EXAMINING THE POTENTIAL BENEFITS OF FEDERALLY SUBSIDIZED FARM SAVINGS ACCOUNTS FOR DAIRY FARMERS

By

Dolapo K. Enahoro and Brent A. Gloy*

Selected Paper prepared for presentation at the American Agricultural Economics Association Annual Meeting, Long Beach, California, July 23-26, 2006

CONTACT AUTHOR
Brent Gloy
Department of Applied Economics and Management
303 Warren Hall
Cornell University
Ithaca, NY 14853
Phone: 607-255-9822
E-Mail: bg49@cornell.edu
Fax: 607-255-9822

---

* Graduate student and Associate Professor, Department of Applied Economics and Management, Cornell University, Ithaca, New York.

Abstract
Financial data from a panel of New York dairy farms was analyzed to examine the potential benefits of establishing federally subsidized farm savings accounts for dairy farmers. The paper examines whether farmers would have sufficient cash flow to fund the accounts, how the accounts would influence farm income variability, and how program design influences eligibility for the benefits received from the accounts.

Keywords: farm savings accounts, counter-cyclical, risk management

EXAMINING THE POTENTIAL BENEFITS OF FEDERALLY SUBSIDIZED FARM SAVINGS ACCOUNTS FOR DAIRY FARMERS

Introduction

Government support programs have long been used to help farmers manage income variability. These programs have ranged from direct income support, to price floors, to subsidized crop insurance. Developing nations have severely criticized many price support mechanisms for their trade distorting effects. The pressure for governments of developed countries to modify their support programs has caused these countries to consider delivering domestic support through alternative policies such as farm savings accounts.

As attention turns to the next farm bill, government subsidized farm savings accounts have gained attention as possible risk management tools. These accounts encourage farmers to set aside funds in high-income years to be drawn upon in low-income years. Like revenue insurance products, most farm savings account proposals rely upon tax records to determine eligibility for contributions and withdrawals from the accounts. Unlike revenue insurance products, the producer does not pay a premium, but rather places funds in a deposit account. Deposits to the account may be tax deferred, and/or matched by a deposit from the government.

Two farm savings programs – Farm and Ranch Risk Management (FARRM) and Counter Cyclical (CC) savings accounts – have arguably received the most attention, although neither has become law. These programs have been the subjects of several research efforts (Gloy, LaDue and Cuykendall; Gloy and Cheng; Monke and Durst; Edelman, Monke and Durst (2001a); Edelman, Monke and Durst (2001b)). The focus of much of the previous research on farm savings account programs has been to determine the costs of the program, farmer eligibility, and risk management benefits. While these are important questions, unless one analyzes the farm cash flow situation, it is impossible to know whether farmers will be able to take advantage of the accounts.

This paper assesses whether farmers have sufficient cash flows to take advantage of the incentives offered by the farm savings account programs. A model of cash flow is developed and

New York dairy farm data is used to determine how the program might impact the farm financial situation. Specifically, the paper examines 1) availability of funds to deposit in farm savings accounts; 2) extent to which farmers could divert cash from investing activities to the savings programs; 3) the effects that the savings programs have on year-to-year variability of farm household income; and 4) how the accounts would impact farm financial conditions.

Next, important features of the proposed FARRM and CC savings accounts are described. Then, a model of farm cash flows is developed to understand how savings accounts impact the cash flow situation. The data and results are presented and the conclusions and policy implications of the paper are presented.

Farm Savings Accounts Proposals and Previous Findings

Key differences between FARRM and CC accounts include the incentives provided to place deposits in the accounts, limitations on the size of contributions, and limitations on withdrawals. Table 1 presents a comparison of the features of the accounts[1]. While FARRM accounts propose tax deferral as incentive for farmers to save, CC accounts include government matching of deposits to encourage farmer contributions. The deposits to FARRM accounts are limited to 20 percent of net taxable farm income as opposed to the CC account which would match contributions up to 2 percent of gross farm income with a $5,000 match limit. Earnings on balances in FARRM accounts would be taxable on a yearly basis and deposits would be tax deferred until withdrawal. CC account earnings would be tax deferred but deposits would be taxable. Under the FARRM account proposal farmers could withdraw funds at their discretion and the CC proposal only allows withdrawals when gross income falls below a historical trigger.

[1] Recent versions of the provisions for FARRM and CC programs are defined within the framework of legislative bills to amend the Internal Revenue code of 1986 (see Library of Congress, H.R 927; S.665)

Table 1. Comparison of Features of FARRM and CC programs[a].

