tr>
<td>North Dakota</td>
<td>100,000</td>
<td>153,000</td>
<td>564,000</td>
</tr>
<tr>
<td>Louisiana</td>
<td>100,000(^b)</td>
<td>75,000</td>
<td>457,000</td>
</tr>
</tbody>
</table>

\(^a\)Economic Indicators of the Farm Sector, State Income and Balance Sheet Statistics, 1980. Assets of farm households excluded.

\(^b\)Includes farmland value only.
farm. But defining the necessary amount of training or education is difficult. For applicants raised in farm families, this is unlikely to cause a problem. Experience on the family farm is the traditional way in which one learned farming skills. For applicants from nonfarm families the question is more difficult. Is formal education without experience acceptable? How much do summer jobs on the farm count as experience? Without some formal definition, the problem could arise that lenders, committee members, or administrators in their effort to weed out urban "back to the land romantics" might subject applicants from nonfarm backgrounds to stricter standards than those used for farmers' children. Informal definition of experience and training standards allows decision makers flexibility in considering differences in motivation and personal factors, but it also leaves the program open to charges of favoritism. If beginning farmer programs use public funds, urban as well as rural taxpayers should be able to expect their children to benefit. In fact, a primary purpose of beginning farmer programs is to create exceptions to the rule that "the only way to get on the farm is to marry one or inherit one."

Formal experience standards have been used elsewhere. The New Zealand savings subsidy plan requires three years of farm experience for eligibility, two years of which must be in the same type of operation as the young farmer proposes to buy (Hill, p. 46).

**Part-time Farming and Credit Worthiness**: Part-time farming is an issue in the Minnesota and North Dakota programs. Given that public sentiment is in favor of aid for full-time family farmers, restrictions on part-time farming are to be expected. The public responsibility to help the "hobby farmer" is small. The North Dakota rule requiring
50 percent of income to be from farming and the Minnesota program which in effect allows part-time off-farm jobs or full-time winter jobs for grain farmers, enables farmers to take advantage of the risk-reducing, equity-building off-farm opportunities, but help ensure that the applicant is serious about full-time farming.

Creditworthiness is an issue in the guarantee and direct loan programs. The Minnesota, Louisiana, and Iowa programs require evidence that the applicant does not have access to other sources of credit for the proposed real estate or major nonreal estate purchase, but if state aid is granted, the applicant will have adequate equipment and operating capital. This provision is an attempt to eliminate those who could obtain conventional credit, but also ensure that those who obtain aid can use it effectively.

The state programs assume the existence of the FmHA; they assume the applicant would at least be able to obtain FmHA operating credit. As with the FmHA, the decision as to who can obtain funds elsewhere is often a matter of judgement since in some cases it is to the advantage of the private lender to collude with the borrower and indicate an unwillingness to lend.

All four operating state programs limit benefits to individuals; corporations, partnerships, and other business organization forms are not acceptable. This is consistent with the public view of the family farm as a sole proprietorship, but may limit the flexibility of some farm businesses to use other legal structures.

Loan and Lease Terms: The regulations on loan and lease terms under the state programs fall into two primary groups: loan maximums and loan or lease time periods. In general, the maximum loans on real
estate allow the purchase of a smaller than average farm. In Louisiana, the $250,000 maximum with a 100 percent loan allows the purchase of 165 acres at the 1981 average price of $1,519 per acre. The average Louisiana farm was 273 acres. In Iowa, the $500,000 maximum allows the purchase of 258 acres at $1,941 per acre, while the average farm size in 1981 was 286 acres. Under the joint Bank of North Dakota and FmHA program, the $200,000 FmHA limit applies, allowing the purchase of 473 acres at $423 per acre. The average size North Dakota farm was 1,043 acres in 1981. Minnesota has no loan maximum. The number of acres that could be purchased would be greater if the young farmer supplied some equity.

Under the Iowa direct loan program, $125,000 may be loaned on depreciable property, while the average livestock and equipment assets for Iowa farmers was $93,200 in 1981. In all cases, the loan limits offer substantial aid to a beginning farmer, while avoiding subsidization of larger operations.

