Managerial Organization of U.S. Farms: Importance for Classifying Farms and Evaluating the Distribution of Farm Payments

Roman Keeney, Amber A. Remble, and Tamara M. Ogle
Department of Agricultural Economics
Purdue University

ABSTRACT

A new typology of U.S. farms is constructed focusing on the managerial organization of farms. Single operator farms are distinguished from those with multiple operators which are divided into four classes: (single generation farms with 1) operators of the same sex, 2) operators of opposite sex, and multiple generation farms with 3) an elder primary operator, and 4) an younger primary operator). The utility of this classification scheme for understanding farm structure is analyzed and findings show that the managerial organization represents an important classification for understanding the distribution of farm payments.

Selected Paper prepared for presentation at the Southern Agricultural Economics Association Annual Meeting, Orlando, FL, February 6-9, 2010

Managerial Organization on Farms: Importance for Classifying Farms and Evaluating the Distribution of Farm Payments

Roman Keeney, Amber A. Remble, and Tamara M. Ogle

Introduction

The 20th century saw dramatic changes in U.S. agriculture. Technological advancement and increased connections between rural locations and urban labor markets simultaneously combined to greatly reduce the number of occupational farmers and the size of the farm population even as agricultural output steadily grew (Huffman, 1991; Mishra and El-Osta, 2008). These factors significantly changed the structure of agriculture in the United States to its current form, with a relatively small percentage of farms producing the majority of agricultural output (and receiving a majority of agricultural income). The structure of U.S. farming continues to be an important policy concern. Political rhetoric surrounding farm program subsidies routinely appeals to support for family farms and more recently the rhetoric has focused narrowly on the distribution of payments. In particular, editorial and investigative reporting have used data on actual payment recipients to publicize many of the cases where the "family farm" most taxpayers support in concept is far different from the actual recipients of this support.

The distribution of income and government support is a longstanding concern in agriculture. While the majority of the population continues to favor supporting U.S. agriculture and its farm families, that same majority is increasingly wary of seeing their tax dollars used to develop a more corporate agriculture. Thus, discourse over distribution and policy effectiveness potentially suffer from a lack of commonality in conceptualizing the type of farm which is either most deserving or for which there exists significant public will for provision of income support. The analysis reported here addresses this very issue through an examination of heterogeneity of family farms. Specifically, we develop a typology of farms which uses information on the farm manager(s) present on an operation to examine several common perceptions of the family farm (e.g. a husband and wife or father and son co-managing a farm). We empirically examine similarities and differences among the classes elucidated and offer discussion of the insight this analysis provides toward an understanding of farm policy and distribution. The remainder of the paper is organized as follows: section two reviews relevant background research in typology development and their application to policy analysis. Section three develops the typology conceptually using available information from a survey of farm households. In section four, we offer a comparative analysis of the mutually exclusive classes of farms identified. The paper closes with implications and directions for further development.

Background

The proliferation of economic data has created a significant demand for categorization. Monitoring and evaluation of economic performance, well-being, and policy effectiveness all represent key demand sources that have spurred the increased availability of data for research analysis. As data collection expands at both the extensive and intensive margins, classification systems for organization and comparison become increasingly necessary to understand the story being told by data. Thus, concurrent with the growth of data has been research effort and expenditure into descriptive analysis of observables (e.g. countries, counties, households) that populate data sets.

Landais (1998) argues for a systematic or taxonomic approach to typology construction. This fosters a classification system that is free of bias in its representation of the policy or outcomes it is constructed to summarize. The considerable heterogeneity that exists in farms poses a serious challenge to this ideal however, as farms may be usefully distinguished in a host of dimensions. Briggeman *et al.* (2007) try to overcome this dimension problem by using a variety of farm business and household decision variables and statistical cluster analysis to identify similarity between farms. This approach has the appeal of its data driven information support but a serious limitation on the interpretive side since households fall into classes for unspecified similarities (e.g. off-farm income, asset level) that may differ when applied to different data sets. Additionally, typologies that use choice variables in construction run the risk of selection bias in subsequent analysis using the classification system.

While the Briggeman *et al.* (2007) approach might be classified as being data driven, other typologies would stand in contrast as being indicator driven. For example, the European Union's Common Agricultural Policy explicitly requires development and updating of a farm classification system for monitoring and evaluation of payments and their impacts. As implemented, this classification closely resembles industry classification with the additional dimension of farm size overlain (Andersen *et al.* 2007). This typology is readily extended, but suffers serious dimension problems for purposes of summarizing policy performance.

One of the most widely recognized typologies for characterizing farm household diversity has been the USDA-ERS farm typology (and its contractions and extensions). This typology functions over two dimensions with the first being a determination of the farm size as measured by the volume of sales. With most farms residing in the lower sales category, further subdivision of small farms is achieved by differentiating farms according to the farm operator's primary occupation (on or off-farm), life stage (at or near retirement), and household income position. The fully typology and its rules for classification is presented in appendix table A1.

