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# Assisting Farmers Through Concessionary Loans: Insight's from Ohio's Linked-Deposit Program.

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Attempts to alleviate farmers' financial stress through concessionary loans have become more common in the U.S. during the 1980s. Previously, the Farmers' Home Administration was the main provider of such loans, but lately State governments have joined these efforts. By early 1987 twenty-three states had initiated emergency programs for farm finance, with total funding of about $1.7 billion (Popovich). These state initiatives include interest rate buy-downs, interest rate deferrals, interest forgiveness, farm grants, state loan guarantees, direct loans from state funds, state secondary markets for farm loans, and state deposits with agricultural lenders linked to concessionary loans.

In terms of number of states involved and volume of funds committed, the linked-deposit programs (LDPs) were the most important of these efforts. Typically, a farmer requests a linked-deposit loan through his or her financial institution. The lender forwards the application to the state for review. Funds from state investment portfolios or appropriations are then used to purchase certificates of deposits (CDs) or debentures in the lending institution. These deposits receive a below-market rate of interest. The lending institution, in turn, makes the loan to the farmer in the amount of the

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deposit at a concessionary interest rate. By late 1986 nine states had authorized LDPs: Illinois, Indiana, Kansas, Maine, Michigan, Missouri, Montana, Ohio, and South Dakota. Seven states made LDP money available to farmers in 1986 amounting to about $740 million; the Maine and South Dakota programs were authorized but not yet implemented. Approximately 16,000 farmers received loans under LDP in 1986.

While LDPs only provided a small part of the total credit used by U.S. farmers--less than one percent of the non-real estate farm lending in 1986--and cover an even smaller percentage of all U. S. farmers, their results provide useful insights into the strengths and weaknesses of concessionary credit programs. In the following we provide information on the operations of Ohio's LDP. We assess the program through four criteria: (1) The overall cost of the program. (2) The extent to which LDP subsidies reached farmers with financial stress. (3) The size of these subsidies compared to LDP borrowers' financial needs. And, (4) the extent to which LDP provided additional funds for farmers. We conclude with a few comments about the limitations of LDPs and also suggest several alternatives for assisting financially stressed farmers.

## Background on LDP in Ohio

Ohio was one of the first states to begin an LDP and its program is among the three largest LDP efforts, only Illinois and Michigan are larger. Ohio's LDP, established in April, 1985, covered a four year period, and authorized the use of up to $100 million. The expressed objective of the program was, "...to provide a statewide availability of lower cost funds for lending to persons engaged in agriculture that will...contribute to the economic revitalization of this state." (House Bill No. 344, The 116th General Assembly). Although the General Assembly was not very explicit in its intent to help financially

stressed farmers, the public perceived the target group to be financially stressed farmers.

Borrowers requested LDP loans through their regular lenders and a short application form was sent by the lender to the State Treasurer's Office. In the case of commercial banks and savings and loan associations (S&Ls), if the application was approved, the state purchased a certificate of deposit for the amount of the loan request. The state purchased a single debenture in the Farm Credit System to allow Production Credit Associations (PCAs) in Ohio to participate. The state accepted a below-market rate of interest on these instruments. The lending institution would then reduce the interest rate charged to the farmer by three percent for loans taken out for a two-year term and by four percent for loans under a year. The rate paid on the state's deposit was reduced by the same percentages.

The lender assumed all risk on LDP loans and applied usual lending standards to identify borrowers. A cap of $100,000 was placed on any single loan. The $100 million, excluding the loans committed for two years, could be rolled over three times during the length of the program. The Treasurer's Office had the option to distribute all, or part of the $100 million in any year; the entire $100 million was placed in both 1985 and 1986.

The General Assembly established three requirements for a farmer to participate in the program: the operator must be headquartered in Ohio, the operation must be exclusively in Ohio, and, the operation must be organized for profit (116th General Assembly Conference Committee Report on H.B. No. 344, p.1). The Treasurer's Office asked for verification that the borrower met these eligibility requirements and also asked for some financial information about the borrower: the amount of interest paid as a percentage of operating

expenses for 1982, 1983, and 1984, and the current debt-to-equity ratio of the operation.

