Retirement and Succession Considerations of Maryland

Farmers: Preliminary Evidence from a Household Survey*

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Abstract

We study patterns of retirement, inheritance and succession using a sample of Maryland farm operators. We find that inheritance and succession decisions are mainly driven by the desire to let the farm prosper in the future and by a preference for equal treatment of heirs. We find a surprisingly low impact of old-age support considerations on both decisions. The retirement decision is mainly affected by personal preferences and reasons, but also by succession considerations.

Introduction

The importance of intergenerational transfer mechanisms to growth through their effects on savings and investments is well established in the economic literature, yet little has been done in order to understand their particular importance to the development of the agricultural sector. Considerations for future generations are an integral part of the decision making processes in the farm household. The family farm is more than another profit maximizing enterprise. It is an asset whose productive life expectancy is well beyond that of its operator, and whose future value depends crucially on its continuous functioning; it is a place of residence for the farmer at old age; and it is attached to land, whose symbolic importance is way above its economic value in many societies. Moreover, the market value of a farm is often well below its value as a 'going concern', and hence considerations for retirement and succession cannot be disentangled from day-to-day farm management decisions (Dunaway 1991).

Intrafamily succession enables the extended family to enjoy the benefits of intergenerational risk-sharing when annuity markets are imperfect (Kotlikoff and Spivak 1981). It also allows farmers to rely on the farm for old-age support, and thus enables them to partly overcome binding borrowing constraints. However, the risk of conflicts within the family cannot be insured against, and hence it is not guaranteed that succession practices are designed to maximize the value of the farm. Rather, they are designed to maximize family welfare as a whole, and these two objectives can

lead to quite different decisions (Perkin and Rehman 1994). For example, although it might be optimal to give the farm to a child rather than sell it in the market (Rosenzweig and Wolpin 1985), it is not necessarily true that the most suitable child is chosen as a successor (Kimhi 1995). Also, there is likely to be an optimal time to transfer the farm to the designated successor, from the point of view of farm performance (Kimhi 1994), but some evidence suggests that a large proportion of farmers abstain from transferring the farm inter vivos (see below). Therefore, we might expect succession patterns to vary considerably according to family attributes such as demographic composition.

Perhaps this is the reason for the surprisingly scarce literature on farm succession in general and in the United States in particular, and for the fact that the existing literature is dominated by social scientists other than economists (Blank and Perrier-Cornet 1993; Carroll and Salamon 1988; Coughenour and Kowalski 1977; Errington 1993/94; Friedberger 1983). American agricultural economists contemplated farm succession mostly to the extent that it is affected by tax considerations (Boehlje and Eisgruber 1972; Harl 1989; Harlin 1992; Tauer 1985). Recently, economic historians' studies of Irish emigration have also examined farm succession practices (Guinnane 1992; Kennedy 1991). Tweeten and Zulauf (1994) view intra-family farm succession as allowing entering farmers to overcome borrowing constraints, at least in commercial farms.

The purpose of this paper is to report results from an

3

exploratory household survey that was conducted among Maryland farmers in the spring of 1992. The survey was aimed at examining not only succession practices but also the motives leading to these practices. As such, the survey was mostly composed of qualitative questions supplemented by demographic information, farm characteristics, and other economic information. When designing the questionnaire, we have tried to cover as many aspects of the farm succession issue as possible, rather than concentrate on a specific research hypothesis. This will also be reflected in the analysis of the results. In general, all the factors affecting patterns of succession can be regarded as demand shifters, assuming that parents have a demand for successors while the designated successors have a demand for succession. Using these concepts, we can think of the designated successors' demand for succession as increasing in farm value and decreasing in their alternative income. Parents' demand for successors is envisaged to be larger when the value of the farm is large relative to other family assets, when the agricultural value of the farm is large relative to its value in alternative uses, and when capital market imperfections are more binding. Parents' demand is smaller when there are more potential successors, since the risk of not having a successor at all is smaller.

The next section describes the survey and the data set. We then use the data to analyze different aspects of retirement and succession practices and considerations. Finally, we derive conclusions regarding general patterns of farm succession in Maryland.

The Survey

The survey was conducted using a questionnaire administered by mail in the spring of 1992, using a list of names and addresses of farmers participating in the Maryland land preservation program. This was done in order to get objective information (included in the program's files) on the farms' agricultural and non-agricultural values. The undesired consequence of this fact is that the sample is not representative of Maryland farmers.

Programs for protecting agricultural land are abundant throughout the U.S. The most common instrument is zoning, which restricts development in certain areas. The purchase of development rights (PDR) is another instrument, which enables land owners to retain parcel ownership and continue farming, but prevents non-agricultural development by current or future owners. The Maryland land preservation program is a PDR program which was initiated in 1977 in order to limit development of farmland throughout the state and near metropolitan areas in particular (Lessley and Pitt 1989). Up to 1990, it has been responsible for protecting 91,448 acres at a cost of about $85 million (MDA 1990).