The need for the USDA-ERS typology arose as a means of describing the USDA-ERS' annual data collection of farm households. The Agricultural Resource Management Survey is a survey of farm households annually implemented by USDA-NASS to monitor and evaluate the financial situation of the agricultural sector. The data itself consists of numerous household income and demographic variables as well as agricultural business characteristics suitable for analysis of the farm population in cross-section. We use this data and its reporting on farm operators to develop the typology discussed in the next section.

Typology Development

As opposed to typologies more oriented toward short run outcome variables (e.g. farm sales, primary products) we opt for a long run structural choice in defining classes of farm households. Specifically, we develop and implement our typology using the 2004 version of the ARMS survey data, keying on variables that report information about farm operators to devise mutually exclusive groups representing alternative compositions of the farm management input. The ARMS survey records information on the number of farm operators, age of operators, and sex of operators for up to three individuals responsible for farm decision making which provides the necessary information to generate the five classes of farms we will examine.

Figure 1 presents the classification scheme diagrammatically, using a tree structure to identify points of differentiation between groups. At the first level, we distinguish single operator farms from those evidencing more than one operator. A farm with a single operator comprises the most common type of farm and is a group that could be functionally divided in many ways. In fact, many

typologies focus specifically on the farm practices and household choices of this individual for differentiating farm types. Because our objective is to provide a better understanding of how distribution is affected by the structural organization of the farm's management, we leave single operators as a final stage category and pursue further level divisions within the remainder group of farms that have multiple decision makers present.

The second level identifier recognizes the generational content of the multiple operator farm management team. We identify farms on which the principal and secondary operators have an age difference of less than twenty years as single generation farms. Conversely, those farms with an age difference of twenty years or more are considered to be multiple generation farms. At the final level, we further distinguish the single generation multiple operator farms based on whether the two operators are same sex or opposite sex. At this same level, we distinguish multiple generation farms based on the elder operator being designated as the primary or secondary operator.

Conceptually, the typology as constructed resembles many views of the family farm that may be important for differentiating farm households according to their management organization. By definition, a single operator farm can have its farm management input summarized by an understanding of the characteristics of that individual. For households with multiple farm operators, description of the farm management component is more difficult since the separate individuals will embody different skills and proficiencies (beyond the additional time that can be allocated) which may substitute or complement with each other in the generation of farm income. Division of the multiple operator single generation farms to the two constituent groups is organized to give a generic form of the family farm composition we often see with familial relationships (husband and wife operation or brothers farming together) and associate with family farms. The other multiple operator farms have multiple generations participating in their management. We view these farms as being differentiated by their placement on the management transition path with either the younger or older operator having primary decision making responsibility.

With these five types identified and defined based on characteristics of the manager(s), we proceed to investigate the similarities and differences of these categories of farm households to better understand how this typological view might provide relevant information on farm structure, distribution, and policy.

Analysis

We begin our analysis by comparing single (59% of farms) and multiple operator farms (41%) in the dataset. Table 1 reports means of variables related to the farm and farm earnings for each type. We first note that household income for the primary operator of a multiple operator farm is higher than that of a single operator farm despite the fact that multiple managers have potential claims on the farm business earnings. This is consistent with efficiencies of scale tied to a larger management input. A majority (78%) of the household income advantage ($88,000 - $77,000 = $11,000) that individuals on multiple operator farms have over single operators arises from a higher realized net farm income. Taking the ratio of net farm income to total income (NFI/HHI) for the two average farms of each type, we see that the two groups are differentiated by a higher reliance on farm income for the multi-operator household. This is to be expected as farms with more than one manager operate nearly twice as much agricultural land and report considerably more investment (40% higher farm net worth). Agricultural area is most closely associated with row crop production and we see that in terms of sales, multiple operator farms are less specialized in crop production (50-50 split between crops and livestock) than are single operator farms (57% of sales are crops). This

would be consistent with the presence of multiple operators allowing the farm to be more diversified as a means to realize some economies of scope or to manage income volatility.

To gain some insight into the top level distinction between single and multiple operator farms, we overlay the two-way distinction from table 1 with the ERS-USDA typology of farm households. Recall that the ERS typology uses both an occupational status and the size of the farm as indicated by the value of sales to distinguish seven groups. In figure 2 we present these seven types on the horizontal axis and report the mean value of production (in $1,000, right axis) for each group. We see that the three distinctions of small farms (limited resource, retirement, and rural residents) all have similar agricultural output and that for occupational farms agricultural output is rapidly increasing as we move across groups. On the vertical (left) axis we report the cumulative percentage of households for each ERS typology group separately for single and multiple operator farms. Here we see that the cumulative probability for each of the ERS small farm classes is lower for multiple operator farms, such that empirically we attach a higher likelihood to observing multiple operator farms in larger sales categories. While the relationship between sales and our top level distinction is of interest, there is still considerable heterogeneity within each of these two groups.

Progressing down the right side of our tree given in figure 1, we next report on differences between single (87 percent of farms) and multiple generation farms (13%) in table 2. The average household income for these two groups is nearly identical, but the composition of this income is quite different across the two groups on average. The importance of farm income is much higher for multiple generation farms representing fifty-six percent of total household income. As has been noted in other studies (e.g. Gray and Keeney, 2008), as farm size (in terms of sales) and dependence on farm income increases for a group of farm households we see diminishing importance of government payments for those farms. This result is confirmed in table 2 with multiple generation farms receiving government payments equal to nineteen percent of their net farm income while single generation farms have around one-quarter of their net farm income attributable to government support.