We use this financial information on LDP in Ohio for the year 1985 in our analysis, along with additional information collected from participating LDP lenders in central Ohio, and some preliminary information from the 1986 cycle of the program.

LDP Operations in 1985-86

In 1985 the state received 1,770 LDP applications, and 1,575 of these were approved. In 1986 the state received 2,791 applications and 1,401 were approved. The average LDP loan was $63,000 in 1985 and $66,000 in 1986. Commercial banks processed about 798 of the 1985 loans while PCAs extended the remaining 777 loans. The Treasurer's office attempted to get a broad geographical dispersion of loans, and in 1985, 82 of the 88 counties in Ohio had at least one farmer receiving funds. In 1986, 85 counties had participants.

In 1985, just over 50 percent of the funds were distributed through eighty-two commercial banks and savings and loan associations (S&Ls). The remainder was distributed through ten PCAs that were eager to participate because they were generally charging higher interest rates than commercial banks and were, thus, losing some of their best clients to other lenders.

The application deadline for the first cycle of LDP was June 21, 1985, long after most farm-lending decisions had been made for the year. In early 1985 the General Assembly was preoccupied with the failure of Home State Savings and was not able to consider the linked-deposit bill earlier. In 1986 and 1987 the deadline for LDP applications was in April.

Program Costs

The Ohio LDP appeared be a "free lunch" to some people, since the funds came from the state's investment portfolio and there was no budget appropriation. However, the State lost future revenue by accepting a lower rate of return on the CDs and debentures purchased for LDP than it would otherwise have realized. In the 1985 cycle of LDP approximately $6.9 million was lent for two years at a 3 percent below-market rate of interest. This represents about $207,000 ($6.9 million x .03) in interest income foregone by the state in 1985 and, assuming the amount of long-term loans remains the same for each cycle, about $828,000 over the length of the program ($207,000 x 4).

The remaining loans, $93.1 million, were short-term loans at a 4 percent below-market rate of interest. The foregone interest, in this case, depends on how much time elapsed before borrower repayment and consequently, the length of time the state's investments received below-market rates. The Farm Credit System's debenture had an April 1986 maturity date, and the majority of two-year loans were made through commercial banks and S&Ls. We therefore assume that the $50 million distributed through PCAs was committed for eleven months, that is, June 1985 through April 1986. If it is assumed that the remaining $43.1 million was committed for nine months, the yearly cost to the state of the short-term loans would be approximately $3.2 million [($50 million x .04 x 11/12) + ($43.1 million x .04 x 9/12)]. On the other hand, if the $43.1 million was committed for eleven months, the yearly cost of the short-term loans would be approximately $3.5 million [($50 million x .04 x 11/12) + ($43.1 million x .04 x 11/12)].

The total opportunity cost of the 1985 linked-deposit program, in terms of state revenues foregone, was between $3.5 and $3.7 million--about $2,100 for

each of the 1,575 loans made in 1985. Total interest foregone over the four-year life of the program, without considering the compounding of interest, would be between $10.5 and $11.5 million. Including the additional interest that might have been earned on the foregone interest would raise the program's cost to around $12 million for four years.

There was some additional cost of LDP: the administrative expenses of implementing and monitoring the project. The General Assembly authorized $25,000 in fiscal year 1984 and $25,000 for the biennium 1985-1986 for linked-deposit administration. Clearly, the Treasurer's office carried out LDP with little additional staff and minimum additional costs.

Likewise, the additional transaction costs at the lender level were probably not significant. Some lenders groused about the additional time spent processing LDP applications, but they did not feel it involved much additional expense for them or their clients.

Targeting of Subsidies

If the objective of LDP was to help those farmers in financial stress, then it is important to know the stress characteristics of those who got LDP loans. The debt-to-asset ratio is a widely accepted measure of this stress.