In some cases, the Louisiana and Minnesota payment adjustment programs require loan repayment terms that reduce the effectiveness of the program. The 20 year repayment limitation requires more rapid repayment of principal than other commercial mortgage programs such as those available from the Federal Land Bank, and more rapid repayment means higher annual payments. So the payment adjustment provision reduces annual payments early in the entrant's career, but the 20 year terms required under the payment adjustment increases annual payments compared to other commercially available mortgages. For example, if the real estate costs and loan terms are those used in Table 1, the annual payment on a 20 year loan is $63,672 and the payment adjustment is
$20,824 the first year. This reduces the first year payment to $42,848. A 40 year loan under the same conditions would have an annual payment of $56,182, so that compared to the 40 year loan the effective payment adjustment is only $13,334. If a 40 year loan is used, a payment adjustment of 2.56 percent is enough to reduce the first year payment to $42,848. By allowing longer term loans, the state programs could either increase the effectiveness of the payment adjustment in reducing the debt burden early in the farmer's career or the programs could cut costs by reducing the payment adjustment needed. However, in Minnesota the practical effect of the 20 year limitation may be small since the majority of guarantees are on seller sponsored loans, which are unlikely to be for more than 20 years.

The North Dakota lease program requires at least a three year lease. This gives the beginning farmer a little more security than the one year arrangement common throughout the Midwest, but it also requires the landlord to bear more risk. Even if the beginning farmer's performance proves unsatisfactory, the landlord is stuck with him for three years. This may make some landlords more reluctant to participate in the program, especially in light of the relatively modest benefits at low state income tax rates.

**Age Requirements:** The lack of an age requirement allows the state beginning farmer programs to be subject to potential abuse. The public support for beginning farmer programs is centered on the idea of helping young people who want to make farming a lifelong career, not on helping people change careers. The FCS has clearly defined 35 as the upper age limit on their young farmer program (Federal Register,
However, age discrimination laws are likely to restrain the use of age limits to control access to beginning farmer programs.

Summary

In general, our analysis indicates that there is justification for developing state programs for beginning farmers. Aid to beginning family farmers can be seen as a public good because the benefits of family farming, such as propensity for small farms to innovate, the support of democratic institutions, and the maintenance of the rural social structure, are not completely captured by individuals or firms. It is a well known result in economic theory that markets underproduce public goods, and the involvement of government in family farm entry is a logical way of dealing with that underproduction. Groups of individuals and firms, such as churches or the FCS, could also play a role, but the history of their involvement does not suggest that they will be major contributors.

Research on the optimal level of government production of public goods suggests that beginning farmer programs at the state level have major advantages. States can choose the type of approach most effective for their area, and they can choose the level of funding that matches the wishes of the voters who are demanding that program. Because support for beginning farmer programs seems to vary widely between areas of the country, state programs are likely to please more voters than a single nationwide program. However, federal level action has benefits in some cases. Credit programs may be most efficiently operated at the federal level because of economies of scale. Federal grants to state beginning farmer programs may also be needed because state programs create positive externalities.
While the lack of empirical research prevents definite conclusions, this analysis suggests two major problems with the approaches chosen by state legislatures for beginning farmer programs. The states have tended to choose relatively expensive programs, even though there is little evidence that these approaches are more effective in aiding entry than lower cost methods, and states have concentrated on credit to the neglect of other entry problems. Except for a direct loan provision for nonreal estate credit in the Iowa program, all state entry programs in operation during the 1982 crop season addressed the problem of control of the real estate resource. The methods used were revenue bond based direct loans for real estate purchase, loan guarantees to buy land with payment adjustments, tax incentives to encourage the sale of farm real estate to young farmers, and tax incentives for leasing land to young farmers. Under the assumptions of this study the direct loan, guarantee, and tax incentive for sale programs all had present values of cost over $40,000 per entrant. On a per dollar invested basis the direct loan, guarantee, and tax incentive for sale programs have present values of cost of more than eight cents per dollar of capital that the young farmer acquires. Only North Dakota used the low cost tax incentive for leasing approach. Nowhere in the U.S. has the high cost land bank program been used. In itself, a guarantee program is not expensive, but the addition of payment adjustments raises costs dramatically.