Up to the middle of 1991, when we approached program officials for cooperation, program participants numbered 2038. However, the officials requested that we do not survey farmers whose case was not completely settled with the program, and as a result only 1600 questionnaires were sent. Of these, only 469 farmers responded. This is hardly surprising, since the program does not keep track of participants once their case is completely settled, so many

5

envelopes were returned undelivered because the address has changed. Also, we expected the response rate to be low since the questionnaires dealt with delicate issues about which people sometimes fear of even thinking. This was reflected in a few angry responses that were received. All in all, any generalization made using these results is on the reader's responsibility.

The questionnaire (appendix 1) included questions on retirement, inheritance, old age support, and succession planning, such as timing of retirement, estate division rules, choice of successor, and their determinants. Modes of succession were also investigated, using questions of allocation of farm work, income, and decision making, between the parent and the successor. We asked respondents whether they are first-generation farmers or not, and for personal information of the previous operator of their farm. We asked for detailed personal information of all family members including age, sex, education, marital status, farm work, off-farm work, and income. Finally, we asked about farm attributes, family income, assets, and debt. Appendix 2 provides a profile of survey participants by analyzing some of the answers.

Results: planning of retirement

The first question about retirement was "at what age do you intend/expect to retire from operating this farm?" 233 farmers answered this question with an exact age. 54 others wrote "120" or "never" or "at death". We consider the latter group as those who have no plans to retire. Surprisingly, they were older than the

former group, while we would have expected younger farmers not to have plans to retire. Perhaps it is easier for the relatively younger farmers to give an exact answer because they do not really give it a serious thought. Of those who did indicate a specific retirement age, retirement age and current age have a correlation coefficient of almost 40 percent. This result probably reflects the selective nature of our sample: relatively older farmers who planned to retire early have done so before they were surveyed, so older farmers who plan to retire late are over-represented.

Another interesting result is that lack of retirement planning is more pervasive among respondents whose parents were not farmers (23.6%) than among those whose parents were farmers (16.75%). This hints to the possibility that second-generation farmers are more aware of the importance of timely succession, at least from the point of view of the successor. Finally, respondents with no plans to retire represent families with higher total income, on average. There is also a positive (5.4%) correlation between family income (measured qualitatively) and retirement age among those who gave a specific age of retirement. This indicates a lower demand for successors among higher-income farmers, perhaps because they are less dependent on the family and the farm for old-age support.

We now want to investigate the determinants of the planned time of retirement by a regression analysis. The explanatory variables include personal characteristics of the parent and the child as well as several farm attributes. The child whose characteristics are to be used was chosen in the following way. If

the parent indicated a single designated successor, this child was chosen. If the parent indicated more than one designated successor, the oldest of them was chosen. If the parent did not indicate any designated successor, the oldest child overall was chosen. Due to missing values, only 103 observations could be used in this analysis, 16 of them indicated they do not plan to retire. Descriptive statistics of the data are provided in table 1.

We first run OLS regression using only observations in which a specific age of retirement was indicated. The results are in the first column of table 2. As expected, age is the most significant predictor of retirement age. Its coefficient of 0.50 means that a farmer postpones his planned retirement by six month every year, other things held constant. Education seems to postpone retirement, although the coefficients are not statistically significant. Farmers who inherited the farm from their parents plan to retire earlier. This is again an indication of their greater awareness of the importance of timely succession. Retirement is later when the value of farm assets is larger, perhaps because successors' demand for succession is larger. The age of the designated successor has a negative coefficient: earlier retirement is perhaps induced by older successors' higher demand for succession. However, when the successor lives on the farm, and is also expected to have a higher demand for succession in this case, retirement occurs later. This is a puzzling result that should be examined further. One explanation is that living on the farm indicates a stronger dependence of the successor on his parents, perhaps due to

8

unobserved factors, and in this case the parents' demand for successors is lower. Retirement is earlier when the designated successor works on the farm and later when he works off the farm. This is consistent with the hypothesis that successor's demand for succession induces early succession, other things being equal.

Second, we control for selectivity by estimating a censored regression, using those who did not indicate a specific time of retirement as observations which are censored from above. The upper censoring point for retirement age is 100, the highest age in the sample among those who indicated a specific retirement age. The changes in coefficients after controlling for selection indicate that selection is important. For example, the estimated standard error of the regression is twice as much the estimated standard error of the OLS regression. The effects of parent's education and farm assets become much larger and statistically significant. The effect of age does not change much. The coefficient of the dummy variable for a child who lives on the farm becomes negative (but insignificant), which is consistent with a higher demand for succession of such children. The child's work status on and off the farm does not seem to significantly affect retirement decisions, after controlling for censoring. Child's education has a negative effect on retirement age, perhaps because parents' demand for successors is higher when the successors are more educated, but the coefficients are not statistically significant.

Overall, the results show that farmers delay their anticipated retirement as they get older, which could be a consequence of

9

sample selection. We also see that more educated farmers and those having larger farms (in terms of assets) plan to retire later. This is consistent with the hypothesis that these farmers do not rely on intergenerational insurance for old-age support and hence their demand for successors is smaller. Farmers seem to retire earlier when their designated successors are more educated, indicating a stronger demand for more educated successors. All these results show that retirement decisions are affected by succession considerations.