Table 1 presents the number of LDP loans in 1985 and the percentage of loans by debt-to-asset ratio. It can be seen that about half the loans, 755, were made to borrowers in the .4 to .69 debt-to-asset category. These borrowers also received the majority of the funds, about $51 million. Farmers with a debt-to-asset ratio above .7 received about 17 percent of the value of loans, and made up a relatively small number of borrowers: 15 percent of the total, or 235 farmers. Finally, approximately 576 borrowers, 37 percent, had debt-to-asset ratios below .4.

TABLE 1: Number, Amount, and Percent of All LDP Loans in 1985 by Debt-To-Asset Ratio.

| Debt-To-Asset Ratio | Number of Loans | % | Amount $(000) | % |
|---|---|---|---|---|
| .70 and above | 235 | 15 | 16,620 | 17 |
| .40 to .69 | 755 | 48 | 50,897 | 51 |
| below .40 | 576 | 37 | 32,032 | 32 |

Source: Compiled from unpublished LDP data provided by the State Treasurer's Office.

If the number of farmers participating in LDP followed the same distribution as that found by the Ohio Department of Agriculture 1985 survey, about one-third of the LDP participants would be expected to have a debt-to-asset ratio above .4. In fact, about two-thirds of the total number of LDP borrowers had debt-to-asset ratios above .4. It should be noted, however, that agricultural lenders in Ohio were not serving Ohio farmers who were at the ends of the debt-to-asset ratio distribution: those with zero debt, and those with large ratios who were not creditworthy. It is not clear from this information, therefore, whether or not lenders tilted their LDP loans toward farmers in their loan portfolios with the highest debt-to-asset ratios. Informal discussion with agricultural lenders showed no clear pattern of lender behavior. In 1985 some lenders recommended that their weakest borrowers apply for LDP loans, while other lenders hardly mentioned the program for fear of playing favorites, and only submitted applications for those who had heard about the program independently. A few lenders sent in LDP applications for all farmers who asked them to do so. Still other lenders used the LDP loans as a marketing device to bid away preferred borrowers from other lenders, or to dissuade current clients from switching to other lenders.

Table 2 shows the percentage of total LDP borrowers, and the percentage of bank and PCA borrowers to total borrowers by debt-to-asset ratio for 1985. As can be noted, banks had a larger percentage of borrowers in the lowest debt-to-asset category: 45 percent versus 29 percent for the PCAs. This suggests that PCAs had a weaker portfolio, or that they tilted their LDP loans more in favor of highly leveraged farmers, than did commercial banks.

In 1985, linked-deposit borrowers with a debt-to-asset ratio between .4 and .7 accounted for about 18 percent (one in six) of the approximately 4,000 Ohio farmers with such a ratio. LDP borrowers with a ratio above .7 made up about 13 percent (one in eight) of the 1,800 Ohio farmers estimated to have a ratio above .7. Only a modest percentage of the financially stressed farmers in Ohio, therefore, received any relief under LDP, regardless of how one defines this stress.

TABLE 2: Percentage of LDP Borrowers by Debt-To-Asset Ratio and Lender in 1985.

| Debt-To-Asset Ratio | Total | Commercial Banks | PCAs |
|---|---|---|---|
| | ----------Percent--------- | | |
| .70 and above | 15 | 14 | 16 |
| .40 to .69 | 48 | 41 | 55 |
| below .40 | 37 | 45 | 29 |
| total | 100 | 100 | 100 |

Source: Compiled from unpublished LDP data provided by the State Treasurer's Office.

Effectiveness

The effectiveness of the subsidy involved in LDP loans in alleviating financial stress also depends on the size of the subsidy relative to need. An estimate of the amount of need is shown by the recent overall decline in farm

land values in Ohio, total farm debt in Ohio, total interest payments by Ohio farmers, and total interest payments by individual LDP borrowers.

The market value of land provides most of the collateral for farm borrowing, and changes in these values sharply affect the creditworthiness of farmers. From 1980 to 1986 the overall value of farm land in Ohio declined $15 billion--by about half. The 3-4 year LDP subsidy of about $12 million is less than 1/1,000th of this decline in land value. In 1984 total agricultural debt in Ohio was about $5 billion, 50 times the $100 million provided by LDP.

