THE EXTENT OF RECORDKEEPING BY U.S. FARMERS AND RANCHERS

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Historical Perspective

Basic management functions include the recognition of business problems, assemblage of relevant facts, analyses of alternatives, choosing and assigning a course of action, evaluating results, and taking responsibility for outcomes. Records tie these functions together by providing the information necessary for decisionmaking (11). It has been forty-four years since Boss, Warren, and Mosher documented the first research and extension activities associated with farm cost accounting, farm management surveys and farm financial and recordkeeping activities at the turn of the century. The primary focus of the first cost accounting studies was to "secure basic data at first hand that could be used in determining which crops under certain conditions gave the greatest net profits when grown for markets, and which crops could best be worked into farm crop rotations that, over a period of years, would yield the best returns to a farmer" (1, pg. 10).

The first farm management studies obtained data from personally enumerated surveys of farmers that had agreed to record daily activities throughout the year. "Route" statisticians drove an established daily route to obtain completed records from farm families and interview farmers to record other needed data (1, p.7). These highly personal data collection efforts were necessitated by the knowledge that few farmers had records of any kind for their operation. Within a decade, however, farm cost studies emerged under a system in which farmers used a record book as a journal in which to record daily business transactions (1, p. 12). In the midwest ..."the farm account book rapidly took the place of the survey record...as the basis of farm management extension work... The books, which provided for the recording of farm expenses and receipts and the production of crops, were left with the cooperating farmers who made their own entries in the books (13, p. 24-25)".

Current Perspective

Seventy-five years after the introduction of record books into the practice of obtaining farm business data, research and extension economists, agribusiness, and lending institutions, still express considerable interest in the recordkeeping practices of farmers. Both extension and classroom teaching focus on the mechanics of recordkeeping. Textbooks are devoted to farm accounting and the use of farm and ranch financial records (9, 11). Farm management texts discuss uses of records in managerial decisions, and a wide variety of extension and popular press publications have provided guidance on how to construct various financial statements from data residing within the business (4). Our journals and extension publications have also provided guidance on the selection and implementation of farm record (accounting) systems (7, 16). Several states, primarily in the midwest, maintain farm business management associations (Casler has developed an assessment of record systems by State, and accounting conventions used to derive net income and return to operators (see 5)). Farm business associations, focused on helping farmers maintain records, are being established in other areas, particularly the Southeast.

Although considerable emphasis has been placed on farm and ranch recordkeeping, the disparate economic performance of farmers during the 1980's, has raised questions about the types of records maintained and their use in managerial decisions. The National Commission on Agricultural Finance was created by the Farm Credit Amendments Act of 1985 to consider methods to ensure the availability of credit

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to producers and agribusiness and the role of various lenders in providing loan funds. In its report the commission asserted that..."the current status of financial records being used by farmers leaves much to be desired. Financial records are often not consistent from farm to farm, state to state, or lender to lender. Many farmers still lack an adequate set of records...quality records could have helped many farmers recognize their financial problems and avoid some of the losses of the early 1980's (14, p. 18). Harl concluded a "highly important lesson from the farm crisis...was that accurate, up-to-date information on the financial condition of farmers is absolutely essential if the economic and financial conditions of farmers is to be effectively monitored (8, p. 14)". Harl's primary concern was not with aggregate sector statistics, but with data to reliably monitor distributions of debt among farmers. Brake has suggested, "If one were to count the recordkeeping systems being offered to farmers for farm business analysis...there would be a dozen...different systems. They use different concepts or the same concepts in different and inconsistent ways (p. 19)". Further, Ferguson has noted, "Farming has become a big business...but farm recordkeeping has not kept pace... . The farm crisis was partly a consequence of decisions made by producers without a solid understanding of their finances...the problem was, and...is, that the records kept by most farmers defy...standards...what farm recordkeeping standards exist are often contradictory...(6, p. 40)."

