

Ownership, Governance, and the Measurement of Income for Farms and Farm Households: Evidence from National Surveys

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Abstract

A large majority of farms in the Netherlands, Italy, Canada, and the United States are family owned businesses. National census and survey data extend information about the extent of multiple households and owners engaged in farm businesses. Multiple owners are relatively common in each of the countries. Even among farms structured as proprietorships two or more owners may be part of a farm's ownership structure. Households and owners of farms also may not completely overlap. Examination of recent data reveals that many farms are structured so that a wide range of owners also interact with a variety of persons or entities to make farm business decisions. Expansion of farm governance structures to include additional parties may affect claims on farm output and income. The message is that agriculture is dominated by far more complex business arrangements than traditional models of business development would suggest. A result is that data collection and income measurement, both for farms and farm households, has become more complex. When household estimates of income are developed from farm-based surveys, care must be used to first correctly measure a farm's income and then to correctly distribute it to stakeholders engaged in the business.

Introduction

A long-standing perspective viewed farms as a one-farm, one-farmer, one-household, low-debt form of business organization. In this view of farming, the farm and farm

household were closely intertwined (Heady; Harrington & Manchester). Around the kitchen table of the farm where they live, they manage the farm and take the risks (Gasson and Errington, 1993, de Haan, 1993). Their reward for this is a "family farm income". Sociologists have stressed that the interaction between family and farm means that a family farm is more than a professional occupation; it reflects a life style (Calus, 2009). The simplicity of this bundled model of organizational structure gave clarity to the sourcing of farm inputs and to the distribution of returns (Boehlje, 2007). Everything flowed through the highly integrated farm-household unit or, in today's terms, the "agricultural household".

Economists have explained that the interaction between family and farm means that there is no clear way to allocate total family farm income as a reward for labor, capital, management and risk as a marginal reward for each of these inputs: the total return determines the decisions, not the marginal ones. This goes back to the agricultural household model developed by Chayanov in his Theory on Peasant Economy: decisions on production, consumption and the allocation of time over farm work, household work and leisure are integrated. At the macroeconomic level, traditional sector accounting frameworks provide a cross-walk between farm production accounts and household income and outlay accounts. The link comes from farm operating surpluses being transferred to the farm household as a source of income that originates from farming (Carlin). But, the underlying assumption is typically, once again, one-farm, one household.

For decades it has been recognized that this bundled or "one-owner" model of business formation is only one of many ways to develop farm businesses. While today's agriculture includes frequent use of more complex organizational forms, "one-owner" farms exist in large numbers and may even dominate in the public view of agriculture. Though numerous, "one-owner" farms generally account for a much smaller than proportionate fraction of output and income than their share of farm numbers. Instead, Censuses and national surveys show that output and income are concentrated on farm units with more complex forms of business organizational structures. Increasingly, farms, especially larger farms, include multiple individuals, households, families, or other entities collaborating in ownership or decision making. In this vein, complex farm organizations do not originate from the size of business or legal structure, but, instead, arise from the stakeholders and business arrangements that form the farm's input sourcing, decision, and control structures. This expanded view of input sourcing, decision making, and control has been characterized as an unbundled approach to farm organization where multiple households or other entities co-exist within the boundaries of the farm firm (Boehlje 2007b)

The Handbook on Rural Households' Livelihood and Well-Being takes up the issue of which households and sources of income in establishing a conceptual framework for measurement of household income. Importantly, the "Handbook" recognizes the presence of multiple households and use of business arrangements that introduce other entities into "a household's farming activities" (United Nations 2007). The "Handbook" in particular recognizes that many family-owned and operated farm businesses may be organized to

have their own legal status and indicates that households found on family farms arranged as corporations should be treated as if they were proprietorships or partnerships. The Handbook focuses mostly on recognizing households on more complex farms as agricultural households and on the accounting of income from both farm and nonfarm sources and less on what the presence of multiple households may mean for the actual measurement of income for either the farm or farm household.

This paper takes up this issue by examining the complex relationships that may exist between farms and farm households in 21st century agriculture. We first pay attention to how organizational structures differ among farms and across countries and how they correspond with legal form of business, particularly for proprietor forms of business development. The paper then examines differences among farms in the number of households or other entities that may share in output or income and demonstrates how an assumption of one household even on proprietor farms may result in erroneous estimates of income. For farms organized as more complex legal entities we investigate ways that the business may reward farmers and farm households for the use of assets, including wages for labor and management inputs and dividends or other payments for use of equity capital. The paper concludes with a discussion of measurement issues for farms and farm households, and identifies necessary adjustments for data collection.

Ownership, Management, Governance: An Organizational Perspective for Farm Businesses

Five lines of empirical work underpin our approach to examining farm business ownership, management, and governance structures. These lines of inquiry confirm that: 1) Farm households increasingly feature a diverse bundle of economic and financial activities that transcend farming and rural sectors of national economies. 2) Household members may selectively participate as stakeholders in family businesses as owners, managers, or employees. Moreover, farms are generally accepted as being predominantly family businesses. 3) Farm businesses, even farms of relatively modest economic size, increasingly operate in an input sourcing environment where production assets may be obtained from a variety of owners of the business and other suppliers. 4) Leadership and management, or decision making structures have devolved from largely centralized control units to include a variety of governance control options, strategies, and reporting mechanisms, and 5) The unbundling of input sourcing and devolution of governance structures expands the number of claimants to farm output and income.

Farm household diversity arises in part from decisions to participate in a broad set of farm and non-farm economic activities. Household members allocate resources, ranging from labor to entrepreneurial skills to either farm or off-farm activities. Off-farm work of farmers and members of farm households is well documented and has been an accepted characteristic of farming for many decades. Likewise, sources and levels of off-farm income and total household income have been documented through surveys and Censuses in many countries. It is also generally accepted that income from farm sources provides an incomplete perspective of the income situation of the majority of farm households, even the household of operators of very large farming enterprises.

In some countries, for example the United States, a larger share of operators declare their primary occupation to be something other than farming. In the most recent Census of Agriculture, released in February, 2009, only 45 percent of farmers reported farming as their primary occupation (USDA, 2009)¹. Increasingly, farm spouses also work off farm. The tendency may be to think of off-farm work as being associated with smaller farm operations. But, even on very large farms a substantial number of operators declare non-farm occupations. For example, nearly one-out-of ten operators of farms with over \$1,000,000 in sales in the United States reported a non-farm occupation in 2007. And, an even larger share of spouses located on large farms work off-farm than operators themselves. The trend of off-farm work by farm spouses is not unique for the US; the same is true for the other countries reported in this paper (Canada, the Netherlands and Italy). Higher levels of education and therefore specialization in the labor market, increased mobility by cars and perhaps even the internet (making working from home possible) are some of the drivers of this trend.

Moving beyond accounting for sources of wage and salary income, farm households also report investing in and earning income from a variety of off-farm sources.

Documentation of diverse sources of household income is supported by farm households reporting balance sheets that include a wide variety of farm and non-farm assets that range from retirement accounts and other financial instruments to ownership of multiple business enterprises. In the U.S., about a fourth of the value of assets held by farm households, on average, consists of other personal, business and financial assets that are unrelated to household's farming enterprises. In Canada, Approximately 12 percent of household assets are non-farm family assets (Farm Financial Survey 2007).

Farmers not only supply resources to a wide variety of non-farm uses, they acquire inputs for a wide range of non-farm sources. Purchased inputs typically consume more than 70 percent of the revenues generated from production of farm-based goods and services. The sourcing process for these inputs results in multiple business relationships that may extend over a wide geographic space, especially given that many farmers now engage in use of the Internet in their input purchasing activities (Johnson, 2008; USDA, 2009). In addition to traditional purchased inputs, farm owners and managers form their businesses to incorporate multiple linkages with a variety of households and other firms, including other farms, both within and outside their local communities (Figure 1). Some households may provide labor, managerial or other services in return for a payment established by some known arrangement. Other households, or firms, may provide infusions of equity capital in return for a share of net returns. These households or firms may or may not hold, or even want, a role in decision making. Instead they may opt to forego an active role in the business and a claim on farm returns in favor of some other payment such as a dividend. Yet other farms may be linked with other farm or non-farm businesses through some vertical or horizontal linkage or through some contractual arrangement. These relationships may be set up to affect the entire farm enterprise or a specific production activity. Vertical or horizontal linkages, whether through contract or ownership

¹ Comparisons between countries are hindered by the definition of a farm that is the threshold to enter the census. The \$ 1,000. - threshold for the US (including imputed values) is rather low compared to the EU.

arrangement, may affect both the level and the distribution of returns generated by a farm.

A modern view of the organizational structure of farm businesses is illustrated in Figure 2. Given the unbundled approach to input sourcing typically used in farming, ownership structures may consist of one or more individuals, households, or other business entities. Moreover, more than one owner may reside within the same household. Likewise, there is no requirement that households holding an ownership position in a farm be part of the same family. And, firms with legal standing may also be an owner of a farm business either in its entirety or in partnership with other firms or households. The driving issue is who or what entity holds right to the use and disposition of farm resources and to the allocation of any residual earnings and not whether the holder of these rights is a specific individual, household, or other legal entity.