Program Features	FARRM	CC
Eligibility Criteria	Positive net taxable income	Gross taxable income over $50,000
Annual eligible deposit	Up to 20 percent net taxable income	Up to 2 percent gross taxable income
Government deposit subsidy	None	Match dollar for dollar up to maximum eligible deposit of $5,000
Tax status of deposit	Pre-tax income	After-tax income
Tax incentive on farmer deposit	Tax deferred until withdrawn	None
Tax incentives on interest	Interest earnings taxed annually	Deferred until withdrawn
Tax incentives on government deposits	No applicable government funds	Deferred until withdrawn
Withdrawal trigger	Left to farmers' discretion	Gross sales below gross revenue triggers
Time limit to deposits	Mandatory close-out if failure to farm 2 consecutive years; 10 percent penalty on deposit not withdrawn after 5 years	Mandatory close-out if failure to farm 2 years consecutive; 10 percent penalty on deposit not withdrawn after 5 years

[a]Adapted from Edelman, Monke and Durst (2001a); and Monke and Durst.

Previous studies have evaluated various features of the FARRM and CC programs (Gloy, LaDue and Cuykendall; Gloy and Cheng; Makki and Somwaru; Monke and Durst; Edelman, Monke and Durst, 2001a). This research has provided several estimates of the number of farms that would be eligible to contribute to the accounts. Among the most important of these estimates is Monke and Durst's study which used Internal Revenue Service data to make national estimates of eligibility and government costs. Based on actual tax returns, they estimated that about 31 percent of US farms would have been eligible to contribute to a FARRM and CC accounts in 1998.

Other studies have primarily relied upon farm business summary data to examine eligibility and have found substantially higher eligibility rates than national studies. These data sets provide much richer farm financial data, including income, balance sheet, and cash flow data. Unfortunately, the sample of farms in the data set does not contain data representative of

all types of farms present in the US farm sector. For instance, participants in the business summary programs tend to operate farms that are above average size and profitability. However, the farms are often typical of commercial family farms in the various states that they represent. As a result, the higher eligibility rates can often be explained by the commercial nature of the businesses in the summary programs as opposed to the smaller farms that make up the majority of the nation's farms.

While earlier studies have provided estimates of eligibility and potential deposits, none have explicitly examined whether farmers would have funds available to deposit in the accounts. These concerns are however, raised by Edelman, Monke and Durst, (2001a) who point out that the low level of net income experienced by many farms would seriously limit their ability to build enough reserves to self insure against income variations. In the next sections we discuss the approach used to study this problem.

Model

A simulation model was developed to examine how the proposed Farm and Ranch Risk Management (FARRM) and Counter-Cyclical (CC) account programs would impact dairy farms. The model utilized a 5-year panel (1997-2001) of 142 farms participating in the Cornell Dairy Farm Business Summary (DFBS) program.

Throughout the paper the term eligibility is used to refer to whether or not farms would be allowed to contribute to the accounts. The assessment of eligibility on its own assumes that there are no cash constraints to participation and eligible deposits (withdrawals) are the maximum amounts that farms can possibly contribute (withdraw). The term availability refers to whether or not farms have funds to contribute (withdraw).

Because FSAs rely on tax information, measures of taxable income were calculated for the farms. Net taxable income (NTI) and gross taxable income (GTI) were calculated as net and gross schedule F income from IRS form 1040.

The eligibility to participate in FARRM accounts can be expressed as an indicator variable:

(1) $FElig_t = 1$ if $NTI_t > 0$; 0 otherwise

where $FElig_t$ takes the value 1 when the farm is eligible to participate in year *t*. NTI_t is the net taxable income in year *t*. Farms with positive net taxable income are eligible to receive tax-deferrals on up to 20 percent of their taxable income in the year(s) in which NTI is positive. This study assumes that farmers would attempt to contribute so as to gain the maximum tax-deferral possible.

The potential size of FARRM deposits was calculated according to (2).

(2) $FMcredit_t = \min[(0.2*NTI_t), xcash_t] \quad \forall \quad FElig_t = 1$; 0 otherwise

where $FMcredit_t$ is the contribution that the farm can make to the accounts in year *t*, NTI is the eligible net taxable income, and the variable $xcash_t$ is calculated as the cash that the farm has available to fund the account. Previous research has made the assumption that $xcash_t$ is adequate to fund any deposit. This assumption is adopted to estimate maximum deposits and then several different approaches are used to estimate xcash. These approaches will be discussed in a later section.