Results: determinants of the retirement decision

In addition to indicating their expected age of retirement, respondents were also asked to rank several possible considerations that affect the retirement decision. The considerations were: (a) the availability of a suitable successor among the respondent's children; (b) personal need or preference for retirement; and (c) optimal time of farm transfer from successor's point of view. There was another possible consideration which was left open for the respondents to specify as an option. 85 respondents used this option, half of them (43) indicating health and physical conditioning considerations as affecting the retirement decision. Of the three pre-specified considerations, the first and the third are associated with the succession process, while the second is associated with personal reasons. In the following sections, we will compare the rankings of the three different considerations. The rankings of the optional consideration will not be included.

10

Respondents were asked to give each consideration a rank between 1 and 4, where 1=most important and 4=not important. Among the 376 farmers who ranked at least one consideration, the mean rank for consideration 2 was lower than the mean ranks for considerations 1 and 3, which means that personal considerations are more important than those related to farm succession (table 3). To see whether the difference is statistically significant, we tested the null hypothesis that the ranks are randomly assigned in the population. We used a test suggested by Benard and Van Elteren (1953) for the case in which all rankings are complete. A generalization for the case of incomplete rankings was proposed by Prentice (1979), but was not utilized here. The test procedure is described in appendix 3.

The average rankings among the 239 respondents who ranked all three considerations display more modest differences among the considerations than in the full sample, but the hypothesis that rankings are random is strongly rejected (table 3). However, the relative importance of personal versus succession considerations is stronger among farmers who were not born to a farming family and neither were their spouses. This indicates that being raised on a farm increases farmers' awareness of the importance of intergenerational succession. The same holds for farmers who did not succeed their parents or their spouse's parents on their present farm. The next two rows in table 3 show, as expected, that succession considerations are relatively more important to farmers who plan to give the farm to one or more of their children. The

last two rows compare the rankings of large and small land owners. We can see that succession considerations are relatively more important in large farms, and that the difference is determined mostly by the availability of a suitable successor: suitable successors are less available in small farms.

The conclusions of the previous analysis are that although succession considerations are not the major determinants of farmers' retirement decision, their relative importance varies with factors associated with the demand for successors by farmers and the demand for succession by potential successors. We want to study this issue in more detail using a regression analysis. Specifically, we use the rank of the second consideration divided by the average rank of the first and third considerations as a proxy for the importance of succession considerations. This proxy is then regressed on a set of explanatory variables documented in table 4. Many observations had to be deleted because respondents did not rank consideration 2 or did not rank considerations 1 and 3. We added a few observations in which respondents ranked the open (number 4) consideration instead of the second consideration, and explained it in terms that are consistent with a personal consideration. For example, the most frequently-cited open consideration was "health" (24 respondents). Whenever respondents ranked both the second and fourth considerations, the average rank was used.

Because of relatively high multicollinearity among the explanatory variables, we used a principal components approach to

12

select the significant variables. Specifically, we first run a full principal components regression, and then deleted the insignificant principal components until the adjusted R-squared stopped rising. Eventually, we excluded the explanatory variables whose contribution to the included principal components was minor, and repeated the previous steps. Two alternative final specifications are presented in table 5.

Signs and significance of explanatory variables are mostly consistent in the two specifications. Our previous result, that succession considerations are more important for farmers whose parents were also farmers is strongly confirmed. They are also more important among farmers who plan to leave the farm to a family member when they retire, and less important among those who plan to sell the farm. This result should be interpreted with caution, since we could be looking at an explanatory variable which is in fact driven by the same unobserved elements that drive the dependent variable.

Succession considerations are more important in larger farms (in terms of land holdings and capital stock). This is consistent with our theory of the demand for succession. Succession considerations are less important in high-income farm families. Although farm share of family income was not included among the significant explanatory variables in either specification, if farm income is correlated with farm size, then the effect of family income is mostly the effect of off-farm income. In this respect, the results is consistent with the view that farm succession is

13

less important when the family earns a large share of its income off the farm. Similar conclusions can be derived from the assets and debt variables. Even though neither family assets nor its total debt seem to have a statistically significant effect on the dependent variable, the importance of succession considerations is affected positively by the farm share of assets and negatively by the farm share of debt.

Several personal characteristics of farmers were also found to affect the importance of succession considerations. Older farmers attach more importance to these considerations, perhaps because they expect to retire sooner and had a chance to give the issue a serious thought. The importance of succession considerations also significantly increases with education. Contrary to our intuition, years of off-farm work experience raise the importance of succession considerations. Perhaps this result indicates that farmers who work permanently off the farm already rely on successors in maintaining the farm operation.

Results: estate division considerations and old-age support

Another set of considerations that respondents were asked to rank regarded the division of their estate. The following set of considerations were suggested, and here they are ordered by the importance given to each consideration in the sample. Ranks were from one to four, and the average rank is given in parentheses: (1) Keeping the farm operation viable over the long run (1.73); (2) Minimizing estate tax liabilities (1.73);

(3) Dividing the estate strictly equally among all children (2.01);

(4) Children will get equal support during their lives (2.12);

(5) Children are equally well off during their lifetimes (2.29);

(6) Giving more to children who will supply old-age support (3.22);

(7) Giving more to children who will not do so well on their own (3.5).