Management teams for farm businesses may range from the traditional single farm operator to several individuals, or in the case of farm management companies, even firms with legal standing. It is also not uncommon to find farm owner-operators developing advisory groups to provide input, even on an informal basis, into farm decisions. In today's farming, participation in joint ownership of some asset, some venture to start or share a production activity, or to engage in producing livestock or crop commodities for another farm is also relatively common. Business arrangements such as these may introduce other stakeholders into a farm's decision making structure. Many of these stakeholders may not only participate as a decision maker, at least for a selected production activity, they may also hold a claim to a share of farm output or net returns. With production contracts, for example, the farm operation most likely does not even sell the livestock or crop output. Instead, the contracting firm removes the physical production and makes payment to the farm business according to some agreed to terms. How income is ultimately distributed among households and other claimants is an outcome of the contracts and rules established to govern operation of the business.

Farms as Family Business Enterprises

The organizational forms that are prevalent in agriculture are motivated to some degree by economics. Different forms have their own costs and benefits. For example, industrial organizational forms in agriculture are linked to situations in developing countries where local capital and management are scarce (and brought in by multinational companies) and relatively inexpensive labor is abundant. Pollack (1985) interpreted the family farm as an organizational solution to the difficulty of monitoring and supervising hired workers (Pollack). Others stressed risk-sharing perspectives, especially in share-cropping and contract farming (Otsuka et al, 1992; Chueng, 1969). In recent years economists have stressed an incentive based, transaction costs and property rights approach from the new institutional economics discipline. Based on the work of Coase, Chueng, Demsetz, Hart and others Allen and Lueck (1998; 2002) modeled the choice of the organizational form as a trade off between specialization and moral hazard incentives. Specialization of different tasks (employing different kind of labor or out sourcing activities to specialized firms like contractors) is attractive but limited by agency costs. Seasonality, randomness

of outcomes of the production process (due to imperfect control of the biological production process), and costs of supervising (also due to the spatial characteristics of a farm) limits the benefits of specialization and size. This explains why farming has generally not converted from small, family-based firms into large, factory-style corporate firms (Allen and Lueck, 1998).

A variety of definitions have been used in farm finance and structural analyses to define family farm operations (Johnson, 1993). Most attempts to define farms as family businesses use characteristics of business development and operation. For example, family farm businesses have been defined to include some minimum amount of sales and to make use of a limited amount of hired labor in relation to labor supplied by farmers and household members. This definition also excludes hired managers and certain forms of business legal organization including non-family corporations and institutional farms such as those owned by a governmental unit (Salant). In some countries, farm legislation has provided an implicit definition of family farm businesses by focusing on forms of business organization, such as non-farm owned large-scale corporate farming enterprises that were viewed as being potentially harmful to a family farm system of agriculture. Elsewhere, the perception of farms as family businesses has been more explicit. For example, farms in Great Britain have been reported to be mostly family businesses from the perspective that, “principals are related by kinship or marriage...business ownership is usually combined with managerial control... and control is passed from one generation to another within the same family (Gasson et al).

Research in the U.S. Department of Agriculture has also recently employed a definition of family farms that is grounded in business ownership (Hoppe, et al., 2008). Specifically, family farms, as currently being defined, include any farm where the majority of the business is owned by the operator—or operators on multi-operator farms—and persons related by blood or marriage, including relatives that do not reside in an operator’s household. The ownership criterion as used within USDA focuses on the principal operator of the farming operation and the relatives of the principal operator. Unrelated secondary operators and their relatives do not count. Prior to this newer definition, family farm businesses included all farms, except those organized as non-family corporations or cooperatives, or farms held in estates, trust, or being operated by a hired manager. Both the new definition of family farms used at USDA and the definition advanced by Gasson, et al, utilize a concept of farms as family businesses that draws on ownership of the farm as an operating business rather than on some physical or legal attribute resulting from how owners assemble and use assets to produce agricultural goods or services.

All legal forms of business organization report farm businesses that include multiple households earning income, even farms that are classified as sole proprietorships (Figure 3 for the US, Figure 4 for Canada, Figure 5 for the Netherlands). This finding from census and national survey data underscores the importance of using an explicit measure of ownership in the identification and assessment of farms as family businesses. This is particularly the case if some number of households or individuals is assumed to have an ownership role in the business based on decisions made about how to legally structure a

business enterprise. In Canada, for example, 2.4 percent of all farms organized as proprietorships report more than one household (Ag-Pop Census Linkage 2006). Census of Agriculture data from the U.S. are a little different, reporting the number of households sharing in net income of the farm. This data collection revealed that, in 2007, 18 percent of farms organized as individual or sole proprietor operations had more than one household sharing in net income. Households may be reported as sharing in net income for a variety of reasons, but, if we accept that a residual claim on earnings of the business is a reflection of ownership, these U.S. census data indicate the presence of multiple owners even on operations identified as proprietor-based businesses. A larger share of businesses organized as partnerships and corporations reported multiple households sharing net income than proprietorships reported.

One of the explanations for multiple households on even sole proprietor (or operator/spouse owned) farms is that increasingly farm businesses have multiple production locations. In the period 2003 – 2007 the prevalence of this strategy has increased in the Netherlands (Figure 6) and such farms are now responsible for 5.6% of total output. Farm enlargement doesn't wait anymore for the neighbor's farm coming up for sale. Some larger farms that reached economies of scale at their original location follow a replication strategy. In such cases the second or third location also may have a household, where one of the family members (not necessarily being an owner) lives.

In recent U.S. surveys, ownership has been more explicitly measured by examining the ownership interest held by operators, their households and relatives whether by blood or marriage, and even by asking outright the number of owners associated with the farm business. Based on the operators reporting an ownership interest of more than 50 percent of the business, 98 percent of farms in the U.S. were family-held businesses in 2007. The ownership interest reported by survey respondents ranged from 99 percent for individual or proprietor farms, down to 83 percent for partnerships. These census and survey-based data confirm that while farms remain largely family-held businesses, owners and the ownership stake of operators and their extended families cannot necessarily be inferred from either the legal form of the business or other attributes such as tenure. Data from the Dutch FADN, presented later in this paper, also provide a similar conclusion: farm structures become more complex, owners choose relevant legal forms of the business, but farms remain largely family-held businesses.

Ownership: Farm Ownership Structures Move Beyond One-Farm, One-Owner

Ownership has been described as a legal condition with economic consequences (Bostwick). The economic consequences of ownership, as ownership is used conventionally, generally include two formal rights: “the right to control the firm and the right to appropriate the firm's residual earnings (Hansmann)”. Or, rephrased, the owner of a resource holds a legal right to its use and disposition (Bostwick). For our purposes, farm owners are the individuals or legal entities that hold the rights to determine how farm assets will be used in production and how any net returns earned by the business will be distributed.

Multiple individuals or households can be associated with a farm business, even those organized as proprietorships. Proprietorships, for example, can be modified when the proprietor, or owner, of the business engages in a variety of formal or informal contracts to take another party into the business through some sort of business arrangement (Thomas & Boehlje). Examples include an enterprise or wage agreement or a joint venture related to some production activity. A common example of when such a modification might occur is when a parent adjusts the business to take a son or daughter into the operation. Likewise, use of partner and corporate forms of organization introduce multiple stakeholders. The end result is that the number of households and owners associated with farms can be substantially larger than the number of businesses. Data have also been reported for the Netherlands, for example, to demonstrate that farms may feature multiple entrepreneurs (Poppe). And, agricultural censuses in Canada and the U.S. have documented the presence of multiple operators. Italy has similar data for its farm businesses as well.

More recent data from Canada, Italy, the Netherlands, and the U.S. extend information about the extent of multiple households and owners engaged in farm businesses. In Canada, proprietors report 2.4 percent of farms having two or three households. Meanwhile, partnerships operating without a written agreement report 14 percent of farms with two or three households. The share of farms with two or three households rises for family corporations and partnerships operating with a written agreement. Data from U.S. farmers show a similar pattern (Figure 7). Over 12 percent of individual or proprietor farms have two or more households sharing net income.² In 2007 there were approximately 2 million households of primary operators associated with family farm businesses. Joining these primary operator households were another 370,000 households of other persons, with nearly three-fourths being aligned with proprietor operations.

In Italy, 2007 data for commercial farms,³ collected by the RICA-FADN survey, show that a majority of farms have one owner. The share of farms with multiple owners is higher though in corporations and particularly in legal partnerships (Figure 8). In addition, even among farms owned by a principal operator household there are cases in which there are more than 2 or 3 owners.

Households and owners of farms may not completely overlap. Thus, just as it may not be appropriate to look at a proprietorship form of business and allocate all business activity to one household, even if households are correctly counted, owners may still differ. This occurs because some owners may not be a part of the operator's household or even extended family. This point is illustrated in Figure 9 which shows that nearly three out of five farms in the U.S. have more than one owner while 85 percent of farms have one household. About half of all farms report multiple persons with an ownership interest within the primary operator's household. Most of this is likely operator-spouse co-

² The Census of Agriculture and the Agricultural Resource Management Survey counted households sharing net income. This count may differ from the number of households associated with a business as reported for Canada.

³ Farms are defined as commercial when they have an economic dimension above 4 European Size Units, i.e., around \$4,800 euros.

ownership of the business. Still, even after accounting for household-based co-ownership, over 253,000 farm owners are not part of the principal operator's household with over 100,000 of these owners being a part of sole proprietor businesses (Figure 10). As expected, farms organized as partnerships or corporations have a larger share of multiple household arrangements and a larger share of owners that are not a part of the operator's household. A similar result is illustrated in Figure 11 for the Netherlands. Besides the classical one household – one entrepreneur (owner) situation there are households with 2 entrepreneurs (often man/spouse or father/son, but also a considerable number of 2 brothers living together) as well as households with 3 entrepreneurs (often operator, spouse, and son) and two households with 2 entrepreneurs (often father and son, but also 2 brothers). In this case, data available over a multi-year period suggests a rather stable situation.