The eligibility to contribute to CC accounts can be expressed as an indicator variable:

(3) $CElig_t = 1$ if $GTI_t \geq 50{,}000$; 0 otherwise

where $CElig_t$ takes the value one to indicate that the farm is eligible to contribute to the account in year t. GTI_t is the eligible gross taxable income in year t. The use of income indexing for eligibility and withdrawals was also examined. The analysis assumes that farms are not allowed to contribute in the same year in which they were eligible to withdraw. Thus, a farm could only contribute to the CC accounts in the current year if its gross taxable income did not fall below 90 percent of the indexed adjusted gross revenue (IAGR) of the preceding years. In this situation the eligibility criterion in (3) is modified to:

(4) $ICElig_t = 1$ if $CElig_t = 1$ and $GTI_t \geq 0.9*IAGR_{t-1}$ otherwise 0.

where $ICElig_t$ is the eligibility of the farm to contribute to CC accounts in the current year and equals 1 if farm is allowed to contribute. The variable $IAGR_{t-1}$ is the income-indexed adjusted gross revenue in the previous year[2]. Farms were allowed to contribute 2 percent of their gross taxable income to the program in the years for which they are eligible. Because the government match was capped at $5,000 the contribution was limited to a maximum of $5,000[3]. The potential contribution to the accounts was estimated according to (5).

(5) $CCcredit_t = \min[(0.02*GTI_t), 5{,}000, xcash_t] \ \forall \ ICElig_t = 1.$

where $CCcredit_t$ is the contribution that the farm can make to the CC account in year t, GTI is the eligible gross taxable income, and $xcash_t$ is the available cash that the farm has to fund the account.

Determining the Availability of Cash (xcash)

While eligibility to participate in FARRM or CC accounts does not depend upon cash flows, the ability of the farms to fund the accounts and utilize them for risk management does. To understand how farms would fund their accounts, the farm cash flow model was assessed.

The farm cash flow situation is defined by the cash flow identity (6):

(6) $\Delta FC_t = (NOP + NCONS + NIV + NFIN)_t$

where ΔFC_t is the farm cash balance in the current year and represents the increase (decrease) in total cash held in checking and savings accounts and in cash reserves within the accounting year. It is calculated as end-of-year farm cash less farm cash at the beginning of the year. The variable NOP is net cash from farm operating activity and is the total cash receipts from the sale of farm products plus receipts from government payments less total cash expenses on farm production. NCONS is net cash from consumption activities and is negative for most of the farms in the five years of the panel. It is calculated as total non-farm income including cash

---

[2] The calculation of IAGR was adapted from the formula used by the Risk Management Agency (RMA) to calculate the indexed average adjusted gross revenue for insurance purposes (FCIC).

[3] Farms would have little incentive to contribute to the account beyond the match limit because the accounts contain withdrawal limitations that could severely limit their access to funds in the accounts.

from non-farm capital used in business and non-farm money borrowed, minus personal withdrawals and family expenditures (including non-farm debt payments). The net investing activity on the farm is represented as NIV and is the cash income from the total sales of farm capital (real estate, machinery and stocks and certificates) less purchase of new capital. The variable NFIN is net cash usage for financing activities and is calculated as the total of intermediate, long and short-term money borrowed plus increases in operating debt, minus principal payments (intermediate, long and short term) and decreases in operating debt.

Cash availability for the FSAs was estimated by considering how the various factors in (6) could be used to fund the accounts. The easiest manner in which farms can fund their FSA accounts is to divert some of the cash normally available as savings in checking and savings accounts and cash reserves. The change in cash accounts reflects new savings net of the consumption, financing and investing activities of the farm in the current year. The ability of the farm to fund the accounts using this source of cash is represented as an indicator variable in (7):

(7) $FC_t = 1$ if $\Delta FC_t > 0$; 0 otherwise

where FC_t equals 1 when the farm has accumulated new cash balances that could be used to make a contribution to the account in year t. The variable ΔFC_t is as defined in equation (6). A positive value of ΔFC indicates that the farm built cash balances over the year. Farms are assumed to divert cash into FARRM and CC accounts that would otherwise have been held in reserves or easily accessible checking and savings accounts. The farm cash measure possibly provides the most stringent assessment of whether farms have the cash to contribute to farm savings accounts.

A second means by which farms could fund their accounts is to assume that all cash net of farm operations is available for contributions. A farm is assumed to have cash to contribute in the years in which the net earnings are positive.

Cash availability using the net earnings from operations measure is represented as an indicator variable in (8):

(8) $NE_t = 1$ if $(NOP)_t > 0$; 0 otherwise

where NE_t is the measure of available cash flows and NOP_t is the net cash receipts from farm operations. When NE_t equals 1 the net cash receipts from farm operations is positive. The measure ignores non-farm income and the use of cash for activities outside of core farm operations and investment and financing. It is the simplest measure of the ability of the farm to generate cash that could become available for contribution to FARRM or CC accounts.