As we would expect due to the generation driven distinction in table 2, we see a significant difference in the average operator age between single (55 years) and multiple generation (62.5 years) farms. This age difference is important when we recognize that the distinguishing characteristic of these farms is a minimum twenty year age difference between the two operators. The older average age of the multiple generation farm then helps explain many of the differences from a life-cycle point of view, since this operator will have been managing the farm longer and had more time to acquire assets (a net worth 45% larger), agricultural land (81% more acres), and capacity to prepare for bringing the second operator into the business. Thus, conceptually we can envision the average characteristics of a multiple generation farm as being the outcome of an operator who has at least partially planned for a successor and made the investments and acquisitions necessary to support propagation of the farm and to support the two generation family. This is in contrast to a single generation farm with two or more operators for which the average outcomes more likely represent a common timeframe for planning and acquisition.

Before moving to the final comparisons across all five groups given in figure 1, we make comment on the distinctions so far made with respect to the distribution of government payments. At the top level, we separate single and multiple operator farms with the former representing fifty-nine percent of the population. Despite a nearly 3:2 advantage in farm numbers, these farm households receive only a slight majority of government payments (52%). On the surface then, it would seem that government payments are disproportionately distributed toward the larger, multiple

operator farms[1]. However, the fifty-nine percent of single operator farms are only able to generate one-half of the total net farm income in the U.S. Thus, it can be argued that as farm payments are designed to support farm incomes, single operators claim a (marginally) higher than fair portion of subsidies. We see a similar story emerge for the two classes of multiple operator farms identified in table 2. The majority class (single generation farms) account for seventy-three percent of farm income but seventy-eight percent of government payments. This six percent advantage (0.78 / 0.73 = 1.06), highlights the need to evaluate distributional outcomes on a relative basis when dealing with such a heterogeneous population.

We continue our discussion of how government payments are distributed in the farm population in table 3. Previously we identified multiple operators as having a slightly lower reliance on government payments (relative to their farm income) than single operator farms. As we move to the lowest levels of the typology structure given in figure 1, we see that in fact the average for multiple operators is a result of two very different levels of reliance on government payments. In table 3, we see that both opposite sex single generation (column 3) farms and multi-generation farms with a younger primary operator have a higher average government payment receipts relative to their farm income levels than do single operator farms (column 1). Combined, these two classes of farms in column 3 and 5 represent only about thirty percent of farms and observing the other variable means (top section of table 3) we see that apart from the importance of government payments they appear quite different with respect to the structure of the farm business. In terms of net farm income relative to household income, the multi-generation younger operator farm earns about half of household income from the farm while opposite sex farms have the lowest share on average at around thirteen percent of household income.

In terms of policy and the distribution of payments we thus have an interesting distinction that emerges from comparing the relative income and payment receipts for different households. We formalize two summary calculations in expressions (1) and (2) below, as shares δ^i, for a farm type group g in the total population of a particular variable $i \in \{PMT, POP, INC\}$ with elements government payments, population, and net farm income respectively.

$$R_1^g = \frac{\delta^{PMT}}{\delta^{POP}} \tag{1}$$

$$R_2^g = \frac{\delta^{PMT}}{\delta^{INC}} \tag{2}$$

We report the results of these calculations for the average farm in each group in figure 3. The white bar indicates that the groups with the largest farms disproportionately receive government payments, with relative shares (R1) exceeding 1.5 for all multiple operator farms excepting the single generation opposite sex farm. The graph of R1 represents a commonly offered critique of farm payments as going to those who are in the least need. This perspective on farm policy implicitly assumes that engagement in farming warrants some payment, but that it should progressive in nature (i.e. lower earners should receive the highest rates of transfer). While this ideal is certainly present in much of the public view on government payments and the rhetoric which sells farm payments to that same public, farm payments in practice work to support prices. Moving to the black bar in figure 3, we see that the values of R2 confirm this perspective on farm policy in practice with many

[1] Of course some of the motivation for moving to multiple operator status may be tied to relaxing payment limitations as a constraint on government receipts.

of the farm groups being very near a ratio of 1.0 indicating correspondence between their shares of total government payments and total farm income. Using the R2 ratio, only the single generation opposite sex farms are considerably above the benchmark value of 1.0. This is consistent with a response to an incentive of payment limit constraints which might cause a husband-wife to organize as a multiple operator farm to relax limits on government support.

Returning to table 3, we can identify several cases of similarity among farm types and some important distinctions. Single operator farms (column 1) and single generation opposite sex farms (column 3) are strikingly similar on average. This would lend further support to the idea that these farms may be jointly managed more as a consequence of some legal business structure than actually representative of a multiple operator management team. Table 4 (top section) provides results for pair-wise test statistics on differences in means for each level variable in table 3 and each household. In this table, the presence of a number in a farm type's column indicates that we reject the hypothesis that the two types have equal means for a particular variable. The summary of test statistics here confirms our observation from table 3 on the similarity of single operator and opposite sex farms as only the tenure (percentage of operated acres that are owned), variable differs significantly across these two types. Moreover, we see that other defined groups in the typology tend to be significantly different for the reported variables than both single operator and opposite sex farms.