The rankings show that farm-related considerations are the most important determinants of estate division. Estate division seems to serve as a tool which is used by farmers to achieve goals such as intergenerational continuity of the family farm. The importance of tax minimization indicates that farmers are well aware of the advantages of proper estate management, given the current tax laws.

The considerations numbered 3, 4, and 5, deal with the issue of equitable treatment of heirs. The pure altruistic model implies that parents will prefer an estate division that will make their children equally well-off. Kimhi (1995) shows that an equal division of support to children induces a cost which is rising in the level of variability of children's ability to derive utility from their endowments. However, the rankings show that despite this fact, farmers prefer the equal division rule. Moreover, they seem to prefer a strictly equal division of estate regardless of other modes of support given to children such as schooling. This preference is consistent with the impression we had following several informal discussions with farmers in Maryland. Our impression was that farmers want the equal division of the estate

to be seen by everyone, as if this is a norm they must follow. In this sense, support such as schooling is not easily measured and compared to other means of financial support, and hence it is given lower weight in the estate-division considerations. If anything, farmers try to make these additional forms of support on a more-or-less equal basis to all their children, according to need, so that the estate could eventually be divided strictly equally without deviating substantially from the equal total support rule. This can also explain the lower weight given to the pure altruistic division rule, because equality is not easily observed by everyone if this rule is followed, and some children may feel as if they were treated in an inequitable manner. This argument is also supported by the fact that the consideration that was given the lowest overall rank is the one that implies that more should be given to worse-off children. This is an evidence to the lack of a compensation effect in estate distribution, although there is no empirical support for an alternative reinforcement effect (Becker and Tomes 1976). Of course, the argument is valid only if variability in children's ability is indeed notable.

Another result that draws attention is the low ranking of the old-age support consideration, implying that the vast majority of farmers do not think that more resources should be given to children who are expected to assist them in their old age. This implies, contrary to other findings, that the strategic bequest motive (Bernheim et al. 1985) is relatively unimportant in our sample. If anything, this motive seems to be more important in the

16

farm sector, since other modes of old-age support are likely to be less available. This is a surprising result that deserves further attention. This result can be viewed from a different direction using another question in our survey. The question was phrased "what percent of retirement days expenses will be covered by: (1) own savings or assets income; (2) income from working part-time; and (3) support from children. 318 of the respondents answered this question properly, indicating that on average, less than one percent of their old-age expenses will be covered by support from children (relative to almost 80% from savings and 11% from part-time work)! Another 95 respondents did not answer the question as asked, but rather checked one or more source of old-age support. Only three of those checked the support from children possibility! These results show very strongly that Maryland farmers do not expect to be supported by their children in their old age, and hence this consideration does not affect their estate-division plans.

Another question in the survey related directly to expectations of support from children. The question was phrased as "how will the responsibility (financial of physical) to take care of you at old age be shared by your children?" Again, the vast majority of respondents indicated that they do not expect any care from their children. The second-ranked alternative was that farmers do not plan to rely on support from children, and leave it to the discretion of the children. About half of all respondents thought that the possibility that assistance will be shared equally by all

17

children is important, and the other half thought that it was not important. Most respondents thought that the possibility that one or more children will supply more support than others is not important at all. Among those who did assign some importance to this possibility, the order of importance was that more assistance will be provided by the child who: (1) "will live nearby;" (2) "succeeds me on the farm;" (3) "gets a larger share of my estate;" and (4) "will end up being wealthier."

Another question provides further support to our previous conclusion that the benefit of the farm dominates other considerations of estate division. The question deals with choosing a successor for the farm, and the vast majority of farmers said that they will choose the child that "will be the best operator for this farm." Other suggested considerations, such as "the one who has the worst alternative possibilities," and "the one who will best take care" (of the parents), were mostly ranked as least important. Again, this indicates the lack of old-age support considerations and compensatory motives. The old-age support consideration was given the lowest rank in another question which dealt with compensating non-succeeding heirs. Most respondents said they will compensate with money, a few - with investments in education, and several others said that the successor will have to compensate his siblings. Very few farmers said they do not have to compensate other children because the successor will supply old-age support in return for the farm.

18

Summary and Conclusions

We have examined retirement and succession practices, and the motivations leading to these practices, using a survey of Maryland farm-households conducted in 1991. We looked first at the determinants of the planned retirement age of farmers, and found that it is increasing with age, meaning that farmers postpone their planned retirement as they get older. We note that this could be a consequence of the fact that farmers who wished to retire relatively early have already done so prior to the survey. More educated farmers and those having more farm assets were found to plan a later retirement, perhaps because they are less dependent on the farm for old-age support and can afford the risk of decreasing farm profitability if all potential successors leave meanwhile. This result could also reflect a higher demand for succession among potential successors in these farms. Farmers were found to plan earlier retirement when their designated successors were more educated. This, again, can reflect two motivations: the higher demand for more educated successors among parents, or the lower demand for succession among more educated potential successors. Overall, an association between retirement decisions and succession considerations is established empirically.