The third cash flow measure used to assess the ability of the farms to contribute is based on the cash flow coverage margin. The cash flow coverage margin (CF) of a farm business is the farm earnings before taxes, interest and depreciation less financial obligations for principal and interest debt payments and family living expenses. This measure provides an indication of the farm's ability to make planned debt payments from its earnings. Firms attempt to keep this margin non-negative such that the planned debt payments do not exceed the cash flow available. According to this measure the farm is potentially able to contribute when cash flows exceed planned debt payments. The availability of cash for contribution based on the cash flow coverage of the farm is represented as an indicator variable in (9):

(9) $CM_t = 1$ if $CF_t > 0$; 0 otherwise

where CM_t equals 1 when CF_t is positive. The use of the cash flow coverage measure in determining farm ability to contribute to the programs assumes that farm cash excluding that for debt payments and family living expenses, is available for contribution to savings accounts.

The three measures outlined thus far (cash balances, cash from operations, and cash flow coverage), although useful indicators of ability to contribute to the FSA, ignore the fact that farms could alter their investment activity. The measures provide basic information on availability of cash but are unable to illustrate how decision-making on the farms could have altered farm activities in such ways as to take advantage of the incentives offered by the programs. A fourth source of cash flows was thus examined that assumes that adjustments can be made to current farm investment activity.

A standard investment rate was assumed for all the farms in the panel in which capital purchases in the current year were reduced to amounts that cover depreciation. In theory

however, the rate and extent of investments on a farm may be influenced by such factors as type of business and growth objective(s) of the farm, level of off-farm income, output prices, interest rates, technology, policy, and the opportunity cost of capital, amongst others (Jensen et al.; Thijssen).

Equations (10) and (11) formalize how changes in farm investment impact cash availability:

(10) $AI_{t,} = 1$ if $ANIV_t > 0$; 0 otherwise

(11) $ANIV_t = NIV_t - I_{j,t}$

where AI_t equals 1 when historical net farm investment NIV_t is greater than net investment, I_t. Here I_t is the net new investment in excess of depreciation and is defined as (12):

(12) $I_{j,t} = \{\max[(CP - DEP)_t, 0]$

where CP_t is total capital purchases in the current year and DEP_t is the total depreciation on capital assets. The variable DEP_t is calculated as depreciation on real estate, machinery and livestock, including depreciation on purchased breeding livestock. The difference between actual purchases of new investments in the current year and depreciation on current assets then represents a potential contribution to FSAs. If the farm does not make purchases that cover depreciation, they are unable to contribute to the accounts in this scenario.

Under the FARRM program, farms were allowed to contribute up to 20 percent of eligible farm net income, with no cap on contributions. Under the CC account, farms could make deposits of up to 2 percent of taxable income, and capped at $5,000 in accordance with the ceiling on the government match. The FARRM and CC program features were simulated for the first year for which panel data is available and re-assessed for each of the subsequent years. Changes in the farm financial situation in response to the programs were tracked through time for each farm and the overall impact of the programs was assessed.

Farms were divided into three size categories. Small farms have gross sales of up to $249,999. Medium size farms have sales between $250,000 and $499,999 and farms classified as large have gross sales equal to or exceeding $500,000. Farm income variability and eligibility

of farms to participate are assessed across farms and over time using the internal revenue service (IRS) schedule F income measures.

Withdrawals from FARRM and CC Accounts

To assess the benefits of FARRM and CC accounts, the frequency and cash amounts of withdrawals were examined. Farms were allowed to withdraw from their FARRM accounts when their eligible net taxable income fell below a target amount[4]. The farms were allowed to withdraw deposits they had accumulated, in any year in which they had negative eligible net taxable income. Withdrawal amounts were restricted to the minimum of the amount required to improve the eligible net taxable income to zero or the FARRM account balance.

Withdrawals from CC accounts were allowed when gross income fell below a trigger value. The trigger was defined according to a 5-year moving average of gross revenue. Farms were allowed to make a withdrawal when income fell below the 5-year moving average. Withdrawals were also examined under the case where the moving average was indexed to account for changes in farm business size. In this case, the indexing approach used for the adjusted gross revenue insurance product (AGR) was used to adjust the average[5]. Farms were allowed to withdraw when current year income fell below 90 percent of the respective average. Withdrawals were limited to the amount required to raise income to the trigger level or the amount in the account.

[4] Although the FARRM proposals do not specify definite triggers for withdrawals from the accounts a negative net income trigger was used to evaluate FARRM withdrawals. This trigger is consistent with using the account for risk management as opposed to tax management.