A comparison of particular interest relates to the two multiple generation farm classes distinguished by the primary versus secondary role the elder operator plays in management. In particular, these farms have nearly identical levels of net farm income and net worth. Returning to table 4, we see that the only significant distinction between the groups in columns 4 and 5 are related to measurement of the operator's age, household size, and land tenure. Consistent with our earlier discussion of the full class of multiple generation farms, these relatively few differences are to be expected. Multiple generation farms will tend to have outcome variables such as farm earnings potential and wealth that are consistent with the career and bequest motive activities of the senior operator whether that individual continues as the primary operator or relinquishes this role. We preserve the distinction in our typology as the reporting in tables 3 and 4 focus on the means of only a few variables out of the many that might explain differences in these two types[2].

Tables 3 and 4 combine to give us a fairly strong confirmation that our classification scheme outlined in figure 1 usefully differentiates the farm household population. We summarize the differences for these nine variables in the last column of table 4, reporting the number of significant pair-wise differences found for each variable (maximum of 10 for five groups). Most of the outcome variables used are different for at least one-half of the pair-wise comparisons of groups, the exceptions being acres (a high variance variable) and household size (a tightly distributed variable). Thus, to the extent the nine variables compared are representative of the larger set of farm structure variables of interest we can establish some confidence that the typology developed here captures heterogeneity in the farm household population in a manner consistent with management organization. The bottom section of table 4 reports the (symmetric) matrix of differences (maximum of nine) between each class defined. The final row of table 4 reports totals (9 variables by 4 comparison classes = 36 total) and percentages of total variables tested which were found to be significant. Thus, types in column 1, 3, and 4 were found to be the "most" different with sixty percent of possible tests producing a rejection of the like means hypothesis. Groups in column 2 and 5 show like mean rejections for just under half of the possible tests.

[2] Remble, Keeney, and Marshall (2010) focus on the distinction between these two groups of farms in their analysis of farm management transition and succession.

Conclusion

In the preceding discussion and analysis, we proposed a new typology of U.S. farms oriented toward the managerial organization of farms. As a first stage of differentiation, we separate single operator farms from those with multiple operators. Multiple operator farms are subsequently divided into four classes: (single generation farms with 1) operators of the same sex, 2) operators of opposite sex, and multiple generation farms with 3) an elder primary operator, and 4) an younger primary operator). In examination of the similarities and differences we were able to identify significant commonality between single operator farms and farms with two operators similarly aged and of opposing gender. This similarity was shown to have important implications for the distribution of government payments as the classification of a second operator (e.g. spouse) might increase the eligibility for subsidies of the multiple operator farm relative to the single operator farm. In addition to the analysis of government payment distribution, the utility of this classification scheme for understanding farm structure was tested and confirmed using a set of two-way statistical analyses keyed to common farm outcome variables (e.g. household income, net farm income). These results and the structure of the typology as developed indicate the variety that is present in common perceptions of family farms.

References

Andersen, E., B. Elbersen, F. Godeschalk, and D. Verhoog. "Farm Management and Farm Typologies as a Basis for Assessments in a Changing Policy Environment." *Journal of Environmental Management* 82: 353-362.

Briggeman, B., A. Gray, M. Morehart, T.G. Baker, and C.A. Wilson. 2007. "A New U.S. Farm Household Typology: Implications for Agricultural Policy." *Review of Agricultural Economics* 29(4): 765-782.

Economic Research Service (ERS), USDA. 2005. *Structure and Finances of U.S. Farms: 2005 Family Farm Report*, Washington, DC.

Gray, A., and R. Keeney. 2008. "Incidence of Government Subsidies and U.S. Farm Households." *Perspectives on 21st Century Agriculture: A Tribute to Walter J. Armbruster*. R. Knutson, S. Knutson, and D. Ernstes (eds). Farm Foundation. 167-174.

Huffman, W.E. 1991. "Agricultural Household Models: Survey and Critique." In M.C. Hallberg, J.L. Findeis, and D.L. Lass, eds. *Multiple Job Holding Among Farm Families*, Iowa State University Press, Ames, 79-111.

Landais, E. 1998. "Modeling Farm Diversity: New Approaches to Typology Building in France." *Agricultural Systems* 58(4): 505-527.

Mishra, A., and El-Osta. 2008. "Effect of Agricultural Policy on Succession Decisions of Farm Households." *Review of Economics of the Household* 6: 285-307.

Remble, A.A., R. Keeney, and M.I. Marshall. 2010. "Multiple Generation Farm Households: What Determines Primacy in Management?" Paper presented at the SAEA Annual Meetings, Feb. 6-9, Orlando.