Examining the rankings of possible considerations that affect the retirement decision, we found that personal considerations overall dominate succession considerations. However, succession considerations are relatively more important among farmers who were raised on a farm, those who succeeded their parents on the farm,

19

those having larger farms, and those having lower family income. Again, this is consistent with our previous conclusion that demand for successors is increasing with farm activity and decreasing with off-farm activity.

In dividing their estate among their children, farmers give more weight to farm continuity and tax minimization considerations, and adhere to a strictly equal division rule. Neither compensation nor reinforcement of differences among children is observed, perhaps because those differences are not notable. Old-age support is not a consideration that affects estate division, and farmers expect support from children to have a negligible contribution to their old-age resources. This implies that the strategic bequest motive is completely inoperative in our sample.

When deciding on the identity of the designated successor, farmers prefer the child who will be the best operator for their farm. Again, other considerations based on motivations of old-age support and compensation were rejected by the respondents.

To summarize, the main patterns of inheritance, succession and retirement observed among Maryland farmers are that inheritance and succession decisions are mainly determined by what will be best for the farm. Old-age support arguments receive very little weight in the decision making, and estates are divided strictly equally. Although the retirement decision is mainly determined by personal considerations, it is also affected by the desire to give the family farm the best opportunity to prosper in future generations.

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22

Table 1. Means of variables used in the regressions

Variable	Indicated retirement age	Not planing to retire	All sample
Parent's:			
Age of retirement	69.9		
Current age	58.3	58.9	58.4
High school education	0.47	0.69	0.50
College education	0.44	0.31	0.42
Inherited farm	0.39	0.50	0.40
Farm and Family:			
Land holdings	301	294	300
Farm assets/1000	410	612	442
Nonfarm assets/1000	222	134	209
Child's:			
Age	32.6	38.2	33.5
High school education	0.40	0.56	0.42
College education	0.51	0.25	0.47
Lives on farm	0.40	0.31	0.38
Works on farm	0.59	0.69	0.61
Works off-farm	0.65	0.44	0.62
Number of observations	88	16	104

Table 2. Determinants of retirement age

Variable	OLS	Censored
Intercept	35.83 (4.5)***	28.82 (1.71)*
Parent's:		
Age	0.50 (5.1)***	0.45 (2.07)**
High school education	1.42 (0.4)	17.09 (2.1)**
College education	4.93 (1.3)	18.55 (2.1)**
Inherited farm	-1.12 (-0.6)	0.97 (0.2)
Farm and Family:		
Land holdings/100	-0.19 (-1.1)	-0.38 (-0.9)
Farm assets/1000000	6.07 (1.6)	17.83 (2.3)**
Nonfarm assets/1000000	-0.39 (-0.1)	4.07 (0.4)
Child's:		
Age	-0.10 (-1.1)	0.23 (1.3)
High school education	1.39 (0.3)	-6.74 (0.9)
College education	1.72 (0.4)	-11.5 (-1.5)
Lives on farm	3.93 (1.8)*	-5.20 (-1.1)
Works on farm	-3.25 (-1.5)	0.80 (0.2)
Works off-farm	4.56 (1.9)*	-0.02 (-0.0)
R squared	34.8%	
Standard error	8.47	18.15
Log likelihood		-449

t values in parentheses. * significant at the 10% level;
** significant at the 5% level; *** significant at the 1% level.

Table 3. Rankings of retirement considerations

Respondents...	number of respondents	consideration			χ^2 stat.
		a	b	c	
...who ranked at least one consideration	376	2.51	1.77	2.78	--
...who ranked all three considerations	239	2.48	2.03	2.72	46
...whose parents or their spouse's parents were farmers	180	2.54	1.98	2.76	24
...whose parents and their spouse's parents were not farmers	58	3.02	1.78	3.16	30
...who succeeded their parents or their spouse's parents on their farm	94	2.49	1.89	2.65	14
...who succeeded neither their parents nor their spouse's parents on their farm	145	2.78	1.95	3.00	37
...who plan to give the farm to one child or more	115	2.37	1.99	2.75	14
...who do not plan to give the farm to one child or more	123	2.95	1.87	2.98	43
...who own under 100 acres	71	2.92	1.65	2.88	32
...who own at least 100 acres	165	2.54	2.04	2.85	21

Notes:
Consideration (a) - the availability of a suitable successor among
    the respondent's children.
Consideration (b) - personal need or preference for retirement.
Consideration (c) - optimal time of farm transfer from successor's
    point of view.
χ^2 statistic - this is the minimum of three alternative test
    statistics for the hypothesis that the ranking of
    considerations is random (see text and appendix 3). The test
    statistic was not calculated for the first row since the test
    is applicable only when all rankings are complete.