[5] For details see: http://www.rma.usda.gov/FTP/Publications/directives/20000/PDF/03_20030_AGR-Lite_Handbook.pdf

Description of the Panel

The dataset was developed from farm level financial data in the Cornell Dairy Farm Business Summary (DFBS) program. The dataset developed in this study consisted of 142 farms that had participated in each year from 1997 to 2001.

Table 2 presents the distribution of farms by farm size. Farm size is determined using farm yearly gross sales. Thirty-six percent of the farms in the panel can be categorized as small farms. Less than a fifth are medium sized farms and almost half (48 percent) have gross sales over $500,000. The predominance of larger farms may be explained by the panel consisting of mostly commercial family farms.

Table 2. Distribution of Farms by Farm Assets and Income, 142 New York Dairy Farms.

	Small Sales < $250,000	Medium Sales from $250,000 to $499,000	Large Sales > $499,999	All
Percent of farms	36	16	48	100
		Farm Assets ($)		
Average	421,915	818,786	2,741,282	1,596,880
Maximum	997,596	1,224,950	15,770,085	15,770,085
Minimum	49,931	409,699	541,145	49,931
		Net Farm Income ($)		
Average	29,578	48,889	188,759	108,933
Maximum	102,708	230,120	1,718,347	1,718,347
Minimum	-40,510	-99,391	-864,003	-864,003

Variability in Farm Income

Variability in farm income was calculated based on net taxable income (NTI) and gross taxable income (GTI) (Table 3). The average NTI for all the farms in the panel was $41,321 while average GTI was $866,316. Incomes were generally lowest in the year 1997. In that year,

the average eligible net income for farms in the medium size category was negative. The correlation between gross income and net income was only 0.26 indicating that gross income fluctuations do not necessarily correspond to net income variation.

Table 3. Average Net and Gross Taxable Income by Farm Size, 142 New York Dairy Farms, 1997 – 2001.

Year	Category	Net taxable income ($'s)	Gross taxable income ($'s)
All	All	41,321	866,316
1997	Small	9,371	134,176
	Medium	-482	290,490
	Large	21,094	1,244,225
	All	13,389	691,067
1998	Small	23,092	160,892
	Medium	29,181	348,149
	Large	83,727	1,503,514
	All	53,115	834,168
1999	Small	26,945	168,596
	Medium	37,401	378,467
	Large	120,830	1,642,277
	All	73,598	908,296
2000	Small	16,344	156,891
	Medium	30,144	345,997
	Large	18,688	1,553,051
	All	19,702	856,105
2001	Small	20,849	175,066
	Medium	27,654	388,032
	Large	72,742	1,913,277
	All	46,801	1,041,943

Substantial income variability was experienced on the farms (Table 4). As measured by the coefficient of variation (CV), relative variability was generally higher for net than gross taxable income. On average, the difference between highest and lowest annual net taxable

income earned in five years ranged from $32,745 for small farms to $35,153 for large farm enterprises. The values for coefficient of variation showed some variation in the net income category with medium size farms having the lowest CV. The CV for gross income did not vary by farm size, indicating that the factors causing gross income variability are common across farm sizes.

Table 4. Average Income Variability by Farm Size, 142 New York Dairy Farms, 1997 – 2001.

Size Category	Range NTI	Range GTI	Std. Dev NTI	Std. Dev GTI	Coefficient of Variation NTI	Coefficient Variation GTI
Small	32,745	51,045	13,347	20,084	0.33	0.13
Medium	34,819	54,354	14,175	21,258	0.29	0.13
Large	35,153	56,058	14,326	21,878	0.34	0.13
All farms	35,027	56,555	14,263	22,020	0.32	0.13

FSA Eligibility

In total, 710 instances of eligibility were assessed. That is, at the maximum, 142 farms could have made 5 contributions each if eligible in all the years. The overall eligibility rate for FARRM was 77 percent. When farms were not allowed to deposit and withdraw from a CC account in the same year the overall frequency of contributions was also 77 percent for the indexed CC account[6]. Table 5 shows the distribution of the number of years that each farm was eligible to contribute to the accounts. Two farms could not contribute to FARRM accounts in any of the years. All 142 farms in the panel could make CC contributions in at least one year although only 27 percent could contribute in all five years of simulation.

[6] Indexing gross revenue results in substantially more withdrawal opportunities. Without indexing only 10 percent of the farms would be allowed to make a withdrawal, while 73 percent are able to make a withdrawal when indexing is allowed.

Table 5. Percent of Farms Eligible to Make Multiple Contributions to FSA's, 142 New York Dairy Farms, 1997 – 2001.