Managerial Structures Evolve: From One-farm, One-manager to Multiple Person/Entity Decision Structures

While owners who direct resource use and disposition can be thought of as performing “leadership” functions (Hanson), the function of management, and by extension of operators or managers of a farm business, is to “direct and control resources in the production process” (Bostwick). Managers focus on efficiency as they approach an issue where constraints have been set. For our purposes, farm operators or managers become the individuals or legal entities that make day-to-day decisions about how the farm is operated.

It is not uncommon for several persons or even hired firms with specialized expertise in the management of farm businesses to be involved in day-to-day decisions of a farm (Figure 12). Operational management structures of farms may also reach beyond an individual and his or her household to include members of an owner-operator's extended family, other individuals, businesses that provide managerial services for hire, or even persons or businesses that may provide advice or input into decisions on an informal basis. Thus, similar to ownership structures, managerial teams may include a wide variety of farm and non-farm based skill sets and experiences. Moreover, farms with highly varied, often complex, managerial structures are not confined by national boundaries to any one country. Instead, complex farm operating arrangements are arising throughout the world as farming becomes increasingly intertwined with national and international economies.

Over 3.3 million individuals were engaged in day-to-day decision making for the 2.2 million U.S. farms in 2007. In addition to managers who were actively engaged in daily decision making, about 16 percent of farms hired professional management services, and over 5 percent included informal advisors as a part of their management team. A majority of farms in the U.S. report one or two persons charged with daily management decision making, with over 97 percent of farms reporting one or two person teams. While farms with larger numbers of decision makers account for 3 percent of farms, the farms associated with these teams account for about 16 percent of the value of production and a similar share of net income.

In 2007, about three-fifths of farms reported one operator, or manager, who made day-to-day decisions. Farms with one operator were overwhelmingly organized as sole proprietor, or individual, operations. Still, one-operator farms may be organized using a partnership or corporate form of legal structure. In these cases, the single operator is most likely either a hired manager or the farm was organized such that a large share of owners, members of corporate boards of directors, or partners are not active in day-to-day business management.

Most two person farm management teams consist primarily of the person identified as the principal operator and his or her spouse. In 2007, for example, nearly 86 percent of two person teams in the U.S. consisted of an operator and spouse. Overall, two person teams accounted for 35 percent of farms and generated 38 percent of farm value of production. This differs from farms operated by a single person which generated a less than proportionate share of output. There is a decided difference between two person teams organized to include an operator and spouse and those that include an operator that farms in combination with another person with regard to size of operation and generation of output. Operator-second person teams are more likely to manage partnerships or corporate businesses, with over a third of operator-second person teams managing farms with these forms of legal structure. In comparison, only about 4 percent of farms managed by an operator-spouse unit had a partnership or corporate legal form of organization. Farms managed by an operator-second person team also tend to be larger in economic size than farms managed by an operator and their spouse. Although accounting for one-out-of-seven two person management teams, these farms generated 40 percent of output that originated from farms with two-person teams and 15 percent of output from farms in total. Dutch FADN data (Figure 13) reports a similar situation. Two-operator farms in the Netherlands have 46% of production and 47% of the total family farm income. The traditional single operator farms (45% of all farms) are not the majority of farms anymore⁴. Being smaller than average they produce about a third of the output and take only a quarter of the total income.

In Italy the single operator is still the dominant form of management (Figure 14). More precisely, 95% of commercial farms reported only one person in charge of daily management decision making. Management teams with two or more person are slightly more frequent among partnership and corporations. The percentage of farms with one operator increases when the whole population of farms, comprehensive of small, non commercial farms, is taken in account. The still limited diffusion of multiple person farm management teams is mainly due to the small dimension of farms (7 hectares on average over the entire population and 16 hectares among commercial farms).

The presence of multiple farm operators is supported by U.S. Census of agriculture data, showing in 2007 that about 58 percent of farms nationally had one operator. Moreover, Census also showed that family or individual operations—proprietorships—reported 60.5

⁴ In the Dutch Agricultural census this group still accounts for 56%. The difference is due to the relatively high threshold of the FADN that excludes very small farms.

percent with one operator, in line with the 61 percent derived from farm survey data. Perhaps more important than the share of farms with a single or multiple operator, Census data also show that the number of operators associated with farms is increasing more rapidly than the number of farms. Between 2002 and 2007, for example, the number of operators increased by about 222,000 persons or 7 percent, while the number of farms increased by about 76,000 or about 3.5 percent. Much of this expansion is accounted for by the increase in larger farm operations where the presence of multiple owners and operators tends to be more common.⁵ In fact, a closer look at Census data reveals that the number of 1-operator farms decreased between 2002 and 2007 while the number of multiple operator businesses expanded.⁶

Farm Governance Structures Evolve: From Bundled Concentrated Input Acquisition and Concentrated Decision Structures Making and Bundled Input Sourcing to More Dispersed Decisions and Unbundled Input Sourcing of Inputs

Farmer's responses to Census and national surveys demonstrate a wide range of ownership and managerial structures for their businesses. Results also demonstrate that farmers utilize a variety of structures to govern their business operations. As illustrated by Calus and Huylenbroeck, farm owners can range from one to some larger number concurrent with people involved in management. How these owners and managers interact to effect control and decision making for the business and to bring labor, knowledge, and capital to the production process form a farm's governance structure (Calus and Huylenbroeck). In family economics, similar governance constructs have been drawn to illustrate the overlap of family, ownership, management, and employee groups for businesses (Figure 15).

Governance structures are described as, "being concerned with how decisions about transactions are made, i.e., the exercise of authority, guidance and control, and with the allocation of income rights" (Jongeneel et al). Re-stated, the "governance structure of a firm is based on ownership, decision making power, and control "(Calus & Van Huylenbroeck).

Poppe, et al, drew on their knowledge of legal structure, households, and persons engaged in farming to offer a preliminary perspective regarding governance of farms in the Netherlands (Poppe, et al). Recognizing that available data were not representative for the country as a whole, sample counts, absent any weighted averages or percentage distributions, were prepared to show that agricultural holdings—farms—had a range of entrepreneurs, that holdings could be associated with multiple households, and, perhaps more important to income measurement, that households and entrepreneurs held no fixed

⁵ For example the 2007 Census of Agriculture in the United States reported that farms with more than \$1,000,000 in sales increase from 28,673 in 2002 to 55,509 in 2007, an increase of nearly 94 percent, while farms with between \$500,000 and \$999,999 increased in number by about 45 percent.

⁶ The number of operators reported by the U.S. Census of Agriculture increased from 3,115,172 in 2002 to 3,337,450 in 2007. The number of farms reporting one operator decreased from 1,325,855 in 2002 to 1,273,122 in 2007, a decline of about 7 percent during the time period.

pattern across or among farms (Poppe, et al). Some farms had one household and one entrepreneur while others had some much larger number of one or the other or both.

Further work in the Netherlands and recent data from national surveys conducted in the U.S. build on the perspective offered in both farm and family economic literature. In both countries data are now fully representative of the farm sector. Similar to survey results for the Netherlands, U.S. survey responses also indicate that farms have a wide range of owners interacting with some number of persons who were making farm business management decisions (Figure 16). The most common owner-operator combination was for one or two-owner farms to be managed by one or two individuals. Most likely these owner-manager combinations reflect either single or joint ownership by the farm operator and his or her spouse. Clearly, however, U.S. data show that many combinations of owners and persons engaged in daily decision making are not uncommon for a business.

| Ownership, Management, Governance: ~~and~~ Accounting for Farms' Net Income

A farm's organizational or governance structure includes aspects of business development that affect "how strategy is implemented, how the manager manages, and how work is planned and controlled" (Harling and Quail). In this context, strategy can be viewed as being, "implemented through organizational structure (Boehlje et al)". Instead of whether a farm may be a proprietorship, partnership, or corporate form of legal business organization, the focus is centered on a farm's stakeholders. Who provides leadership, who makes longer-term and day-to-day decisions, and what are the lines of authority? Response to these questions helps identify contracts, written or unwritten, formal or informal, that exist within the farm. These contracts, or internal rules, specify the rights held by individuals, or agents, and how they will be paid (Fema and Jensen). Some stakeholders may hold a contract that specifies a fixed payment, while others earn a share of any net return generated by the farm. These latter stakeholders are typically referred to as the residual claimants or risk bearers for the business (Fema and Jensen).

The presence of an increasing number of multiple owner-operator businesses raises key questions not only about farm decision structures and who takes what decisions for current and longer term production and financing activities, but also about how managers are paid for services provided the business. These issues are important not only from the perspective of better understanding decisions ranging from farm production to technology adoption, but also from the perspective of performance measurement and reporting for farms and associated farm households. For example, how are additional, non-owner operators paid for services on farms organized as proprietorships? If these operators do not function as hired managers and earn a wage, then some arrangement, or contract, likely exists to share farm output or net income. As a result, additional households may hold claim to a share of net income even though they may not be a part of farm ownership.