In 1984 Ohio farmers paid approximately $200 million in interest on their non-real estate debt alone. This amount did not likely decline appreciably in 1985. By way of comparison, in 1985 LDP reduced participating farmers' interest payments by about $3.5 million, less than 2 percent of Ohio farmers' interest payments on non-real estate debt in 1984 and probably less than one percent of their total interest payments. The $3.5 million reduction was, in the aggregate, certainly not enough to make a big difference to farmers on average. The more relevant question, though, is the difference the program made to the participating borrowers. To answer this question, 45 LDP borrowers from six representative Farm Credit System district offices were sampled to determine the absolute amount of interest they were paying. The magnitude of the LDP subsidy in relation to the total interest paid by a borrower can be used to determine whether or not the subsidy helped a farmer overcome financial difficulty.

In Table 3 the 45 sample observations are broken down into categories by loan size. The average loan, largest loan, and smallest loan are given for each category as well as the average interest, most interest, and least

interest paid by sample borrowers in each category. The amount of interest paid is the total paid in 1985.

It is noteworthy that most borrowers were borrowing an amount above their LDP request. For farmers borrowing the maximum $100,000 under LDP, the concessionary interest rate reduced the borrowers interest payment by about $2,400 in 1985 ($100,000 x .04 x 7/12). That is, the average total interest paid by the borrower would have been $65,300 without LDP, rather than $62,900. Looking at the borrower with the highest interest cost, $131,336, the interest payment this borrower would have made without LDP would have been about $133,736. The $2,400 in interest savings represented about 2 percent of the total interest payment for this farmer, and 23 percent of the total interest payment for the farmer having the lowest interest payment.

TABLE 3: Summary Information of PCA Borrower Sample by Loan Size.

| LDP LOAN AMOUNT ($000): | =$100 | $75 to $99 | < $75 |
|---|---|---|---|
| NUMBER IN SAMPLE | 20 | 11 | 14 |
| AVERAGE LDP LOAN | $100,000 | $83,263 | $43,719 |
| LARGEST LDP LOAN | $100,000 | $90,000 | $71,630 |
| SMALLEST LDP LOAN | $100,000 | $75,000 | $10,000 |
| AVERAGE INTEREST PAID | $ 62,900 | $40,736 | $23,551 |
| MOST INTEREST PAID | $131,336 | $67,509 | $50,550 |
| LEAST INTEREST PAID | $ 10,145 | $ 8,818 | $ 6,356 |

Source: Sample PCA data.

The average interest paid in 1985 for borrowers of more than $75,000 and less than $100,000 was about $40,000. If the average loan amount in this category is used to calculate the benefit of the interest reduction then the

average borrower in this category reduced his or her interest payments by about $2,000 in 1985 ($83,263 x .04 x 7/12).

The subsidy provided to these LDP borrowers was relatively small in relation to their total interest payments. The additional cash flow accruing to a farmer was negligible and unlikely to materially affect the financial condition of any borrower, let alone increase the viability of financially stressed farmers. This conclusion is supported by studies that have simulated interest rate reductions on the financial viability of farms and concluded that concessionary interest rates have a weak effect on farm viability [e.g. Barry (1986), and Boehlje (1985)].

Additionality of Funds

At least in part, the linked-deposit program was based on the assumption that there was a shortage of loanable funds for farmers in Ohio. The explicit intent of LDP was to increase the availability of loanable funds.

Melichar, however, points out that the average loan-to-deposit ratio of the nation's agricultural banks was about .56 at the end of 1985 and about .52 at the end of 1986, the lowest level since the 1960s. (The data on Ohio banks is not available, but likely parallels national figures closely). On average, the loan-to-deposit ratios of agricultural banks have declined since the early 1980s, meaning they have shifted their funds away from farmers. Furthermore, about one in seven agricultural banks currently have loan-to-deposit ratios below .35. Clearly, banks making agricultural loans were highly liquid in the mid-1980s. Similarly, the Farm Credit System has virtually unlimited access to national bond markets. While agricultural lenders have little trouble in obtaining loanable funds, they do have trouble finding creditworthy borrowers.