Number of Years that Farm was Eligible to Contribute	FARRM	CC
0	1	0
1	6	0
2	10	0
3	13	41
4	26	32
5	44	27
At least one year	99	100

Ability to Fund Farm Savings Accounts

Each of the cash availability assumptions was used to determine the potential for farms to contribute to the accounts. The first analysis only considers whether the farms would be able to make any contribution under each of the assumptions. The amount of the deposit will be considered in the next section.

The cash balance (FC) criterion was the most restrictive assumption (Table 6). Farms had cash reserves only 52 percent of the times for which they were eligible to contribute to FARRM accounts or CC accounts. The net earnings cash measure (NE_t) on the other hand showed that the farms would have funds to contribute to FARRM accounts 100 percent of the time for which they were eligible. The net earnings measure, which does not consider depreciation, expenditure on family living, debt payments or the purchase of additional capital, is the most basic measure of whether farms have the cash to contribute. The cash flow coverage (CFC) margin is a more restrictive measure of the ability to contribute. Under this measure farms would be able to make a deposit to FARRM accounts 70 percent of the times eligible and CC accounts 59 percent of the times eligible. By altering investment, more farms could contribute under this measure than under the cash flow coverage measure. Here, the deposit frequencies increased to 76 percent (FARRM) and 77 percent (CC).

Table 6. Frequency of Contributions to FSA's, 142 New York Dairy Farms, 1997 – 2001.

	FARRM		CC	
Cash flow measure	Frequency of contributions	Possible Contributions (%)	Frequency of contributions	Possible contributions (%)
Maximum Possible	551	-	548	-
Farm cash balance	286	52	287	52
Net earnings	551	100	531	97
Cash flow coverage	383	70	326	59
Adjusted Investment	420	76	423	77

The potential sizes of deposits were assessed in relation to the maximum potential deposit. The maximum potential deposit measure assumes that farms have sufficient cash and ignores any cash constraints to participation. Average actual deposits were then calculated using the cash balance, net earnings, cash flow coverage margin and adjusted investment cash availability measures (Tables 7 and 8).

The summary is presented by farm size. In the case of the FARRM account (Table 7), on average, eligible farms could have received tax deferrals on up to $12,759. Under the optimistic net earnings measure, farms would be able to fully fund their accounts. Under more realistic restrictions, the results were less encouraging. Farms were able to meet only 25 percent of the possible deposit with the cash balance criterion, 80 percent with the cash flow coverage criteria and 73 percent with modified investment. The average deposits ranged from $1,444 for small farms (cash balance measure) to $17,272 for large farms using the cash flow coverage margin criterion.

Table 7. FARRM Deposits as Percent of Maximum Eligible Deposits, 142 New York Dairy Farms, 1997 – 2001.

Size Category	Amount eligible for deposit ($)	Cash Balance (FC)	Net Earnings from Operations (NE)	Cash Flow Coverage Margin (CM)	Adjusted Investment (AI)
		-----Actual Deposit as a Percent of Eligible Deposit------			
Small	4,814	30	100	65	58
Medium	6,926	22	100	79	78
Large	20,810	25	100	83	75
All	12,759	25	100	80	73

The cash amount available to small farms under the cash balance measure is 30 percent of the average maximum the group is eligible to receive tax deferral for. This compares favorably with 22 percent for medium-sized farms, and 25 percent for the farms in the large-size category. The cash flow coverage margin criteria generally showed increased ability of eligible farms to take advantage of the incentives of FARRM accounts compared to the measure of cash held in savings and checking accounts and in cash reserves. However, in this case farms were still only able to fund the account at 80 percent of the possible level.

The ability of farms to fully fund CC accounts was, in general, lower than observed for FARRM program. This is explained because farms were often eligible to make deposits under CC program rules in years in which they did not qualify for FARRM contributions. In these years they had a negative net taxable income which often impacts their cash flow and ability to fund the account. As a result, they often could not meet the specified cash requirements for CC contributions. For example, none of the farms with negative cash from net earnings qualify to participate under FARRM, but some of them are eligible for CC deposits. Using the cash flow coverage margin, farms could make 59 percent of the potential deposits.

Table 8. CC Deposits as Percent of Maximum Eligible Deposits, 142 New York Dairy Farms, 1997 – 2001.