We know that a wide variety of computer and workbook account systems exist for the farmer's own use, that many different consultant services are available, that several States maintain farm business associations, and that farmers are generally assumed to do a good job of keeping the records needed to support tax filings. But, statistically sound estimates measuring the extent to which farmers either hire professional services or undertake recordkeeping activities themselves have not been available for the U.S. farm population as a whole. The objective of this paper is to empirically demonstrate the extent to which farmers and ranchers practice recordkeeping activities either within their own business or through a hired service and to measure the importance that farm and ranch operators place on keeping records suitable for measuring costs of production and financial analyses.

Recordkeeping: Observations from Small Area and Specialized Surveys

In 1979, Jones, Sonka, and Mazzocco surveyed randomly selected commercial farmers in Illinois as well as lenders to define the extent to which each group used selected financial information. Of the 600 farmers surveyed, 293 (about 49 percent) provided usable responses. Of the farmers responding, over 90 percent, "maintained some type of written financial records (10, p. 40)". To evaluate current financial records of farmers, their use of balance sheet and pro-forma cash-flow statements was evaluated. Of the 292 respondents, 69 percent completed a balance sheet, 48 percent a pro-forma cash-flow, and 39 percent both a balance sheet and pro-forma cash-flow. But, 24 percent of the respondents completed neither a balance sheet nor a pro-forma cash-flow. Jones, et. al concluded that respondents who prepared financial statements were more likely to prepare both a balance sheet and a pro-forma cash-flow statement as they became more dependent on operating credit as shown by the percent of operating funds borrowed. Business size, measured in acres, was found to be positively related to the preparation of financial statements, while age was negatively related (10, p. 42).

Carlson, in a study designed to better understand the role of management in the operation of the farm business, surveyed 222 farmers in two Idaho counties (50 percent response). Respondents to this survey indicated that "keeping records and analyzing your operation and having a "sure knowledge" of your financial picture when you talk to your lender," were important elements in successful farm management (3, p. 92-93). Carlson obtained data on the amount of time devoted to recordkeeping, the relative enjoyment of recordkeeping in comparison with other activities, farmers satisfaction with the way they kept farm records, and who had the responsibility. Results showed that recordkeeping was not a high priority item. Field work, buying and selling, and working on equipment were all ranked ahead of management activities in terms of enjoyment. Only 28 percent of respondents reported that they were very satisfied with their records; another 50 percent reported that they were somewhat satisfied. Twelve percent of respondents reported spending no time on recordkeeping during winter; another 79 percent spent from one to 10 hours per week. Thus, only 9 percent of respondents spent 10 hours or more per week working on recordkeeping

during winter months. Carlson found that, "those having higher incomes were more oriented toward keeping good records" (3, p. 93).

In a second Idaho study, Rowe and Guenthner surveyed 1500 producers (31 percent usable return rate) to determine their use of recommended practices in farm or ranch activities (15). Of the respondents, about half indicated that they kept field, herd productivity, and health records while 62 percent indicated they kept equipment maintenance records. In responding to questions concerning management/marketing practices, 73 percent indicated that they calculated profit/losses, 66 percent calculated net worth, 56 prepared an annual farm budget, 42 percent prepared a long run farm plan, 40 percent undertook cash flow analysis, and 17 percent did enterprise analysis (15, p. 17).

A survey conducted by the Agribusiness Industry team of Authur Anderson and Company and the University of Illinois provides a perspective from a larger geographic area. The Authur Anderson/Illinois study focused on farmers and ranchers identified as innovative leaders in the management of information, lenders, and consultants (17, p. 5). Producers and lenders who responded to this survey were dispersed throughout the United States and Canada. Lenders and consultants were viewed as representing commercial producers in general. Results from this survey indicated that the "innovative" producer group were using more complex methods of accounting than estimated for all commercial producers as a group.

Table 1. Accounting methods used by agricultural producers

Method	Producer Respondent: Proportion of all commercial farmers who used each: method:	farmers and ranchers Lender: estimate	Consultant estimate
	Percent		
Manual, single entry	16	66	74
Manual, double entry	28	11	8
Service bureau	39	20	16
Direct computer entry	11	3	2
Other	6		

Source: The Management Difference: Future Information Needs of Commercial Farmers and Ranchers, Arthur Anderson and Company, p. 8.

Overall these studies indicated that approximately three-fourths of farmers and ranchers were either keeping records and analyzing their operation or completing a financial statement. About two-thirds either prepared cash flow analysis or reported preparation of a pro-forma cash-flow statement.