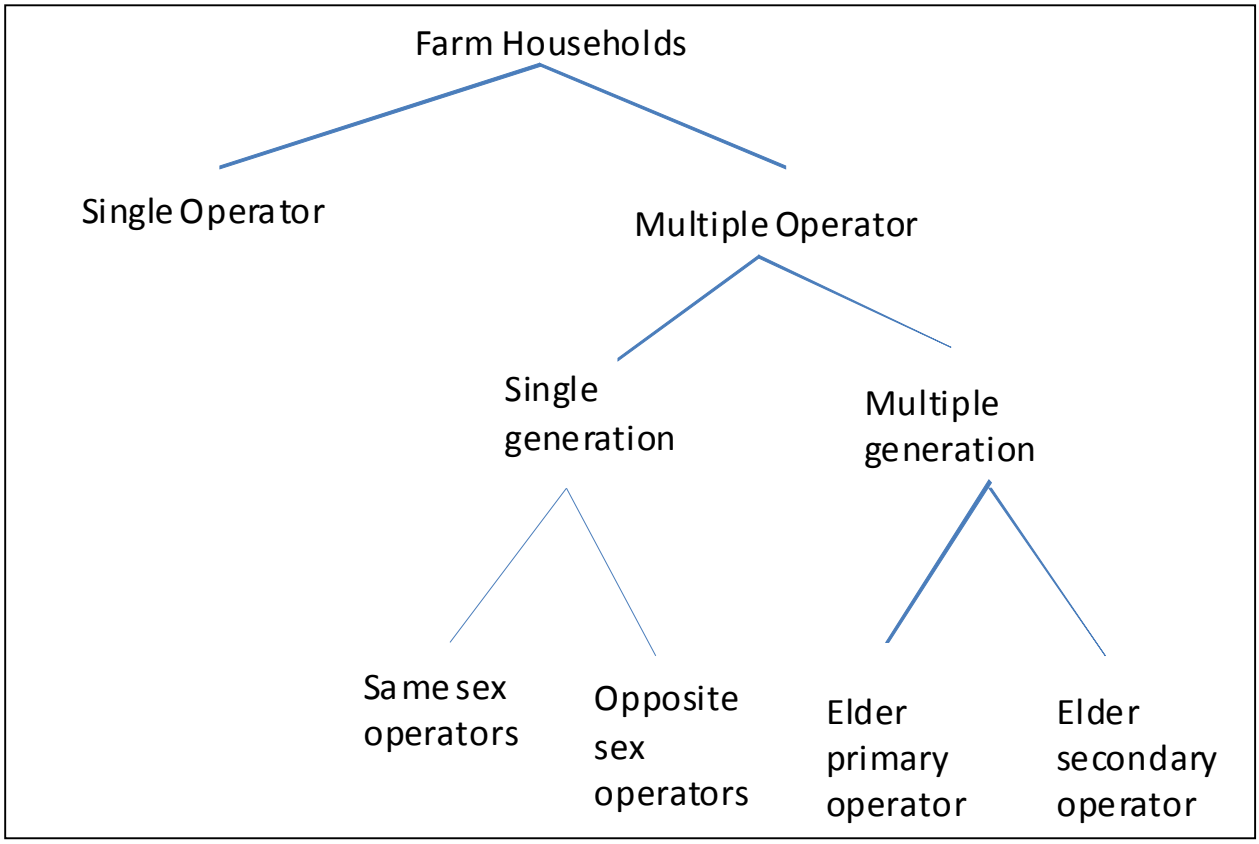

Figure 1. Classification scheme used to organize farm households.