Important from a measurement perspective is that multiple owner-multiple operator farms tend to account for a disproportionately large share of farm output and net income. In the

U.S. for example, the 4-percent of farms with three or more owners accounted for over 20 percent of production and 16 percent of net income in 2007. Farms in the U.S. also demonstrated a range of households associated with each level of ownership interest. One owner farms, where the entire business interest was held by one person, still reported business structures where more than one household shared net income. While the most common arrangement was one or two owners with one household earning net income, other combinations are clearly present in U.S. agriculture. At least in an indirect way, survey results for 2007 are confirmed by reports from the 2007 U.S. Census of Agriculture. While the Census did not collect information about the number of owners associated with a farm, it did collect information about the number of operators and the number of households sharing net farm income. Responses to these questions show that 16 percent of one-operator farms had multiple households sharing income. Twenty four percent of multiple operator farms had multiple households sharing income (Figure 17).

We drew on guidance from prior work to devise a farm governance classification system, showing various combinations of owners and managers, to help illustrate the association of governance structures, households, and net income of farm businesses (Whatmore et al, Lockie, Campbell and Dinar, Parker). For our purposes we utilized a simple combinations of one and two owners with either one, or two or more operators, along with a catchall group that included farms with two or more owners for the US (Table 1), Canada (table 2) and the Netherlands (table 3). ⁷The most common governance structure in all countries is the one-owner, one-operator farm, followed by two-owner, two or more operator businesses. The two-owner, two or more operator farms are primarily held and operated by an owner-operator and his/her spouse.

The United States. In the US, farms owned and operated by either a single person or by two-owners and two or more operators account for nearly three-fourths of farms and generate about three-fifths of output and net income. Even though nearly all farms organized with one-owner, one-operator or two-owners and two or more operator structures are family-owned businesses, these farms report that about one-out-of-ten farms share income. The share of farms with multiple households earning a portion of net income rises for farms with more than two owners, with 56 percent of these businesses reporting multiple households sharing income.

Beyond sharing income among multiple households, business arrangements and labor-hire decisions may also affect income measurement for farms and households. A small share of farms reports that they either participate in a production contract (about 2 percent of farms) or have a vertical linkage (less than 1 percent of farms) with another business. While currently representing a small share of farms, both of these practices may affect estimates of net income for a farm even before the distribution of any residual earnings is considered. As demonstrated in Table 1, on some farms, operators or family members may be paid a wage for labor hire or their managerial efforts. This practice is much more

⁷ We recognize that more complex classification systems can be developed. Tools such as cluster analysis could be used to help organized farms into groupings. Tools such as this were not used for this paper since our purpose was simply to illustrate that owner-manager interactions frequently transcend traditional one-owner, one-operator governance systems, particularly for farms of larger economic size.

common on farms with multiple owners and multiple operators that it is on farms that are owned and operated by an owner-operator and his /her spouse.

Both use of business arrangements and labor/management hire of operators and/or family members raise several issues for income measurement. The first issue is to account for how output and income that is generated by a farm is allocated to owners and stakeholders that participate in the business. Taking the case of production contracts, firms or individuals that contract with a farm to grow livestock or crop commodities under contract typically hold title to the output with the farm being paid a fee for services. Output is typically removed and sales do not show in the farm's income account. Only a fee is included. Vertical linkages, with a larger parent or affiliated firm, may generate similar output sharing issues. Here, a key question may become where revenues and costs show up in the multiple-firm arrangement. A second set of issues arises from the need to account for wages that accrue to owner-operators and household members. While wages paid a household member may be legitimate expenditures for a farm they are a source of earned income to a farm household. Keeping these farm business-household relationships straight is important to the measurement of income for both the farm and the farm household as separate entities.

Canada. The majority (57 percent) of farms in Canada are classified as sole proprietorships (Figure 4). Sole proprietorship farms generally follow the model of one owner where the farm profit is distributed to one household. Although this farm type is the most common, sole proprietorship farms account for 25 percent of the production. These farms tend to be small in size with many being part time operations. Average cash flow produced from the farm in 2005 was \$10,729, which includes net farm income and wages earned on the farm paid to family members.

Partnerships are the second most common farm operating arrangement in Canada. Seventy-nine percent of partnership farms in Canada are owned by one household. The most common form of partnership is without a written agreement. These farms are generally family partnerships and usually the partnership is between spouses. On average these farms are relatively small with an average gross farms receipt of \$107,360. In over eighty-six percent of the farms the income generated by the farm is distributed to one household.

Partnerships with a written agreement, which account for five percent of the farms in Canada, have more sophisticated ownership and operating arrangements. Partnerships with a written agreement may be between family members such as between brothers or non-family members. The written agreement can specify a number of issues related to management and ownership of the farm. These farms are generally larger and have average cash flow of \$57,221. Over a quarter of these farms have the average cash flow distributed to two or more households. These farms are not corporations so the income from the farm is distributed as wages and salaries paid to family members and as net farm income.

In Canada 16 percent of farms are operated as corporations. The most common form of corporation is a family corporation where family members own and operate the farm. Over 80 percent of the family corporate farms are owned by one household. Family corporations are more complex, with gross farm receipts of \$555,447. These farms can also be complex in their ownership and management arrangements. The income from corporate farms generally flows to the family in the form of wages paid to family members including the owner/operator and also in the form of dividends. The amount of dividends that flow to the household from the farms will depend on many factors including tax considerations and goals of the owners. Some corporate farms have also set up more complex organizations where land is rented from shareholders and money is borrowed by the farm from shareholders. In these cases the flow of income from the farm to the household is more complex.

In Canada, non-family corporations, although few in number, account for over 10 percent of the agricultural production. These farms, unlike the family corporations, have multiple shareholders. The day-to-day operating decisions of these farms are made by farm managers that are generally not owners of the farm. These farms have, on average, sales over \$ 1 million and many have significantly higher sales. The farm operation is often part of a larger corporation that could operate throughout the supply chain. Farm profits are generally distributed to shareholders as dividends.

Other operating and ownership arrangements in Canada include co-operative farms where the resources are owned and pooled and are not owned by any one family. Co-operative farms generally support several families. Although few in overall numbers, co-operative farms can be important in certain types of production such as western Canadian hog production.

The Netherlands. The majority of Dutch farms are partnerships, either operator/spouse or father/son. As reported above, classic sole proprietor farms count for only 46 percent of farms, a third of production and a quarter of income. Partnership farms are more dynamic and have a disproportional share of production and therefore also of subsidies (Table 3, Figure 18). This is especially the case for the group 'other partnerships' that include mostly two generations and have a farm large enough to generate an income for the next generation. Limited partnerships (a legal form in which partners have a common business, sometimes with limited liability for one of the investors) and limited companies are less important categories but especially limited companies are large. Their sales are 5 times as large as the average farm, which implies that this 3 percent of the holdings produce 12 percent of the output. These farms are especially active in horticulture, pigs, and poultry. These types of production are less subsidized. One fifth of total income in Dutch farm households is from non-farm sources. On all types of farms described in table 1 this is between €16,000 and €20,000 with the limited companies being the exception: only €10,000. This makes it a relatively unimportant source of income for limited companies versus very important for sole proprietorship farms, where it amounts to one third of income.

The large size of limited companies with their high income and large cash flow (savings plus depreciation) made them huge investors in 2007. They used their cash flow to attract outside capital (equity or borrowed) of more than 1.1 million Euros: 24 percent the industry's total. It is interesting to see that only 10 percent of the limited companies support two or more households, 90 percent being a one-household farm. This is in contrast with the limited partnerships where only 73 percent of the farms support one household. This confirms the impression that the legal form of a limited company is often chosen as a risk management tool or tax management tool by a farmer, and not always as a governance structure between different investors.

Italy. In Italy the majority of commercial farms is owned and managed by a single person. Sole proprietorship is the legal status chosen by 93 percent of Italian farms; this percentage increases to 98 in the Southern regions of the country. This kind of farm operates 80 percent of total agricultural land and produces 70 percent of total agricultural production and income. The average size of sole proprietorship farms is very small both in physical (15 hectares) and economic (average net income 13000 euros) terms.

Legal partnerships account for less than 5 percent of farms in Italy. On average they operate 49 hectares and produce a net income of around 88000 euros. This kind of farm is particularly widespread in the livestock sector, especially in dairy, and shows a wider diffusion in the Northern regions, that is in regions in which agriculture is more integrated with the rest of agro-food system, hence of the economy. This is the group of farms with the highest percentage of multiple owners, while they are second to the non-family corporations in terms of multiple operators.

Non-family corporations, although less than 1 percent of total farms, account for around a quarter of the agricultural production. They are particularly frequent in the wine sector, a very industrialized sector, and among farms specialized in the production of cereals and industrial crops. In geographic terms non-family corporations are more diffused in the northern and central regions of the country. This group of farms is characterized by the highest percentage (21 percent) of farms with multiple operators. The more complex organization of these farms is explained partly by their large size, but also partly by the production of different product lines that often require technical and economic competences in fields very distant from each another. For example, this group of farms is very active in agri-tourism, as a consequence, they need an operator to take care of agricultural production, often wine, and another to manage the provision of agri-tourism services.

Concluding remarks

The message of this paper is that today's agriculture is dominated by far more complex business arrangements than the classic one farm – one location – one household – one family – one operator – one source of income form of business. Family businesses remain the core of the industry but by having additional sources of income and creating new governance structures (be it to support the intra-generational transfer of the farm, to

increase the size of the business, or to exploit new opportunities) decision making has become more complex.