Table 4. Descriptive statistics of regression variables

a. quantitative variables

Variable	Mean	S.D.	Range	Unit
Land owned	0.0280	0.0474	0.0006-0.4	10000 acres
Farm capital[a]	0.1720	0.5238	0-4.5	$1000000
Farm share of assets	0.7067	0.2928	0.01-1	
Farm share of debt	0.5609	0.4316	0-1	
Age	0.5419	0.1162	0.28-0.85	100 years
Years working off-farm	0.1002	0.1350	0-0.5	100 years

b. dummy variables

Variable	Mean
Farming parents	0.7092
Parents owned current farm[b]	0.4184
Farm remains with family[c]	0.4043
Farm expected to be sold[d]	0.1773
Low family income[e]	0.2199
Medium family income[f]	0.5319
Low family assets[g]	0.4397
Medium family assets[h]	0.2482
High school education	0.4681
College education	0.4468

[a] value of farm machinery and equipment.
[b] including respondents whose spouse's parents owned the farm.
[c] farmer plans to let the farm stay in the family after he retires.
[d] farmer plans to sell the farm to a stranger after he retires.
[e] annual family income under $20,000.
[f] annual family income between $20,000 and $100,000.
[g] total family assets under $500,000.
[h] total family assets between $500,000 and $1,000,000

Table 5. Regression of the importance of succession considerations[a]

Variable	Specification #1	Specification #2
Intercept	-0.1157 (-0.28)	-0.1959 (-0.49)
Farming parents (D)	0.2622 (2.75)***	0.3206 (3.61)***
Parents owned current farm (D)		0.0647 (0.62)
Farm remains with family (D)	0.1344 (1.57)*	0.2218 (2.30)**
Farm expected to be sold (D)	-0.3234 (-3.11)***	-0.1665 (-2.02)**
Land owned	0.0453 (1.73)**	0.0681 (1.49)*
Farm capital	0.1212 (1.62)*	0.0853 (1.27)
Low family income (D)	0.1134 (2.27)**	0.1628 (2.32)**
Medium family income (D)		0.0907 (1.30)*
Low family assets (D)	-0.0219 (-0.25)	-0.0738 (-0.91)
Medium family assets (D)[b]	-0.0219 (-0.25)	
Farm share of assets	0.1817 (7.05)***	0.1349 (3.60)***
Farm share of debt	-0.0470 (-0.74)	-0.1732 (-1.85)**
Age/100	0.6631 (1.49)*	0.7242 (1.66)**
High school education (D)	0.2327 (2.07)**	0.1967 (1.81)**
College education (D)	0.3108 (2.60)***	0.3107 (2.61)***
Years working off-farm/100	0.0825 (2.02)**	0.1157 (1.96)**

Table 5. (*continued*)

	Specification #1	Specification #2
Number of observations[c]	141	141
# of principal components[d]	6	8
R-squared	0.1347	0.1486
F[e]	4.2014	3.3152

Notes to table 5:

t values in parentheses.

* significant at the 10% level.

** significant at the 5% level.

*** significant at the 1% level.

(D) a dummy variable.

[a] the average rank of the second and fourth retirement considerations (see text) divided by the average rank of the first and third considerations.

[b] the coefficients of low and medium family assets were forced to be equal in specification #1.

[c] observations had to satisfy three conditions in order to be included: (1) at least one of considerations 1 and 3 are ranked; (2) at least one of considerations 2 and 4 are ranked; and (3) no explanatory variables are missing.

[d] insignificant principal components were excluded by order of significance until adjusted R-squared stopped rising. We have also verified that all the excluded principal components were jointly insignificant.

[e] the degrees of freedom for testing the significance of the regression are the number of principal components, and the number of observations minus the number of principal components, respectively.

Appendix 1: Agricultural Land Preservation Survey (number of respondent)

1. What were your main reasons for establishing an agricultural preservation district? Rank the possibilities (1 - most important, 4 - not important).

1	2	3	4	Qualify for easement sale
1	2	3	4	Pass farm to heirs as a whole unit
1	2	3	4	Avoid nuisance problems
1	2	3	4	Enjoy tax benefits
1	2	3	4	Keep land in farming
1	2	3	4	Prevent development in the area

2. If you applied for development rights easement sale, what were your main reasons?
Rank the possibilities (1 - most important, 4 - not important).

1	2	3	4	Obtain money for expanding farm operations
1	2	3	4	Obtain money for debt reduction
1	2	3	4	Obtain money for inheritance purposes
1	2	3	4	Obtain money for other reasons
1	2	3	4	Keep land in farming
1	2	3	4	Prevent development in the area

3. In what year did you (or your spouse) start farming this particular farm? 19___
4. Were your parents farmers? yes no
5. Were your spouse's parents farmers? yes no
6. Did your (or your spouse's) parents own this particular farm? yes no

In the table below, please answer the questions for each family member (14 years and older only) in a separate column. Include children not residing with you, and parents or other relatives who reside with you. Use columns 3-8 for children and/or parents. Add another sheet if necessary.

	1	2	3	4	5	6
Relationship..	yourself	spouse				
Age...						
Male/Female (M/F).....................................						
Highest diploma (0-none;1-high school;2-college)						
Is he/she married? (yes/no)..........................						
Does he/she live with you? (yes/no).................	N/A.					
Does he/she normally work on farm? (yes/no)..						
Days per year he/she normally works on farm....						
Hours per day he/she normally works on farm....						
Total years he/she has been working on farm....						
Does he/she normally work off the farm? (y/n)						
Days per year he/she normally works off the farm						
Hours per day he/she normally works off the farm						
Total years he/she has been working off the farm						
Approximate yearly income from off-farm work						

What are the ages of children younger than 14 years (or not listed above)?