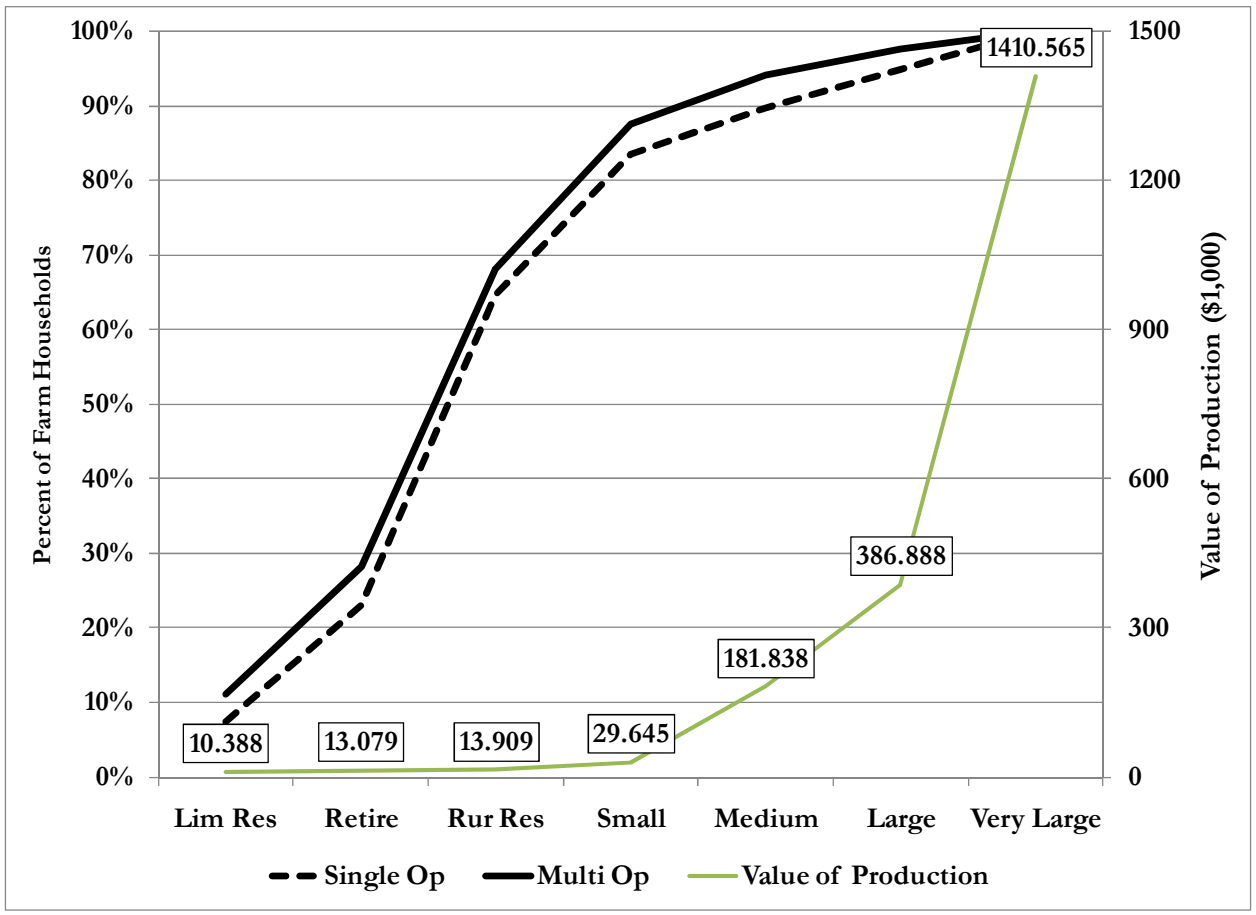

Figure 2. Comparison of single and multiple operator farms, overlaying the USDA-ERS farm typology.