USDA Survey of Farm Operators

Since 1984 the Economic Research Service has been engaged in building a comprehensive farm financial management information system. The analytical focus has been on the development of reliable indicators of financial performance for farm operators. Of importance to us, as well as the agricultural finance community, has been the issue of data quality and the ability to obtain accurate financial data, often perceived as sensitive, from personally enumerated surveys.

One factor potentially affecting data quality is whether respondents use their records in providing answers to survey questions pertaining to farm finances. To measure use of farm and ranch records in responding to expenditure and financial questions, we asked 1986 Farm Costs and Returns Survey (FCRS)

enumerators to indicate whether a respondent used records. Enumerators recorded yes if a respondent used farm management records, their 1040F tax farm, or other records to respond to expenditure or financial questions. If the respondent supplied responses from memory, without referring to records, the enumerator coded the question no. Subjective evaluation of record use indirectly provided insight into the availability of farm and ranch records.

Efficiency of data collection is a major USDA survey goal, given that the average FCRS interview time exceeds one hour. Thus, determining the types of records that producers have available for use in responding to questions could serve a pragmatic goal of allowing questionnaires to be geared to available record systems and, therefore, data. To measure the records that farmers and ranchers maintain, we asked producers selected for the 1987 FCRS whether their farm operation used or subscribed to a service (extension, farm business association, accountant, farm management/information business, producer organization, or other source) for keeping its farm or ranch financial records. Aside from the service used, if any, we also asked operators which method (general ledger, farm records workbook, home/personal computer, or another method) that they or a family member used to keep track of their operator's income and expenses. The juxtaposition of these two inquiries provided not only insight into the direct use of own farm and hired consultant services in maintaining records, but also farmers' use of records in responding to sensitive farm finance questions.

A third issue of interest not only to USDA but to agricultural lenders and others is how producers view the importance of keeping records suitable for costs of production and financial analysis. On the 1988 FCRS we asked producers to rank the importance of keeping these records (from one to five with one being least important) along with other production and sociologically oriented items.

The FCRS is a multiframe probability based survey conducted annually within each of the 48 contiguous States. The sample consists of two frames: a list of operators stratified by economic size and other attributes and an area frame consisting of all land segments in a State stratified by land use type. The FCRS is developed using multiple versions of a questionnaire with each version designed to collect some unique data related to the farm business as a whole, the farm household, or selected enterprises for which detailed production practices information is obtained. In 1986, enumerators were required to complete questions related to respondents use of records (about 25,000 expected contacts). In 1987 detailed recordkeeping questions asked of farm operators were constrained to the detailed farm finances version of the FCRS (about 14,000 contacts). And, in 1988, the attitudinal questions regarding records were included in the farm operator resource version (about 6,000 area and list contacts nationwide). Accounting for refusals, non-farm screenouts and other loss of sample, the completion rate was about 73 percent each year. For 1987 and 1988, an operation qualified as a farm if it sold or would normally have sold at least $1000 of agricultural products. A farm was allowed to qualify based on points--that is if it had either production activity or inventory that could be valued at $1,000. In 1987 expanded farm numbers totaled 1.69 million farms as compared to the official estimate of 2.18 million. More than 90 percent of the expanded farm count missed by the FCRS has sales of less than $10,000 (12). For 1988, the expanded farm numbers from the FOR version was 1.8 million, compared to the official estimate of 2.1 million. In 1986, a farm could qualify based on a $1,000 of sales or the purchase of $1,000 of inputs for production and a point system was not used. The estimated number of farms was 1.52 million with the undercount of smaller farm operations being greater than in 1987 and 1988. The survey results reported in this paper are expressed as percentages of the expanded FCRS farm count.