Category	Amount eligible for deposits ($)	Cash Balance (FC)	Net Earnings from Operations (NE)	Cash Flow Coverage Margin (CM)	Adjusted Investment (AI)
		-----Actual Deposit as a Percent of Eligible Deposit------			
Small	3,128	36	98	54	62
Medium	4,942	30	91	56	61
Large	5,000	44	98	63	78
All	4,313	39	97	59	71

Withdrawals from FSAs

Withdrawals were assessed using a net income trigger for FARRM and an indexed gross income target for CC accounts. Overall, the income variability experienced by the farms frequently made them eligible for withdrawals from the accounts. Table 9 shows how frequently farms were eligible to make withdrawals from FARMM and CC accounts. Overall, the withdrawal rate was much higher for the CC account (73 percent) than for the FARRM account (38 percent).

Table 9. Farms Eligible to Make Withdrawals, 142 New York Dairy Farms, 1997 – 2001.

Farms Eligible	FARRM	CC
	----------Percent----------	
0 yrs	62	27
1 yr	33	49
2 yrs	5	25
At Least One Year	38	73

Farms often did not have sufficient funds available for withdrawals when they were eligible. For instance, while net taxable income (NTI) was negative 22 percent of the time, farms would not necessarily be able to make withdrawals from FARRM accounts in all of these instances. Some experienced negative NTI before they could build account balances. In addition, the balances in the accounts were often inadequate to address the need for withdrawals.

The ability of eligible farms to withdraw funds from their FSAs was next assessed under the different assumptions of cash availability when contributing to the accounts. The impact of different assumptions on contributions was compared to the amounts that could be withdrawn assuming that there were no cash flow constraints on contributions (Table 10).

Table 10. Average Cash Withdrawals as Percent of Maximum Withdrawals from FSAs, 142 New York Dairy Farms, 1997 – 2001.

Farm Size Category	Maximum Eligible Withdrawal ($'s)[a]	Cash Balance (FC)	Net Earnings (NE)	Cash Flow Coverage Margin (CM)	Adjusted Investment (AI)
		----------FARRM Accounts ----------			
Small	4,796	44	100	61	65
Medium	9,017	40	100	76	58
Large	28,553	40	100	92	80
All	19,618	40	100	89	78
		----------CC Accounts ----------			
Small	6,893	55	97	60	72
Medium	13,766	38	94	59	69
Large	25,265	48	100	65	82
All	17,296	47	99	63	79

[a] The maximum eligible withdrawal is the amount that farms could withdraw from the account assuming that they had placed the maximum eligible deposit in the accounts.

Table 10 shows the relative withdrawal potential for four measures of farm cash. The maximum average withdrawal was slightly higher for FARRM accounts ($19,618) than for CC accounts (($17,296). Farms could withdraw 100 and 99 percent of the maximum possible, when positive net earnings (NE) from farm operations was used as the criteria for cash availability. However, the percent of possible withdrawals fell quickly as more strict assumptions were placed on cash flow availability. In the case of the cash balance measure (CB), the percent of maximum withdrawals fell to 40 percent (FARRM) and 47 percent (CC).

The cash flow coverage measure increased withdrawals to 89 percent (FARRM) and 63 percent (CC) of maximum withdrawals. Large farms seemed to have the highest potential for farm withdrawals although this did not hold when farm cash reserves was assessed. It appeared that the

large farms on average kept proportionally smaller cash reserves when compared with the smaller farms. The cash flow coverage margin was more favorable to large farms. This was particularly true in the FARRM account situation. Here, large farms could withdraw up to 92 percent of the maximum possible deposit while small farms only had 61 percent of what was possible.

FSA Ending Account Balances

Table 11 compares the average FARRM and CC account balances at the end of the five-year program window. On average, end-of-program cash in FARRM accounts was more than double that observed for CC accounts, despite the dollar-for-dollar government funding under CC accounts. This result is partially explained by the more frequent withdrawals from CC accounts which arise from income indexing. Overall, the account balances can be relatively large. In the case of FARRM accounts, assuming the maximum possible contribution, the average farm would have ended the period with a balance of $42,289. However, one would expect that the actual balances would be less than this amount because farms are unlikely to make the maximum contribution. An expected range for the magnitude of the final deposit could be determined from the various cash flow deposit criteria. The most restrictive assumption is the cash balance criterion, while the cash flow coverage margin is much less restrictive. Based on these criteria, one would expect the final balances to fall somewhere in the range from $9,726 to $32,563. The average ending balance, including the government match, in the average CC account was $18,315. Here, one would expect the ending balances to fall between $5,860 (cash balance criterion) and $10, 256 (cash flow coverage margin criterion).

Table 11. Average FSA Balances at End of Five-Years, 142 New York Dairy Farms, 1997-2002.