The cost estimates show the revenue bond based direct loan programs to be the highest cost entry programs now in use in the U.S. The direct loan programs are attractive to state legislators because of low state costs, but the overall public cost is high. Under the assumptions of this study, a revenue bond based direct loan program for
real estate control is about three times more costly than a guarantee program with a payment adjustment or a tax incentive program for real estate sale; about seven times more expensive than a savings subsidy approach; and about 36 times more expensive than a tax incentive for leasing program. It should be noted that tax receipts lost because of revenue bond sales or the tax incentive approaches are as real a public cost as a payment adjustment or a savings subsidy. Tax receipts foregone in bond sales or incentives must be made up by higher taxes elsewhere.

In addition, the fact that the majority of the cost of revenue bonds is borne at the federal level contradicts one of the arguments in favor of state level programs. State programs should allow voters a greater choice in kind of programs and the level of funding, but a state program based on tax exempt revenue bonds forces citizens nationwide to finance a program that they have not in general chosen to support. State beginning farmer programs do create some externalities, but that does not justify transferring the bulk of the cost to the federal government. From this standpoint, tax incentives for sale or lease programs are easier to justify since the tax cost of the programs affects only the state in which the program is desired.

The second problem is that the states have focused on credit and especially real estate credit, while neglecting other promising and less costly methods to assist beginning farmers. While not all the programs are operational, all seven states with beginning farmer legislation have created credit programs of some kind. This penchant for credit programs is not surprising because the extension of credit has a long and successful history as a tool for helping improve farm
income and living standards. But it is not clear that the problems of today's beginning farmers can be solved with more credit or more liberal credit terms. Research on the issue is not conclusive, but there is some suggestion that only a superior manager can handle credit beyond that available from conventional sources. Other research questions the role of nonconventional terms, such as deferred payments, in the entry process.

It is often argued that the state credit programs supplement inadequate FmHA funds; the long waiting lists for FmHA loans are cited as evidence of the inadequacy. However, limited funds have been a problem primarily with FmHA farm ownership loans (LaDue (b), p. 11), and research has questioned whether the ownership of farm real estate is critical in the entry process. The marginal entrant, on whose entry limited public funds could have the greatest impact, should probably start farming as a tenant. This entrant's problems would center on finding rental land and nonreal estate capital. The only credit program likely to help this low net worth beginning farmer would apply to equipment and livestock, yet during the 1982 crop season only one state beginning farmer program had provisions to provide funds for such purposes. Alternatives to credit programs might be savings subsidies to help more entrants qualify for commercial credit, tax incentives for leasing land to beginning farmers, programs to help young farmers deal with risk, and farm management and on-the-farm training programs.

The implementation of the state programs generally fits the goal of reducing barriers to entry for family farmers. The net worth tests allow ownership of substantial equipment and livestock, but limit eligibility by those who own real estate. Farm experience and training
regulations could be better defined. Part-time farming regulations allow young farmers to take advantage of off-farm opportunities, while limiting problems with "hobby farming." The 20 year limitation on repayment terms in payment adjustment programs may counteract the effect of the program in reducing debt service requirements early in a farmer's career. The three year lease requirement in the North Dakota program may be beneficial for the tenant, but may also make landlords reluctant to participate.

In general, our analysis suggests that the presence of state level beginning farmer programs and the implementation of those programs, once chosen, assist in reducing barriers to entry for family farmers. However, the choice of programs to implement raises questions of cost effectiveness. Credit programs tend to be expensive and may not provide effective assistance. Federal credit programs clearly have faults, but duplicating those services at the state level may not be the most economical way to correct these faults. Real estate ownership programs, whether they operate through credit or tax incentives, are also costly and may ignore the needs of the low net worth entrant. In light of this analysis, state legislators contemplating new entry programs or reexamining existing programs would do well to consider low cost alternatives such as savings subsidies and tax incentives for leasing. If a credit approach is adopted, provisions for nonreal estate financing may increase the effectiveness of the program.
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