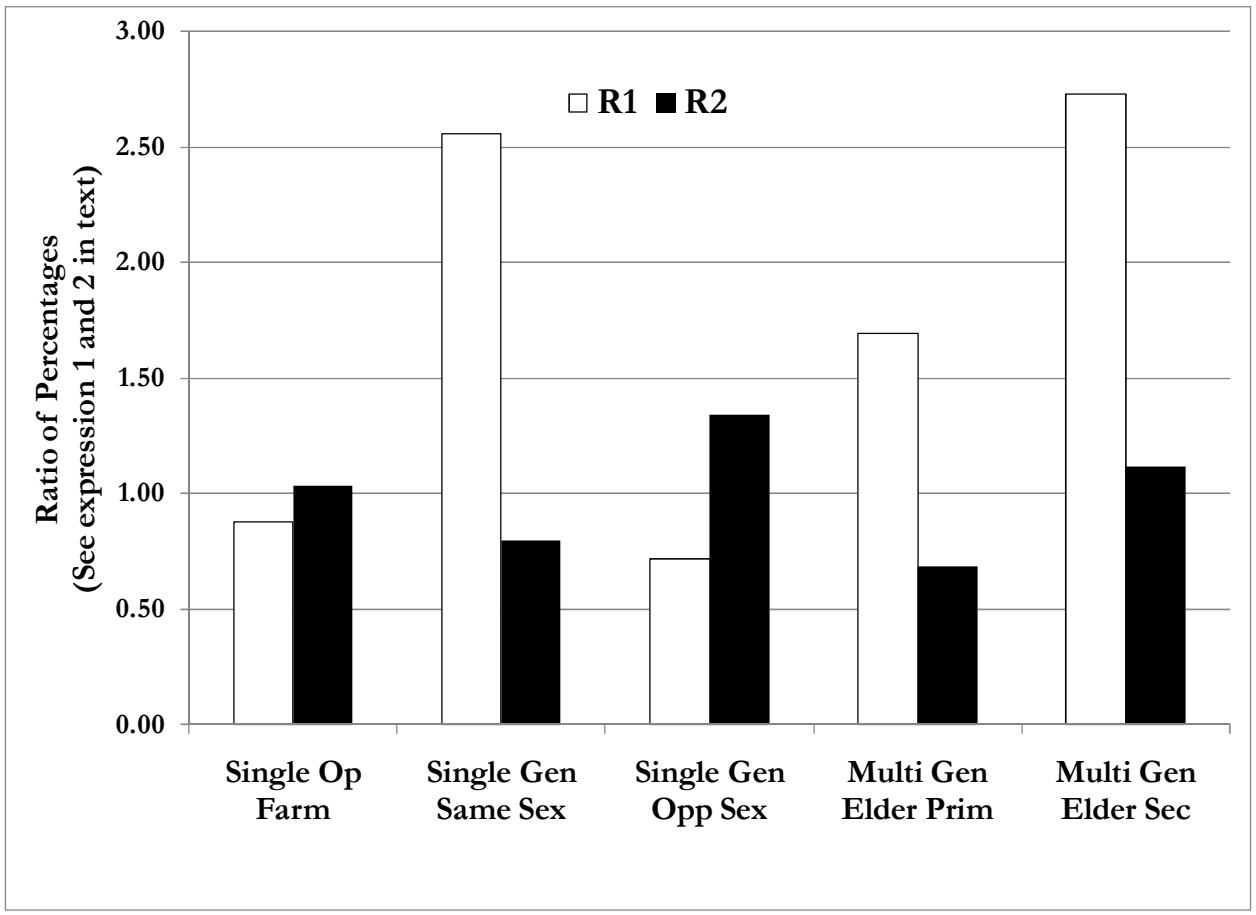

Figure 3. Comparison of payment ratios: average shares in total payments relative to share in the population (R1) and share in national farm income (R2).

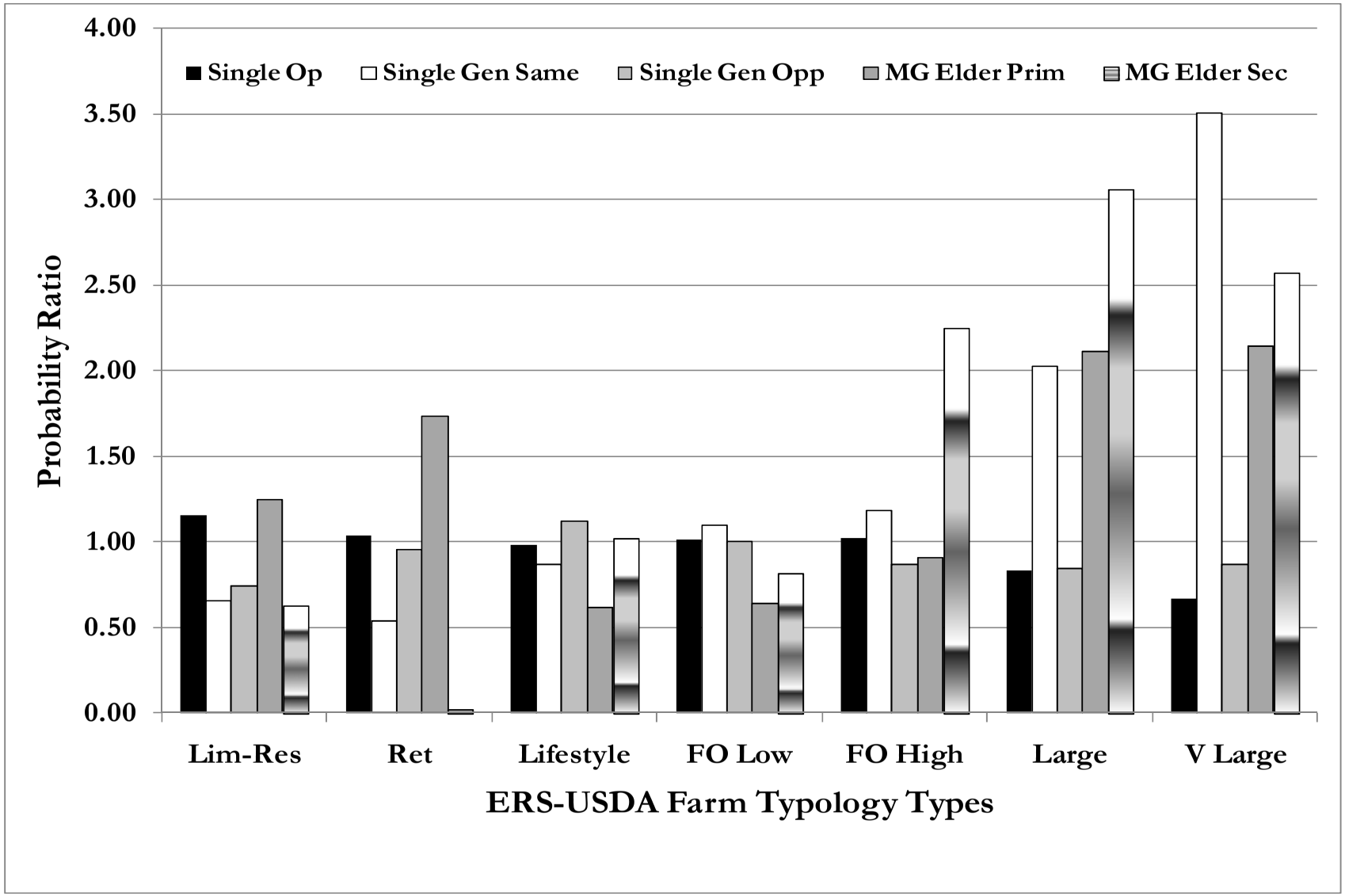

Figure COMPARE. Comparison of constructed typology to ERS-USDA farm typology.

Table 1. Comparison of single and multiple operator farm households.