Data gathering to understand this world has also become more complex. Data collection systems (surveys like FADN, ARMS, or household surveys) should gather the complete picture of a farm business/household situation for a more exact and comprehensive measure of income and to understand decision making of the households (in case the data set is used for policy analysis). This central message is extended below for data collection activities.

Household surveys probably have fewer problems in recording the earned income of farm operator households as such. The issue is to make sure that all sources are accounted for and attention is paid to completeness. However, it is more difficult to relate household data to characteristics of farms or farming areas of countries and to sources of income (earned and unearned) and wealth. These types of data would likely be important if household income estimates are to be used to make any kind of policy assessments regarding either farm or rural economies or their contribution to the economy in general.

Where data collection efforts are based on farm-centered surveys like ARMS or FADN a lot of attention needs to be given to the way questions related to governance structures of farms and to farm-household interactions are structured. Here the issue becomes two-fold. One is to correctly measure a farm's income—this introduces all the discussion about business arrangements and how assets are assembled. To address this issue, questions are needed to make sure that output and income flows are correctly tracked so that a farm's income can be correctly measured. Following measurement of income for a farm, stakeholders and their relationship to the farm still have to be correctly identified so that income can be distributed to parties that hold a residual claim. This raises difficult questions. Take the case of contract farming, where the sales of the farm are not the physical product (e.g. calves) but a service. Here the definition of sales may be different between a micro approach such as that utilized in the FADN / ARMS surveys and a macro approach such as that utilized in sector-wide accounting. Another issue is the leasing of farmland, machinery, or equipment that may be set up by farm families in a separate legal institution and leased to the farm. At the farm level there are no assets and only the costs of leasing production inputs. At the household level, however, rents received would be recorded along with assets and liabilities, in order to enable an accurate assessment of household income and financial status.

Bottom line, the lines of questioning in the surveys need to be developed so that farm stakeholders may be identified and related to the assets they bring to the farm, and to the roles they hold in the business, including their role in both daily management and longer term strategic oversight. Then, how they are paid for contributing to a farm has to be measured not only to derive an estimate of farm income but to correctly allocate income to individuals or other entities engaged in the business. At a minimum, how income is divided among households so that farm and off-farm sources of earnings can be correctly measured and linked is an important element of farm-household surveys in today's

agriculture. Whether all this farm and off-farm information can be collected for every household associated with a farm is a question in itself.

One might question why an income measurement in a household survey or tax data set is not enough. For measuring income distributions and poverty it probably is. But our thinking is that this information is not only important for income measurement, but also to undertaking efforts to model farm adjustment, adoption, and response to government policies. The agricultural sector is an important object of agricultural, environmental, rural and –recently- energy policy with large budget and welfare impacts. Understanding the decision making and farm reaction to such policies is vital for any impact assessment. Therefore a correct and complete recording of reality in our data sets stays important. The current complexity in farm governance structures is a challenge to cope, not a reason to retreat.

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Table 1.—Classification of farms by governance structure based on number of owners and operators, 2007

Item	Governance Structure					All
	one owner and one operator	one owner and two or more operators	two owners and one operator	two owners and two or more operators	more than two owners	
Number of Farms	821,702	51,096	406,705	667,654	84,053	2,031,210
Distribution of farms (%)	40.5	2.5	20.0	32.9	4.1	100.0
Distribution of production value (%)	25.4	2.7	16.5	35.4	20.1	100.0
Distribution of net farm income (%)	28.8	3.1	21.1	30.6	16.4	100.0
Number of Owners	801,632	47,676	813,410	1,335,307	311,539	3,309,565
Number of Owners in operator's household	799,568	47,676	406,705	667,615	83,520	2,005,085
Number of households sharing income	933,850	68,090	453,084	768,404	180,012	2,403,439
Number other households sharing income	112,147	16,994	46,379	100,750	95,959	372,229
Farms with other households sharing income (%)	12.8	28.3	9.9	13.8	56.4	14.7
Farms family owned (%)	97.3	93.3	99.4	99.6	64.0	97.0
Distribution of operators (%)	28.6	3.7	14.1	47.2	6.4	100.0
Distribution of operators within group (%)						
All	100.0	100.0	100.0	100.0	100.0	100.0
One Operator	100.0	na	100.0	na	35.8	62.0
Two Operators	na	92.3	na	97.3	27.0	35.4
Three Operators	na	*5.3	na	2.2	31.4	2.2
Four or More Operators	na	na	na	*0.5	5.8	0.5
Farms vertically linked (%)	0.5	1.6	0.2	0.6	1.5	0.5
Farms with production contracts (%)	1.4	1.6	2.3	3.2	3.1	2.2
Farms with hired mgmt services (%)	13.8	15.1	14.9	18.1	22.7	15.8
Farms with informal mgmt team members (%)	3.4	7.9	5.5	6.3	11.6	5.2
Farms with principal operator paid to work on farm (%)			1.6	1.3	11.0	1.2
Farms with spouse of principal operator paid to work on farm (%)	0.7	1.5	0.9	3.0	6.9	1.8
Farms with other members of principal operator household paid to work on farm (%)	1.5	0.8	2.8	2.1	5.0	2.1
Farms with other operators paid to work on farm (%)	0.9	3.8	1.3	1.6	12.5	1.8

Source: 2007 USDA Agricultural Resource Management Survey.

Table 2. Sources of Income from the Farm and Number of Households per farm by operating arrangements, Canada

Sole proprietorship	Partnership without a written agreement	Partnership with a written agreement	Family corporation	Non-family corporation	Other operating arrangements
57.1% of all farms 25.6% of all production Average gross farm receipts: \$82,459 Net operating income \$8,520 Wages paid to family: \$2,209 52.6% of farms have positive cash flow	21.1% of all farms 12.4% of all production Average gross farm receipts: \$107,360 Net operating income \$13,658 Wages paid to family: \$2,882 52.0% of farms have positive cash flow	5.6% of all farms 7.6% of all production Average gross farm receipts: \$250,301 Net operating income \$49,594 Wages paid to family: \$7,627 74.8% of farms have positive cash flow	14.1% of all farms 42.5% of all production Average gross farm receipts: \$555,447 Net operating income \$82,197 Wages paid to family: \$29,403 75.9% of farms have positive cash flow	1.9% of all farms 11.0% of all production Average gross farm receipts: \$1,069,521 Net operating income \$138,835 Wages paid to family: \$16,552 67.5% of farms have positive cash flow	0.3% of all farms 1.0% of all production Average gross farm receipts: \$581,989 Net operating income \$127,747 Cash wages paid to family: \$4,618 54.3% of farms have positive cash flow
Average cash flow \$10,729	Average cash flow \$16,540	Average cash flow \$57,221	Wages to family: \$29,403 + Dividends	Wages to family: \$16,552 + Dividends	Average cash flow \$132,365
Farms with one household 127,725 (97.6%)	Farms with one household 41,600 (85.9%)	Farms with one household 9,420 (73.9%)	Farms with one household 25,555 (79.2%)	Farms with multiple shareholders	Non-household farms Multiple households
Farms with two households 2,905 (2.2%)	Farms with two households 6,155 (12.7%)	Farms with two households 2,865 (22.5%)	Farms with two households 5,355 (16.6%)		
Farms with three households 235 (0.2%)	Farms with three households 675 (1.4%)	Farms with three households 465 (3.6%)	Farms with three households 1,365 (4.2%)		

Source: 2006 Census of Agriculture- Population Linkage

Table 3 Sources of income and number of households by type of legal organization in The Netherlands 2007

	sole proprietorship	partnership man/woman	other partnerships	limited partnership	limited company	total
farms represented	25.664	12.623	12.199	6.553	1.514	58.553
idem in %	44	22	21	11	3	100
subsidies [euro per farm]	13.322	15.762	29.351	16.544	17.202	17.648
idem in %	33	19	35	10	3	100
output (euro per farm)	219.986	326.240	407.327	564.927	1.732.970	359.655
idem in %	27	20	24	18	12	100
family farm income (euro per farm)	29.838	47.801	87.455	70.491	163.779	53.729
non farm income [euro per farm]	16.593	15.929	20.132	18.173	9.094	16.893
cash flow (euro per farm)	56.756	58.828	110.655	99.323	701.455	84.720
idem in %	29	15	27	13	21	100
total low of funds (euro per farm)	75.300	104.423	155.141	145.517	1.154.049	126.195
idem in %	26	18	26	13	24	100
distribution number of households (%):						
1 household	99	100	70	73	90	90
2 households	1	0	27	23	4	9
3 households	0	0	4	4	5	1
4 households and more	0	0	0	0	1	0

Source: Dutch FADN

Figure 1. Farm-households allocate resources to farm and non-farm uses and source inputs from multiple farm, household, and non-farm businesses