Use of Farm Records on the 1986 FCRS

In 1986 survey enumerators were instructed to record whether or not farmers used records to respond to financial and expenditure questions on the FCRS. No attempt was made to distinguish between formal and informal record systems.Enumerator's response to the questions on the 1986 FCRS concerning record use indicate that at least 70 percent of all farm operators used some form of records (table 2). These operators accounted for over 80 percent of all commodity sales, 81 percent of all operator business debt, and about 74 percent of all operator farm business assets on farm's represented by the survey. As might

be expected, record use varied substantially by farm size, production specialty and location. For example when measured by economic class, which includes both commodity sales and direct government payments, over 80 percent of farms earning $250,000 or more used records. In contrast, only 62 percent of farms earning $39,999 or less used records. On a net farm income basis, over 70 percent of all farms earning (or losing) $10,000 or more during 1986 used records.

Farms specializing in the production of cash grains, and dairy products were the most intensive users of records. Farms producing other livestock, other crops, and poultry were least likely to use records. Farms located in the Lake States, Corn Belt, and the Northern Plains regions were the heaviest record users. Conversely, the lowest level of record use occurred on farms located in the south (Appalachia, Southeast, Delta, Southern Plains).

The analysis of these results in combination with FCRS cross tabulations (from the 1988 survey) of farm numbers by economic class, region, and production specialty, suggests that farm size was a key determinant of record use followed by production specialty and region. For example, the three regions where record use was the most intensive also had the highest shares of farms with sales of $40,000 or more. Similarly the highest shares of farms receiving less than $40,000 were located in the south (Appalachia, Southeast, Delta, Southern Plains). Most dairy farms were located in the Northeast, the Lake States, the Corn Belt, and the Northern Plains and nearly three fourths of these farms had sales of $40,000 or more. In contrast over 75 percent of other crop and other livestock farms had sales of less than $40,000 with nearly half of other livestock farms being located in the south. For cash grain and poultry farms the shares of farms with sales above and below $40,000 were almost evenly divided, however over 70 percent of all cash grain farms were located in the Lake States, Corn Belt and the Northern Plains, while about 80 percent of all poultry farms were located in the south.

Individuals were somewhat less likely to use records than partnerships or corporations as were operators over 65 years old. Farms using records operated more acreage on average but also rented a higher proportion of total acreage operated. They also had substantially higher average levels of net cash farm income, net farm income, debt and assets. Non-farm income however was higher on operations where records were not used.

Use of Records and Record Keeping Services During 1987

On the 1987 FCRS farmers were asked to identify their method of keeping records and the type of record keeping service used if any. Enumerators were not required to indicate whether or not farmers used their records to respond to survey questions. In comparison to 1986 a higher share and in some instances a substantially higher share of operators reported keeping formal records and/or using a service. For example in 1986 nearly 57 percent of poultry producers used records for the FCRS whereas in 1987 nearly 83 percent of these producers reported using a service and/or keeping records (table 3). Many of the relationships noted in 1986 also applied in 1987 when data on farmers who used records for the 1986 FCRS was compared to 1987 data on farmers who reported using a service and/or keeping records.

Operators Using a Service and/or Keeping Records. In 1987 about 77 percent of all operators reported using a service and/or keeping their own formal records. These operators accounted for nearly 94 percent of total crop and livestock sales, and held 91 percent of total assets, and owed 86 percent of all debt on farms represented by the survey.

As was the case in 1986, substantially higher shares of these operators were in an economic class of $40,000 or more and had net farm income greater than (or less than minus) $9,999. The largest users of records/services were cash grain, dairy, and cotton farms (not classified separately in 1986). The lowest levels of use occurred on tobacco (not classified separately in 1986), beef, hog, and sheep, other livestock, vegetable fruit and nut, and other crop farms. As in 1986, the highest levels of use were in the Lake States, the Corn Belt, and the Northern Plains. Records were used least intensively in the southern regions. Nearly 84 percent of operators under the age of 35 used records and/or a service compared to 69 percent of

operators aged 65 or over. Record/service users were more highly leveraged (debt/asset ratio of .16) than non-users (debt/asset ratio of .10), but had a lower debt burden as shown by the interest to gross cash income ratio. Record/service users also had a much higher rate of return on equity (3.24%) then non-users (.82%).

Operators Using a Service. Just 2 percent of all operators reported using only a record keeping service in 1987. These operators accounted for 4 percent of all crop and livestock sales and held about 4 percent of all operator debt and assets.