The additionality of funds can also be examined by determining if LDP allowed some farmers to receive loans who would otherwise not have gotten them. Discussions with lenders led us to conclude that virtually all LDP borrowers would have received the same sized loan, even without the LDP. In 1985 virtually all of the lending institutions had already made their loan decisions before LDP funds became available. They simply substituted LDP funds for their own funds. Also, none of the lenders that we interviewed felt that the small subsidy provided by the concessionary interest rate on LDP loans was enough to make any marginal borrowers creditworthy, who would have been judged to be not creditworthy without the LDP subsidy.

As a result, we conclude that LDP had little or no impact on the aggregate supply of loans available to farmers in Ohio and it had little, if any, effect on the supply of funds actually lent to LDP borrowers.

Distributional Impact

As mentioned earlier, in the 1985 cycle approximately $3.5 to $4 million in subsidy was transferred to LDP borrowers. Most of the concern with concessionary interest rates have focused on low income countries [Adams (1984) and Gonzalez-Vega (1977, 1984)]. These studies point out that the subsidy provided by concessionary interest rate programs are directly related to the size of the loan. Those farmers borrowing the largest amount receive the largest subsidy, those borrowing the smallest amount receive the smallest subsidy, and those who do not borrow receive no benefits. Furthermore, since loan size and borrowers' assets are positively correlated, the amount of the subsidy is a function of the borrower's wealth; thus, there is a regressive impact on income distribution as a result of these concessionary interest rate programs.

Information on the number of LDP loans in 1985 and the amount of credit by loan size is presented in Table 4. Farmers borrowing the maximum loan of $100,000 accounted for about one-third of the linked-deposit participants; they received approximately 50 percent of the program's $100 million. If the ratio of long-term loans and short-term loans was the same for all loan sizes, then those farmers borrowing the maximum loan amount received approximately 50 percent of the total subsidy, or approximately $2 million. Those farmers borrowing between $50,000 and $99,000 received about 36 percent of the program's $100 million while accounting for about 32 percent of the borrowers. Those farmers borrowing below $50,000 accounted for 36 percent of the borrowers; they received about 14 percent of the subsidy.

Complete information on the 1986 LDP cycle is not available. However, the share of loans and credit by loan size appear to have remained about the same. Approximately 35 percent of the 1,401 borrowers in 1986 received loans for the maximum $100,000 which accounted for about 50 percent of the credit. The remaining 65 percent of the borrowers received loans of less than $100,000 and received 50 percent of the credit. Again, a minority of the borrowers received a disproportionate share of the benefits.

TABLE 4: Share of Number of LDP Loans and Value, by Loan Size, 1985.

| Loan Size $(000) | Percent of Borrowers | Percent of Credit |
|---|---|---|
| = $100 | 32 | 50 |
| $75 - $ 99 | 13 | 18 |
| $50 - $ 74 | 19 | 18 |
| $25 - $ 49 | 20 | 11 |
| < $ 25 | 16 | 4 |

Source: Compiled from unpublished data provided by the State Treasurer's Office.

Not only are the benefits distributed inequitably among LDP borrowers, but they are distributed inequitably among Ohio farmers in general. In 1985, 1,575 farmers participated in LDP. This represents about 8 percent of Ohio's 20,000 family-sized farms. This 8 percent received all the benefits of the program. The majority of Ohio farmers, who did not participate, received no benefits from LDP, but as taxpayers they shared in LDP's costs.

## Conclusions

The linked-deposit program had significant pluses: (1) The General Assembly showed that it wanted to help agriculture. (2) In applying LDP they avoided other policies that could have been harmful. (3) The program was put in place quickly and operated with few transaction costs. And, (4) despite initial doubt as to how it would be accomplished, PCAs were allowed to participate.