Variable	Single Operator Farm	Multiple Operator Farm
Household Income (HHI)	76,927.63	87,968.62*
Gross Farm Income	70,204.21	128,499.01
Net Farm Income (NFI)	16,937.10	24,320.04
Net Worth	527,998.27	732,109.47
Acres	327.69	630.25
Tenure	0.77	0.78
Operator Age	56.67	55.98
Oper. Hhld Size	2.55	2.84
Govt. Payments (GP)	4,215.14	5,641.49
NFI/HHI	0.22	0.28
GP / NFI	0.25	0.23
Debt/Asset Ratio	0.08	0.10
Labor Expense (Share)	0.09	0.13
Crop Share in Sales	0.57	0.50
Number Observed	10,300	9,168
Population	1,211,140	849,682

Notes: Values are authors' estimates using the 2004 ARMS survey conducted by USDA NASS & ERS. An asterisk indicates an estimated mean for which the coefficient of variation is larger than 0.25 but less than 0.50.

Table 2. Comparison of generation types for multiple operator farms.

Variable	Single Generation Farm	Multiple Generation Farm
Household Income (HHI)	87,864.74	88,656.60
Gross Farm Income	115,293.70	215,959.15
Net Farm Income (NFI)	20,562.36	49,207.48*
Net Worth	690,737.50	1,006,120.21
Acres	569.55*	1,032.24*
Tenure	0.79	0.74
Operator Age	55.00	62.51
Oper. Hhld Size	2.88	2.55
Govt. Payments (GP)	5,091.89	9,281.60
NFI/HHI	0.23	0.56
GP / NFI	0.25	0.19
Debt/Asset Ratio	0.10	0.10
Labor Expense (Share)	0.29	0.50
Crop Share in Sales	0.51	0.46
Number Observed	7,519	1,649
Population	738,221	111,461

Notes: Values are authors' estimates using the 2004 ARMS survey conducted by USDA NASS & ERS. An asterisk indicates an estimated mean for which the coefficient of variation is larger than 0.25 but less than 0.50.

Table 3. Comparison of variable means for five types of households in typology.

Variable	Single Operator Farm (1)	Single Generation Same Sex (2)	Single Generation Opposite Sex (3)	Multi-generation Elder Primary (4)	Multi-generation Elder Secondary (5)
Household Income (HHI)	76,927.63	117,867.48	81,063.49	83,779.91	104,745.08
Gross Farm Income	70,204.21	286,370.33	76,512.70	211,709.55	229,978.82
Net Farm Income (NFI)	16,937.10	63,949.69	10,726.98*	49,312.24*	48,861.88
Net Worth	527,998.27	1,319,274.89	548,255.70	1,005,262.91	1,008,948.49
Acres	327.69	1,297.09*	404.63	1,077.65*	882.45
Tenure	0.77	0.66	0.81	0.78	0.59
Operator Age	56.67	53.16	55.42	68.87	41.52
Oper. Hhld Size	2.55	2.76	2.91	2.34	3.24
Govt. Payments (GP)	4,215.14	12,295.41	3,458.93	8,125.60	13,095.34
NFI/HHI	0.22	0.54	0.13	0.59	0.47
GP / NFI	0.25	0.19	0.32	0.16	0.27
Debt/Asset Ratio	0.08	0.09	0.11	0.09	0.12
Labor Expense (Share)	0.09	0.17	0.11	0.13	0.10
Crop Share in Sales	0.57	0.54	0.47	0.44	0.54
Number Observed	10,300	2,180	5,339	1204	445
Population	1,211,140	136,421	601,800	85,535	25,927

Notes: Values are authors' estimates using the 2004 ARMS survey conducted by USDA NASS & ERS. An asterisk indicates an estimated mean for which the coefficient of variation is larger than 0.25 but less than 0.50.

Table 4. Result of two-way test of differences in means across types.

Variable	Single Operator Farm (1)	Single Generation Same Sex (2)	Single Generation Opposite Sex (3)	Multi-generation Elder Primary (4)	Multi-generation Elder Secondary (5)	Total
Household Income (HHI)	2,5	1,3,4	2,5	2	1,3	5
Gross Farm Income	2,4,5	1,3	2,4,5	1,3	1,3	6
Net Farm Income (NFI)	2,4,5	1,3	2,4,5	1,3	1,3	6
Net Worth	2,4,5	1,3	2,4,5	1,3	1,3	6
Acres	4,5		4,5	1,3	1,3	4
Tenure	2,3,5	1,3	1,2,5	5	1,3,4	6
Operator Age	2,4,5	1,4,5	4,5	1,2,3,5	1,2,3,4	8
Oper. Hhld Size		5		5	2,4	2
Govt. Payments (GP)	2,4,5	1,3	2,4,5	1,3	1,3	6
Groups						
(1)	--					
(2)	7	--				
(3)	1	6	--			
(4)	6	2	6	--		
(5)	8	2	8	3	--	
Total	22	17	21	17	21	
	(0.61)	(0.47)	(0.58)	(0.47)	(0.58)	

Notes: Values are authors' estimates using the 2004 ARMS survey conducted by USDA NASS & ERS. An asterisk indicates an estimated mean for which the coefficient of variation is larger than 0.25 but less than 0.50.

Appendix

Table A1. ERS-USDA Typology of Farms.