    1. ___   2. ___   3. ___   4. ___   5. ___   6. ___

7. At what age do you intend/expect to retire from operating this farm?   _____

8. Which of the following affects your retirement decision? Rank the suggestions
    (1 - most important, 4 - not important) or suggest your own.
    1 2 3 4   the availability of a suitable successor among your children.
    1 2 3 4   personal need or preference for retirement.
    1 2 3 4   optimal time of farm transfer from successor's point of view.
    1 2 3 4   other (specify)_____

9. What do you plan to do with the farm after you stop operating it? Circle the most relevant.
    a. give it to one of your children.
    b. divide it among your children.
    b. sell it outside the family.
    c. rent it out.
    d. farm will be operated by a partner.
    e. other (specify)_____

10. If one of your children is going to operate the farm after you quit, who do you **PREFER** to do this? give the number of that child from the table of family members.   _____

11. Do you think this child will **ACTUALLY** operate the farm after you quit?   <u>yes</u> <u>no</u>
    If not, give the number of the child that you think will actually operate the farm.   _____

12. When deciding about the division of your estate, what are the important considerations? Rank the suggestions (1 - most important, 4 - not important) or suggest your own.
    1 2 3 4   all my children will be equally well off during their lifetimes.
    1 2 3 4   they will all get equal support (including cost of schooling, etc.) during their life.
    1 2 3 4   dividing the estate strictly equally (at the time of division) among all children.
    1 2 3 4   giving more to children who will not do so well on their own.
    1 2 3 4   giving more to children who will take care of me and/or my spouse at old age.
    1 2 3 4   keeping the farm operation viable over the long run.
    1 2 3 4   minimizing estate tax liabilities.
    1 2 3 4   other(specify)_____

13. What percent of your retirement days expenses will be covered by each of the following?
    ____   own savings or assets income.
    ____   income from working part-time.
    ____   support from children.
    ____   other(specify)_____

14. How will the responsibility (financial or physical) to take care of you at old age be shared by your children?
Rank the suggestions (1 - most important, 4 - not important) or suggest your own.

1 2 3 4   equally by all children.
1 2 3 4   mostly by the child who gets a larger share of my estate.
1 2 3 4   mostly by the child who will end up being wealthier.
1 2 3 4   mostly by the child who succeeds me on the farm.
1 2 3 4   mostly by the child who will live nearby.
1 2 3 4   I don't plan this ahead of time, and leave it to the discretion of my kids.
1 2 3 4   I don't expect to be cared for by my children.
1 2 3 4   other (specify)_____

15. Of the total estate you plan/expect to leave for your children, what percent will be in:

____   farm: farmland and farming capital.
____   savings.
____   other assets.
____   investments in children (including costs of schooling, etc.).
____   other (specify)_____

Suppose that you decide to give the farm to one child. For the next two questions, rank the suggestions (1 - most important, 4 - not important) or suggest your own.

16. How would you decide which child will get the farm?
1 2 3 4   the one who will be the best operator for this farm.
1 2 3 4   the one who has the worst alternative possibilities.
1 2 3 4   the one who will best take care of me and\or my spouse at old age.
1 2 3 4   other (specify)_____

17. How would you compensate the other children?
1 2 3 4   I will give them money to equalize the value of assets each one receives.
1 2 3 4   invest in their education so that they will be able to make a living outside.
1 2 3 4   make the child that gets the farm compensate the others.
1 2 3 4   don't have to compensate since that child will care for me at old age.
1 2 3 4   other(specify)_____

For the next three questions, circle the most appropriate answer.

18. How would you and your succeeding child share farm work?
a.   sole responsibility will be mine before the transfer, and my child's after it.
b.   jointly, but mainly by me before the transfer, and by my child's after it.
c.   equally, both before and after the farm ownership transfer.
d.   other(specify)_____

19. How would you and your succeeding child share farm decision making?
    a.   sole responsibility will be mine before the transfer, and my child's after it.
    b.   jointly, but mainly by me before the transfer, and by my child's after it.
    c.   equally, both before and after the farm ownership transfer.
    d.   other(specify)_____

20. How would you and your succeeding child share farm income?
    a.   sole responsibility will be mine before the transfer, and my child's after it.
    b.   jointly, but mainly by me before the transfer, and by my child's after it.
    c.   equally, both before and after the farm ownership transfer.
    d.   other(specify)_____

Please answer the following 3 questions about the person from whom you got this farm.