There were, however, hidden costs and unintended effects of LDP. It is important to keep these in mind and weigh them against the positive aspects.

It is unlikely that Ohio voters would approve a cheap credit program for all farmers in Ohio, be they rich or poor, financially stressed or financially secure. Unfortunately, the most financially stressed farmers in Ohio were excluded from LDP because they were not creditworthy. Only a small portion of those farmers showing signs of serious financial stress, farmers with a debt-to-asset ratio greater than .7, received LDP funds. If the objective of LDP was to help the most financially stressed farmers, then the LDP subsidy should have been more precisely targeted.

In 1985 there were 1,331 LDP loans made to farmers with a debt-to-asset ratios below .7. If all LDP loans had been given to farmers with ratios above .7, then almost 90 percent of Ohio's 1,800 farmers with high debt-to-asset

ratios could have been reached. Of course, not all of these farmers could have been reached through commercial lenders, since many of them were not creditworthy and lenders assumed all lending risks. Therefore, if LDP targeted these high-debt farmers, it is unlikely that lenders would have been able to find enough creditworthy borrowers to absorb the $100 million authorized by the General Assembly. Commercial loans were not the way to reach those farmers with the most problems.

Even if the program were more effectively targeted, the amount of assistance provided to borrowers is too small to materially improve their financial condition. Lowering the cap on the maximum size of LDP loan allowed, for example, would allow more farmers to participate, but the subsidies that now appear to be too small to make an impact would be made even smaller. If LDP is to be continued then the loan cap, or the interest rate reduction, might be increased so that the amount of help going to a targeted borrower would be large enough to have more impact. This would, of course, run counter to political objectives of having as many farmers as possible participate in LDP.

On the other hand, if the objective of the General Assembly was to help Ohio agriculture in general then the $100 million was simply not enough to make a difference. Only about 8 percent of Ohio's 20,000 family-sized commercial farms participated in LDP. The total $11 to $12 million subsidy provided by LDP over the length of the program was small when compared to the size of the problems faced by Ohio's financially stressed farmers--it was less than 10 percent of the state subsidy provided to Home State Savers.

The explicit objective of the General Assembly was to increase the supply of loanable funds in Ohio agriculture. It appears, however, that there was no lack of loanable funds in either commercial banks or PCAs; the problem was a

lack of creditworthy customers. LDP made few, if any, additional farmers creditworthy and did not put loans into the hands of farmers who would have gone without otherwise.

In addition to the above issues of targeting and additionality, the equitability of LDP must be questioned. The linked-deposit program was only large enough for a few Ohio farmers to participate. Thus, those who were not able to participate, and especially those who applied and were turned down, must wonder about the fairness of a program that excludes them, but at the same time provides benefits to neighbors. The most benefits flowed to those who borrowed the most and the fewest benefits flowed to those who borrowed the least.

An alternative to LDP might be to take the subsidy out of the credit system and target the aid to stressed farmers through other channels. This would, of course, require a direct appropriation by the General Assembly and the explicit cost would become known to taxpayers. This information would allow taxpayers to make more informed decisions about the efficacy of the assistance program.

Social or educational agencies could use the funds for job training for those being forced out of farming, to help displaced farmers relocate, to provide tuition for further education, or to provide counseling to financially stressed farmers and their families. The $12 million LDP subsidy could have provided about $6,000 to each of two thousand Ohio farmers suffering extreme financial stress or $20,000 to each of the 600 farmers estimated to have left farming in 1985 due to financial difficulties.

Providing such direct assistance may be the best way to alleviate some of the human suffering in agriculture, if that is our intention. However, if

public assistance is to be channeled through the credit system, then the assistance must be more carefully targeted than was the LDP subsidy. On the other hand, if our intention is to help Ohio farmers in general, the linked-deposit program does not appear to be the right tool. It was too small and reached too few farmers with too modest a subsidy to make a significant difference. It is also clear that financial stress in farming is a national problem that requires federal, not state, government action.

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