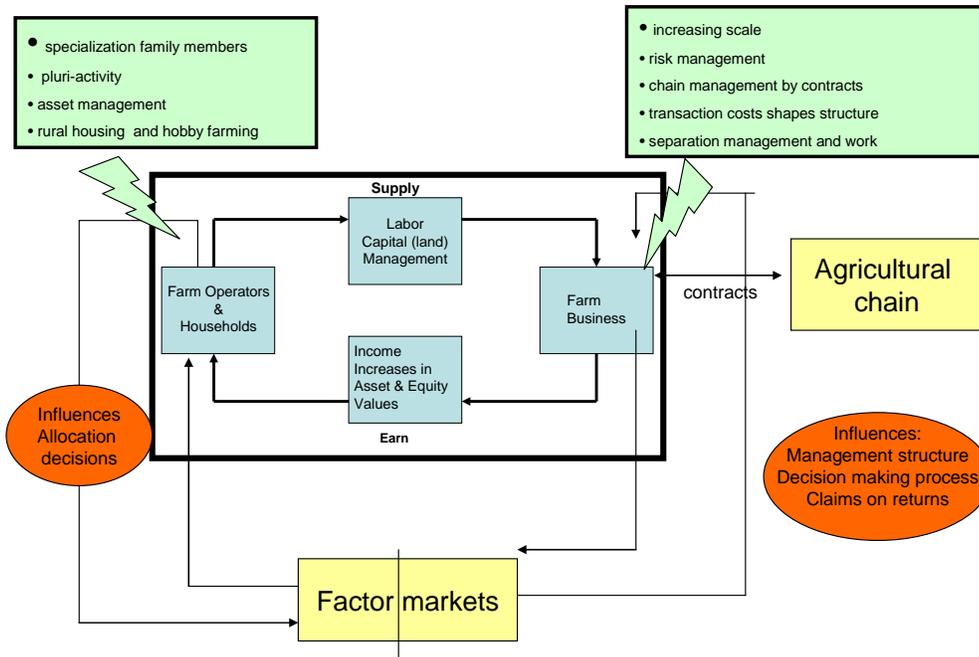


Figure 2. Farm Organizational/Governance Structures May Range from One to Many Owners and Operators

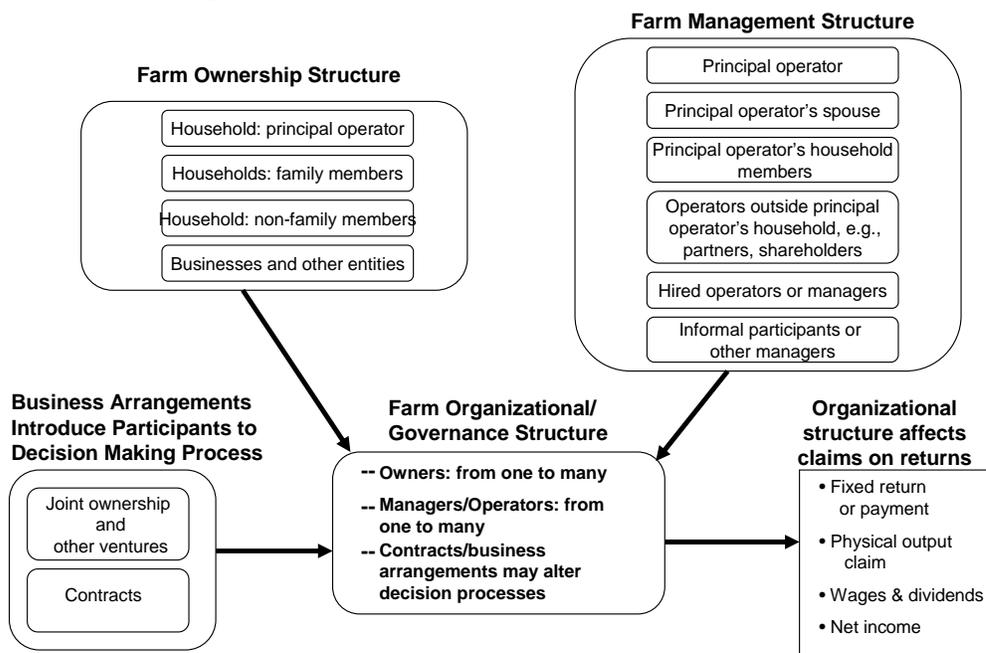
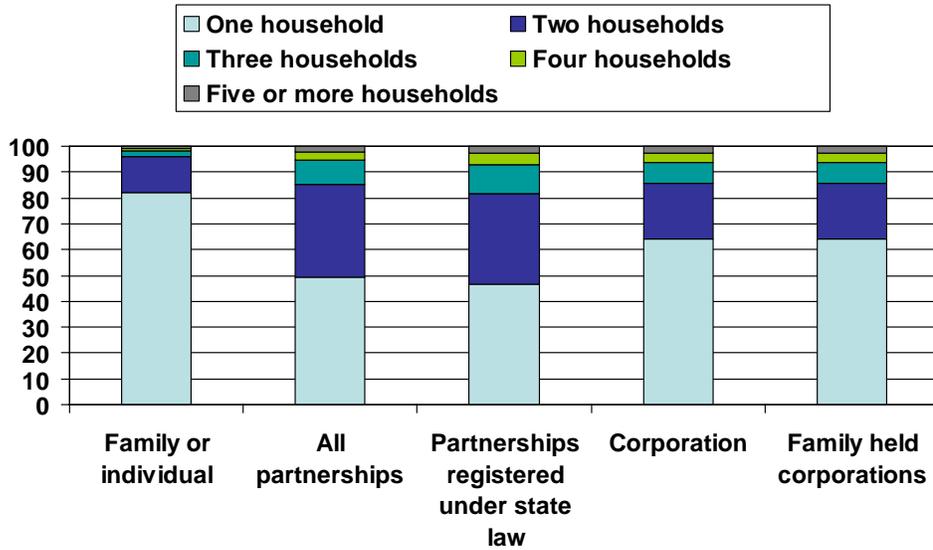


Figure 3. Distribution of farms by type of legal organization and number of households sharing in net income of the farms



Source: Agricultural Resource Management Survey, 2007

Figure 4. Number of households per farm by operating arrangement, Canada

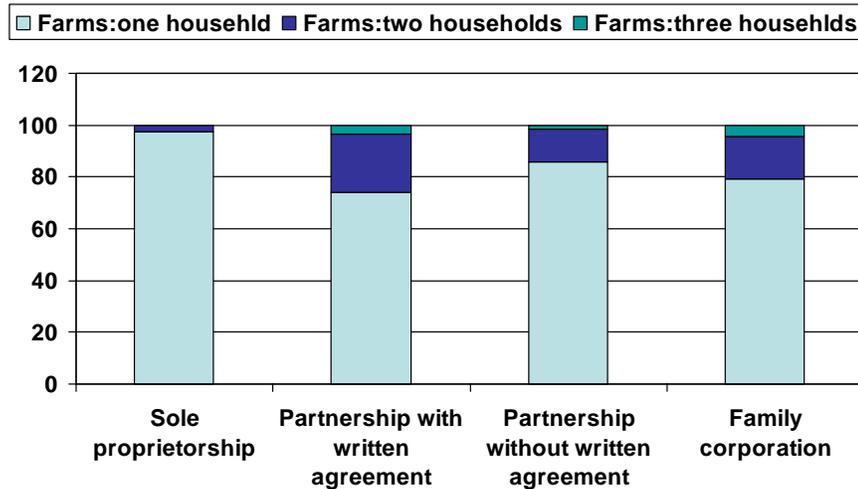
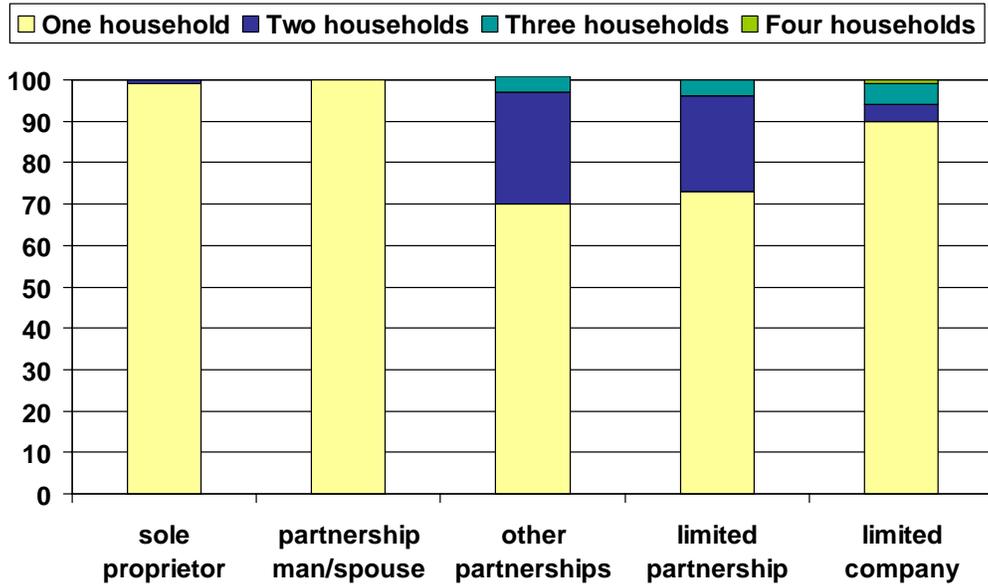
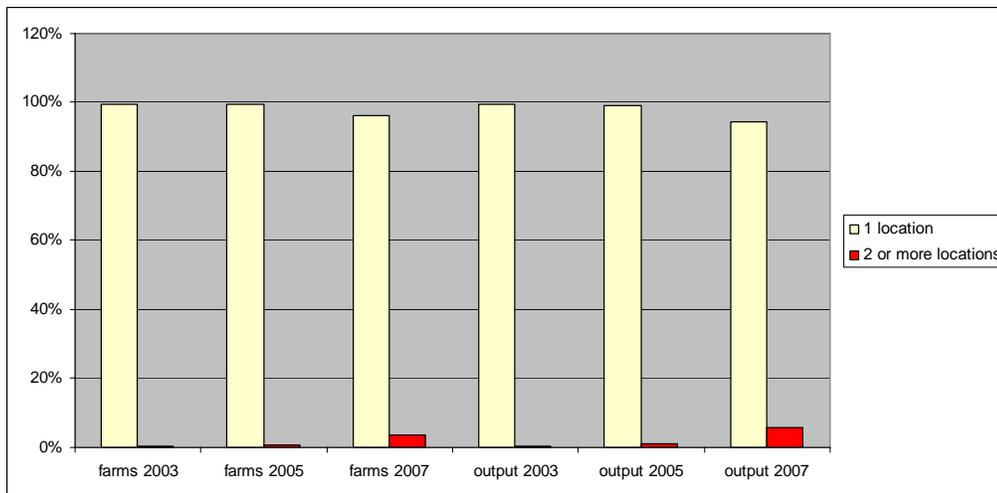