21. Was he/she one of your (circle one):
    a. parents   b. spouse's parents   c. other relative   d. other

22. What was his/her age at the time you received the farm from him/her?   _____

23. What was his/her highest level of schooling (0-elementary;1-secondary;2-college)?   _____

24. What is the total area of the land you own?   _____ acres

25. Of the land you own, how many acres are:
    operated by yourself   _____ acres
    operated by a family member   _____ acres
    operated by someone else   _____ acres
    not operated at the moment   _____ acres

26. Of the land you own, how many acres were obtained by:
    purchase from relative   _____ acres
    inheritance or gift   _____ acres
    purchase from non-relative   _____ acres
    other_____   _____ acres

27. What is the total area of the land you operate?   _____ acres

28. Of the land you operate, how many acres are:
    owned   _____ acres
    rented   _____ acres

29. What is the approximate value of farm machinery and equipment? $_____

30. How many hired workers work on your farm on average during the year?
        For example, if you have one worker who works 6 months, write 1/2.   ____

31. What is the approximate yearly total number of working days of hired farm workers? _____

32. What is the approximate value of annual family income? a. $0-10,000 b. $10,000-20,000
      c. $20,000-50,000   d. $50,000-100,000   e. $100,000-200,000   f. $200,000+

33. What percent of annual family income comes from the farming operation?   ___%

34. What percent of farm income is contributed by each of the following farming activities?

Poultry and poultry products	___%	Dairy products	___%
Livestock and livestock products	___%	Vegetables	___%
Nursery and greenhouse crops	___%	Tobacco	___%
Agronomic field crops (other than tobacco and vegetables)			___%
Fruits and berries	___%	Other	___%

35. What is the approximate value of total family assets? a. $0-50,000 b. $50,000-100,000
      c. $100,000-500,000   d. $500,000-1,000,000   e. $1,000,000+

36. What percent of total family assets is in the farming operation?   ___%

37. What is the approximate value of total family debt? a. $0-50,000 b. $50,000-100,000
      c. $100,000-500,000   d. $500,000-1,000,000   e. $1,000,000+

38. What percent of total family debt is in the farming operation? ___%

THANK YOU VERY MUCH FOR YOUR COOPERATION AND YOUR TIME

Appendix 2: A Profile of Survey Respondents

Personal information

- 67% of respondents, and 39% of respondents' spouses were born to a farming family, respectively.

- 42% of respondents are operating the same farm as did their parents or their spouses' parents. About 85% of those received the farm from their parents, and 15% - from their spouses' parents. 5.2% of the respondents received the farm from another family member. A little more than a half acquired the farm from outside the family.

- The distribution of the year in which the respondents started operating their current farm is described in the following table:

Years	number of respondents
1910-19	3
1920-29	6
1930-39	17
1940-49	60
1950-59	87
1960-69	96
1970-79	79
1980-89	84
1990-91	7

Farm information

- Respondents owned 225 acres of land on average. Of these, 60% are operated by the respondent, 11% are operated by a family member, 27% are operated by someone else, and the rest is not operated at the moment.

- Respondents operated 276 acres of land on average, less than half of those are rented.

- The average value of farm machinery and equipment was $122,642.

- Each respondent used the services of one and a half hired workers during the year on average, and each hired worker supplied on average 116 days of work per year.

Income and assets

- The distribution of annual family income is presented in the following table:

Income (in $1000)	Percent of respondents
0-10	7.55
10-20	13.80
20-50	29.95
50-100	25.52
100-200	14.32
200+	8.85

- On average, 40 percent of total annual family income comes from the farm operation.

- The distribution of farm income by source is described in the following table:

Source	Share
Livestock and their products	20.86
Dairy products	12.60
Poultry and their products	4.74
Agronomic field crops	36.14
Vegetables	3.48
Fruits and berries	2.80
Tobacco	1.67
Other	13.55

- The distribution of respondents by total family assets is presented in the following table:

Assets (in $1000)	Percent
0-50	1.86
50-100	3.19
100-500	37.77
500-1000	28.99
1000+	28.19

- On average, 65% of total family assets are in farming.

- The distribution of respondents by total family debt is described in the following table:

Debt (in $1000)	Percent of farms
0-50	48.56
50-100	19.84
100-500	24.28
500-1000	3.92
1000+	3.39

- On average, 45% of total family debt are in farming.

Appendix 3: A Test Procedure for Complete Rankings

Assume a sample of M individuals, each ranking N objects by a rank $0 < r_{mn} < N+1$. Denote the sum of the ranks given to object n by S_n, defined as $S_n = \Sigma_m r_{mn}$. Also define $S = \Sigma_n [S_n - m(n+1)/2]^2$. Benard and Van Elteren (1953) show that if all ranks are different, the statistic $12S/D$, where $D = MN(N+1)$, converges in distribution to a χ^2 random variable with N-1 degrees of freedom.

We now want to allow identical ranks of more than one object. In this case, define for each individual m:

t_{m1} - number of objects that were ranked differently than all others;

t_{m2} - number of pairs of objects that were ranked equally;

t_{m3} - number of triplets of objects that were ranked equally;

and so on. Also define:

$$T = \frac{1}{N-1} \sum_{m=1}^{M} \sum_{n=1}^{N} (n^3 - n) \, t_{mn}$$

Benard and Van Elteren (1953) suggest a correction to the denominator of the test statistic as $D = MN(N+1) - T$. This is the statistic used in the present analysis.

Prentice (1979) extends the test to the case in which not all objects are ranked by all individuals, but this extension was not used here.

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