Over 9 percent of all operators reported using both a record keeping service and their own formal record keeping system. The data indicate that these are predominantly larger farm operations. For example about 65 percent of these operators were in an economic class of $40,000 or more. They also had a disproportionately higher share of sales (28 percent of total), debt (25 percent), and assets (18 percent). By production specialty the largest users of a both a service and their own record system were nursery and greenhouse, dairy, and cotton producers. By location the greatest use of a service and records occurred in the Lake States, the Mountain, and the Northeast regions. Based on distributional data from the 1988 FCRS, the largest share of dairy farms are located in the Lake States. Over 50 percent of the farms in the Mountain region specialized in beef, hog, and sheep production in 1988. Over 30 percent of the operators who used a service and records were beef, hog, and sheep producers. The Northeast contained the highest share of nursery and greenhouse operations and the second highest share of dairy operations. The largest share of cotton farms was located in the Southern Plains but these farms only comprised about 5 percent of the total number of farms in that region. As a group operators using both records and a service were the most highly leveraged with a debt/asset ratio of .21 and had the highest rate of return on equity (5.81 percent).

Operators Using Only a Formal Record Keeping Method. Operators who used only a formal method of keeping records in 1987 were predominantly mid-sized or smaller based on their reported economic class. Less than 5 percent of the operators in this group were in the economic class of $250,000 or more. In 1987 they accounted for 65 percent of all farms, 61 percent of total crop and livestock sales, 62 percent of operator debt, and 64 percent of operator assets. By region the most intensive use of records occurred in the Corn Belt, the Northern Plains, and the Lake States. Records were least likely to be used in the southern regions. Cash grain, cotton, poultry, and dairy producers were the heaviest users of records by production specialty.

Farmers Opinion on the Importance of Keeping Records in 1988. On the 1988 FCRS, farm operators were asked to rate the importance of "keeping records suitable for costs of production and financial analysis" on a scale of 1 to 5 with 1 being the least and 5 being the most important. Over 24 percent of all operators rated keeping good records as least important. These operators accounted for nearly 8 percent of all crop and livestock sales, 10 percent of all debt, and 14 percent of all assets. At the other extreme the 34 percent of operators who rated record keeping as most important accounted for nearly 42 percent of all crop and livestock sales, 46 percent of all operator debt, and 40 percent of all operator assets. Operators on farms producing poultry and tobacco considered records least important. Cotton producers followed by other livestock, nursery and greenhouse, and cash grain producers rated record keeping as most important. On a geographical basis, operators in the south attached the lowest level of importance to maintaining useful records. Operators in Northern Plains, Corn Belt, Pacific, Mountain, and Lake States regions rated record keeping as most important. As might be expected, as operator age increased the share of operators ranking good records as least important increased. Conversely the share of operators who considered record keeping as most important decreased as operator age increased.

Summary and Implications for Further Analysis

Responses to the 1986 and 1987 Farm Costs and Returns survey extend our knowledge about farm and ranch recordkeeping activities from a local to a national perspective. Previous studies suggest that about three-fourths of producers were keeping records. Our work indicated that this share applies nationally as well. Key observations to be drawn from this report include:

- A prime interest of USDA is the extent to which producers use their records in responding to questions about expenses and financing of the farm business, especially since these data are used in deriving estimates of net farm income and financial performance. The results indicated that more farmers have records than enumerators said used them. This was particularly true for larger farm operations and for certain farm types such as nursery and greenhouse, poultry and general crop and livestock farms.

- Enumerators reported that 7 out of 10 producers used records in responding to sensitive financial inquiries; for larger operations who account for 80 percent off agricultural sales and the majority of debt, more than 8 of 10 producers used records in responding to survey questions.

- For interview purposes, we have structured our enumerator training to stress the use of farm records, indicting that less of the respondents time may be taken and better data acquired if records are used. Work has also been done to structure questionnaires to more closely resemble the format of farm record books.

- A second objective of USDA analysis of record keeping practices was to quantify the extent of recordkeeping. Results showed that more than 75 percent of all farmers and 90 percent of farmers with sales over $40,000 either kept formal records or used a service of some type to organize their financial data. The extent of recordkeeping varied by economic size, age, tenure, degree of indebtedness, production specialty, and location.