Contribution Criteria	FARRM	CC
Maximum Possible ($)	42,289	18,315
Cash Balance (CB) ($)	9,726	5,861
% of maximum	23	32
Net Earnings (NE) ($)	42,289	17,582
% of maximum	100	96
Cash Flow Coverage Margin (CM) ($)	32,563	10,256
% of maximum	77	56
Adjusted Investment (AI) ($)	30,871	12,088
% of maximum	73	66

Summary and Conclusions

The farms in this study experienced considerable income variability. The variability is found on both large and small farms. When measured by the coefficient of variation, the income variability experienced by small farms is similar to that experienced by large farms. One potential purpose of farm savings programs is to encourage farmers to put aside funds that can be used to offset income variability. This study examined two farm savings account (FSA) proposals, Farm and Ranch Risk Management (FARRM) and Counter-Cyclical (CC) account programs. The FARRM account implementation is based upon net taxable income and tax deferral incentives, while the CC account implementation is tied to gross income and provides a government matching deposit incentive. The focus of the paper was to determine how cash flow availability would influence deposits and withdrawals from the accounts.

Overall, almost all of the farms were eligible for at least one deposit under either account. The FARRM account allowed for larger deposits, however it is unlikely that either account would be funded at its full level because the farms frequently did not have cash flow available to fund the accounts. Four measures of farm cash flows were assessed to estimate the extent to which cash flow

would be available to fund the accounts. The measures considered changes in cash balances, net cash flow from operations, cash flow coverage margin, and net investment.

The only measure that produced a fully funded account was net earnings from operations. The cash flow coverage margin indicated that many farms would be able to fund the accounts and resulted in average account balances that were 80 percent (FARRM) to 59 percent (CC) of the maximum potential deposits. When assuming that the accounts could only be funded by changes in cash balances arising from cash flows, the contributions fell considerably. Here, the average contribution was 25 percent (FARRM) and 39 percent (CC) of the maximum deposits.

The results of the study are useful because they provide estimates of how cash flow availability will influence the use and benefits of FSAs. However, the farms in the panel are not typical of the "average" farm. These dairy farms are predominantly commercial and mostly large-sized farms with average annual gross sales exceeding $250,000. National data shows a high proportion of small farms and non-commercial farms. Consequently, the findings from this study cannot be easily generalized to represent the entire farming sector in the United States. However, one would expect that the cash flow situation on most farms is constrained in similar matters and that studies of FSAs need to take into account how cash flow availability will influence the use and benefits of FSAs. This study showed substantial deviation between the potential for farms to participate in FARRM and CC, as specified in program proposals, and the actual ability of the farms to take advantage of the incentives. Without adjustments to the current farm financial activity, the farms are unlikely to be able to make sufficient contributions and withdrawals to the programs and as such do not stand to gain significant risk reduction from the program.

REFERENCES

Edelman, M. A., J. D. Monke, and R. Durst. "Farmer Savings Accounts." The 2002 Farm Bill: Policy Options and Consequences. In Farm Foundation, no. 01(2001a): pp 61-66.

Edelman, M. A., J. D. Monke, and R. Durst. "Can Farmer Savings Accounts Help Save Farming?" *Choices*, 3rd Quarter, Fall (2001b).

Federal Crop Insurance Corporation (FCIC). Adjusted Gross Revenue Standards Handbook. 01-2005, p 44.

Gloy, B. and M. Cheng. "Farm Savings Accounts for Specialty Crop Growers." Research Bulletin, Department of Applied Economics and Management, Cornell University, RB 2006-3, May 2006.

Gloy, B., E. LaDue, and C. Cuykendall. "Farm Savings Accounts: Examining Income Variability, Eligibility and Benefits." Staff Paper, Department of Applied Economics and Management, Cornell University, SP 2005 – 02, August 2005.

Jensen, F. E., J. S. Lawson, and L. N. Langemeier. "Agricultural Investment and Internal Cash Flow Variables." *Review of Agricultural Economics* 15 (May 1993): 293-306.

Makki, S., and A. Somwaru. "Review and Analysis of Canadian Net Income Stabilization Account and Australian Farm Management Deposit Programs." Report to United States Department of Agriculture Risk Management Agency, September 2004.

Monke, J., and R. Durst. "Will Savings Accounts (Ever) Become Part of US Policy?" American Agricultural Economics Association Selected Paper, AAEA Meetings, Long Beach, California, July 27-31, 2002.

Thijssen, G. "Farmers' Investment Behavior: An Empirical Assessment of Two Specifications of Expectations." *American Journal of Agricultural Economics* 78 (February 1996): 166-74.

Library of Congress, H.R. 927, The United States House of Representatives, 108th Congress 1st Session, (February 26 2003).

Library of Congress, S. 665. The United States Senate, 108th Congress, 1st Session, (March 19 2003).