Figure 5. Distribution of farms by type of legal organization and number of households sharing in net income of the farms in the Netherlands



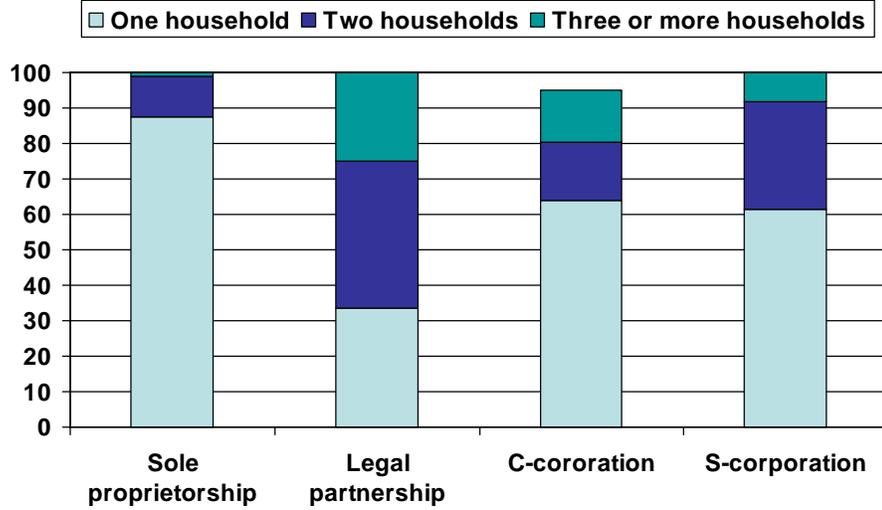
Source: Dutch FADN, 2007

Figure 6. Number of locations (farm addresses) per farm business, the Netherlands, 2003 – 2007



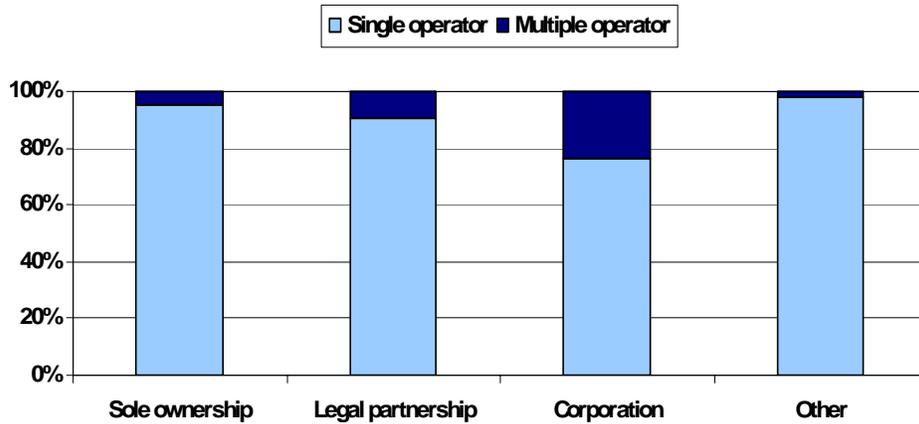
Source: Dutch FADN, 2007

Figure 7. Number of households sharing net income, United States, 2007



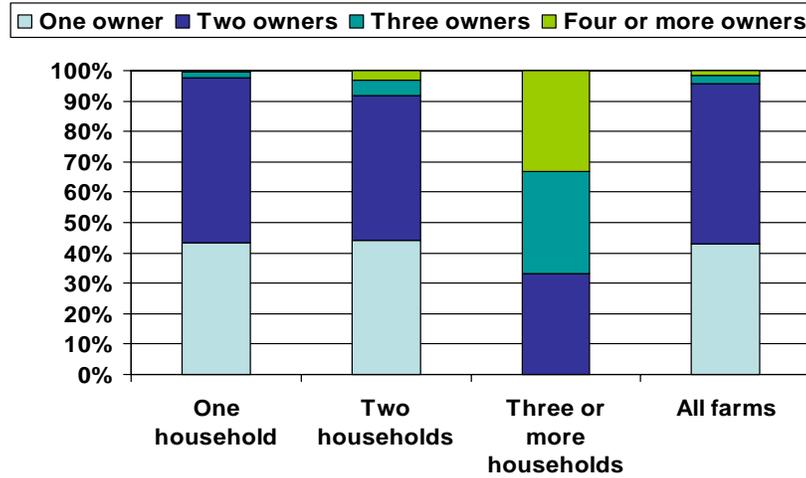
Source: Agricultural Resource Management Survey, 2007. C-corporation and S-corporation are specific legal forms of incorporation available to business owners in the U.S. S-corporations are typically viewed as small business corporations

Figure 8. Farms by legal status and number of owners, Italy, 2006



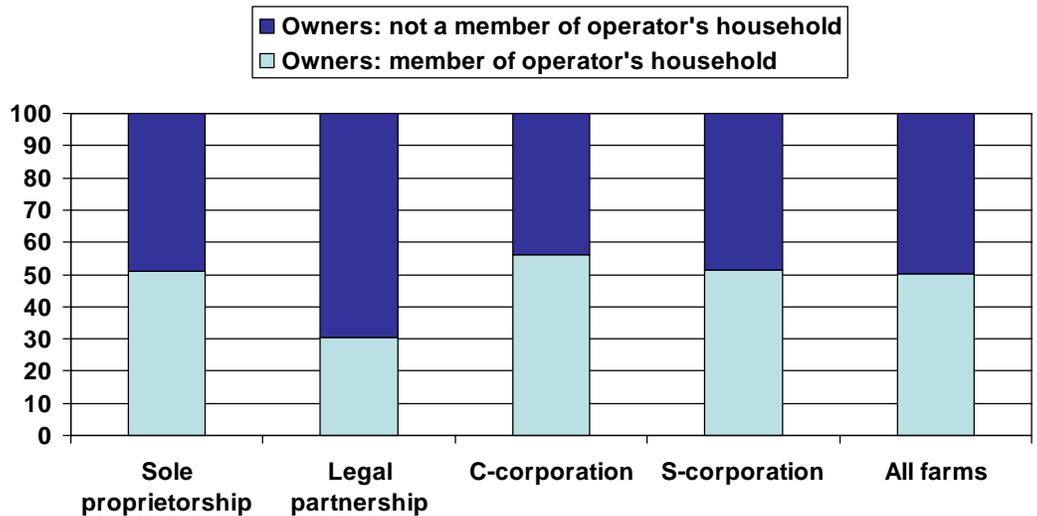
Source: Italian FADN, 2006

Figure 9. Distribution of farm business owners by number of households associated with the farm, United States, 2007



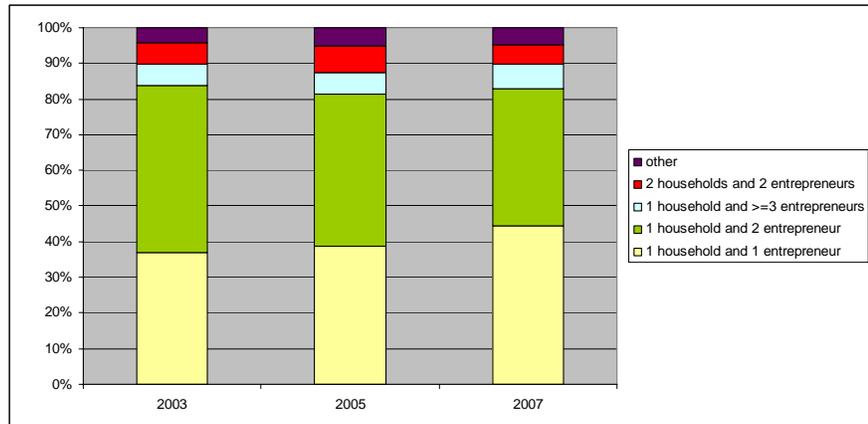
Source: Agricultural Resource Management Survey, 2007

Figure 10. Share of farm owners that are part of the primary operator's household, United States, 2007