- Results of ranking farmer's attitude toward recordkeeping indicated that farmers with larger gross incomes, higher net incomes, and larger debts and assets tended to rank recordkeeping as being more important. Younger operators and farmers who rented more of their land also tended to rank recordkeeping more highly. In addition, farmers located in areas that have traditionally focused on recordkeeping activities, such as the Corn Belt and Northern Plains attached a higher level of importance to recordkeeping.

To date, our work has focused on the measurement of recordkeeping activities and how knowledge of these activities can improve data collection activities. A corollary activity is to measure how farmers are using their record systems. The management function represents a large component of USDA's ongoing farm financial analyses program. On the 1989 FCRS, information about whether records are being kept, the types of financial, enterprise, employee, and family expense statements that farmers prepare from their record systems, the type of accounting method used, and the types of decisions in which the financial statements will be collected. This information will provide more insight into the financial performance of farm businesses as it relates to the types and uses of farm records.

REFERENCES

1. Boss, A. "Forty Years of Farm Cost Accounting Records." Journal of Farm Econ., 27, 1 (1945): 1-17.

2. Brake, J.R. "A Perspective on the Financial Situation in Agriculture." NJARE, Oct. (1986): 86-92.

3. Carlson, J.R. "Farmers Perceptions About the Management of Their Farms." Jour. Amer. Sol. Farm Manager and Rural Appraisers. 52,1 (1988): 91-95.

4. Casavant, K.L. and C.L. Infanger. Economics and Agricultural Management an Introduction. Reston Publishing Co., Inc., Reston, Va. 1984.

5. Casler, G.L. State Farm Business Record Data: A Study in Inconsistency, paper for NC-181, Determinants of Farm Size and Structure in North Central areas of the United States, Baton Rouge, La., Aug. 1989.

6. Ferguson, R. "Game Without Rules: What Farm Business Records Need Are Some Accounting Principles." Farm Futures: Summer (1989): 40.

7. Guenthner, J.F. and R.L. Wittman. Selection and Implementation of a Farm Record System. Western Regional Extension Service Publication WREP No. 99. Coop. Ext. Serv., Univ. of Idaho. Jan. 1986.

8. Harl, N.E. Lessons Learned From the Farm Debt Crisis of the 1980's. W.I. Myers Memorial Lecture, Dept. Agr. Econ., Cornell Univ. A.E. Research 88-13, Ithaca, Nov. 1988.

9. James, S.C. and E. Stoneberg. Farm Accounting and Business Analysis. Iowa State University Press, Ames, 1974.

10. Jones, B.L., S.T. Sonka, and M.A. Mazzocco. "Agricultural Record Systems and the Information Needs of Farmers and Lenders." Agricultural Finance Review. Vol. 42, 1982.

11. Libbin, J.D. and L.B. Catlett. Farm and Ranch Financial Records. Macmillan, New York, 1987.

12. Morehart, M.J., J.D. Johnson, and D.E. Banker. Financial Characteristics of U.S. Farms, January 1, 1988. ARED, ERS, USDA. Agr. Info. Bulletin No. 551, Oct. 1988.

13. Mosher, M.L. "Thirty Years of Farm Financial and Production Records in Illinois." Journal of Farm Econ., 17, 1 (1945): 24-37.

14. Report of the National Commission on Agricultural Finance. Kenneth Auberger, Executive Director, Washington, D.C. February 22, 1989.

15. Rowe, C.M. and J.F. Guenthner. Agricultural Producers' Use of Recommended Practices in the Farm or Ranch Operation. Bulletin No. 674, Coop. Ext. Serv., University of Idaho, March 1988.

16. Schnitkey, G.D. and S.T. Sonka. "Systems Design Procedures for Farm Accounting." Southern Jour. Agr. Econ., Dec (1986): 207-213.

17. The Management Difference: Future Information Needs of Commercial Farmers and Ranchers. Prepared by Staff from the Agribusiness Industry Team of Authur Anderson and Co., and the Dept. Agr. Econ., Univ. of Illinois, 1982.

18. Warren, S.W. "Forty Years of Farm Management Surveys." Journal of Farm Econ., 27, 1 (1945): 18-23.