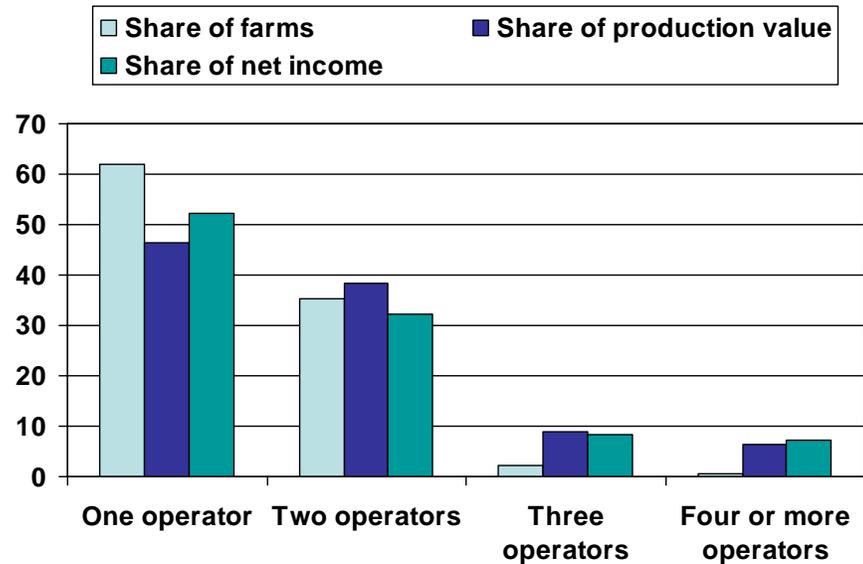
Source: Agricultural Resource Management Survey, 2007

Figure 11. Distribution of farm businesses by number of households associated with the farm, The Netherlands, 2007



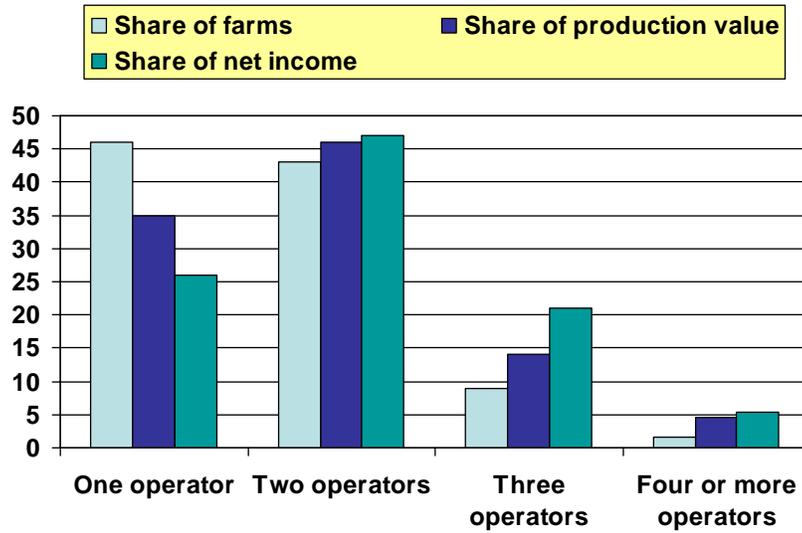
Source: Dutch FADN, 2007

Figure 12. Farms exhibit a variety of persons engaged in daily decision making, United States, 2007



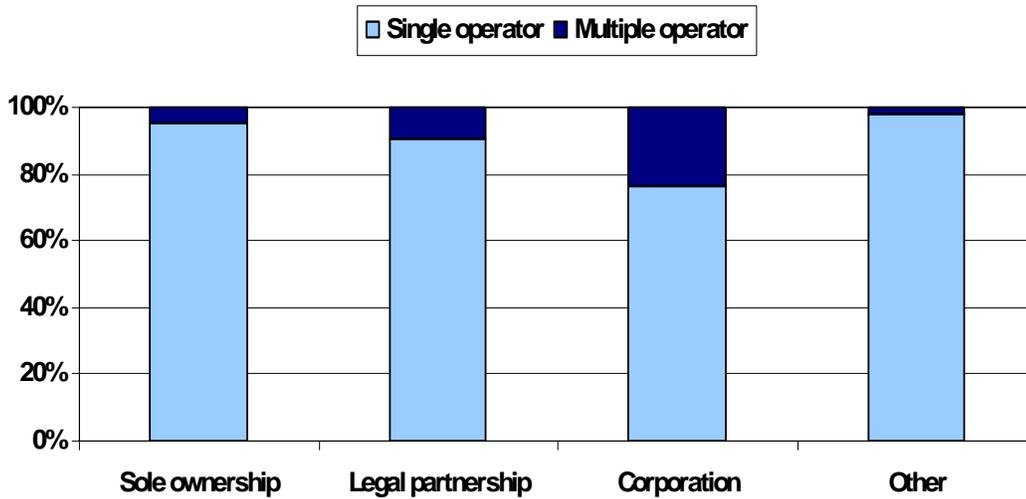
Source: Agricultural Resource Management Survey, 2007

Figure 13. Farms with more entrepreneurs have the majority of production, the Netherlands, 2007



Source: Dutch FADN, 2007

Figure 14. Distribution of commercial farms by number of operators and legal status, Italy, 2006



Source: Italian FADN, 2006

Figure 15. Conceptual Constructs of Family and General Business Organizational Structures

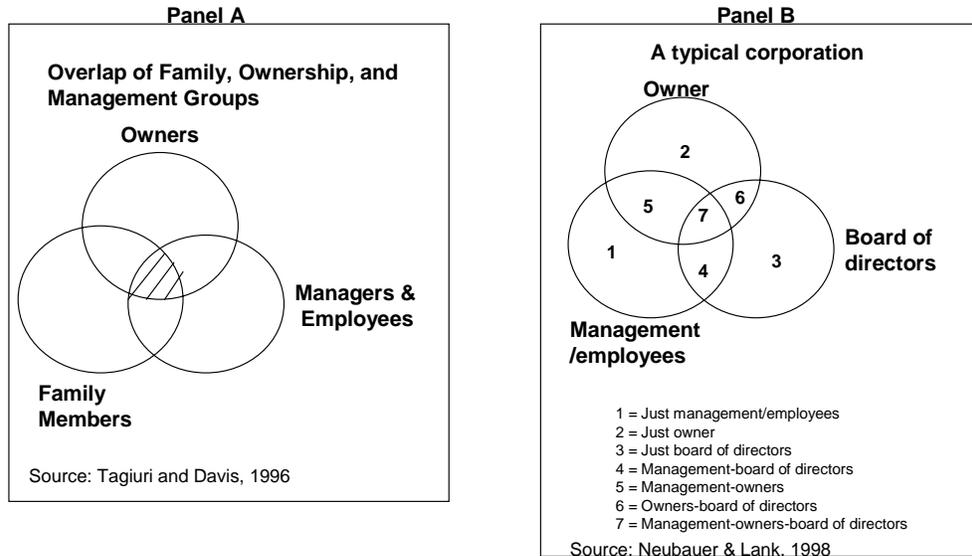
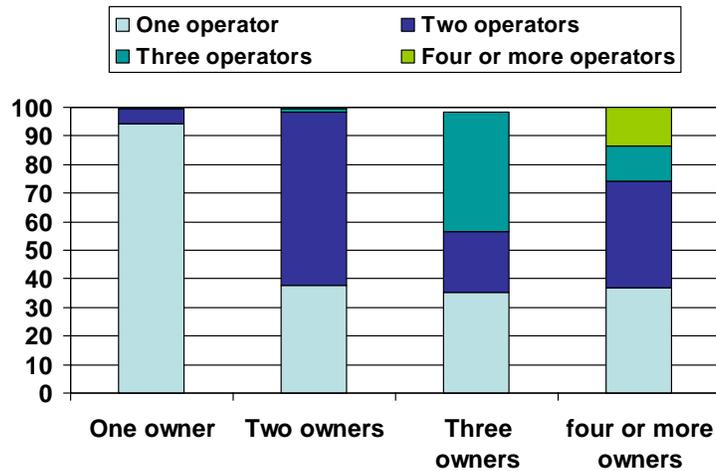
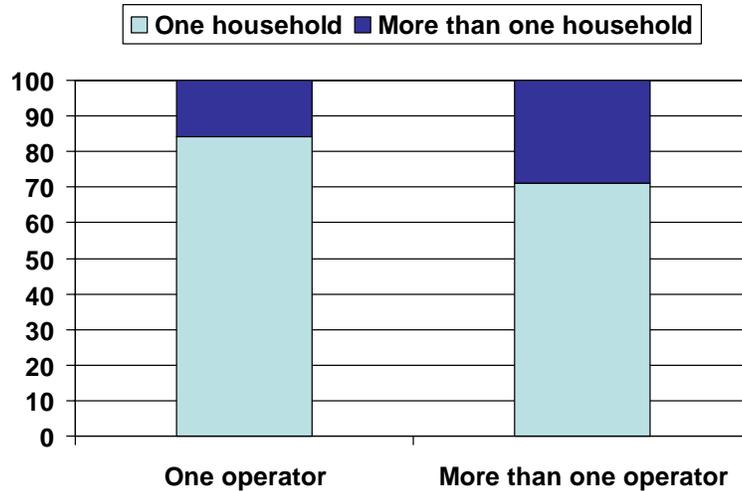


Figure 16. Farms include a range of owners and daily decision makers in business governance-decision structures, United States, 2007



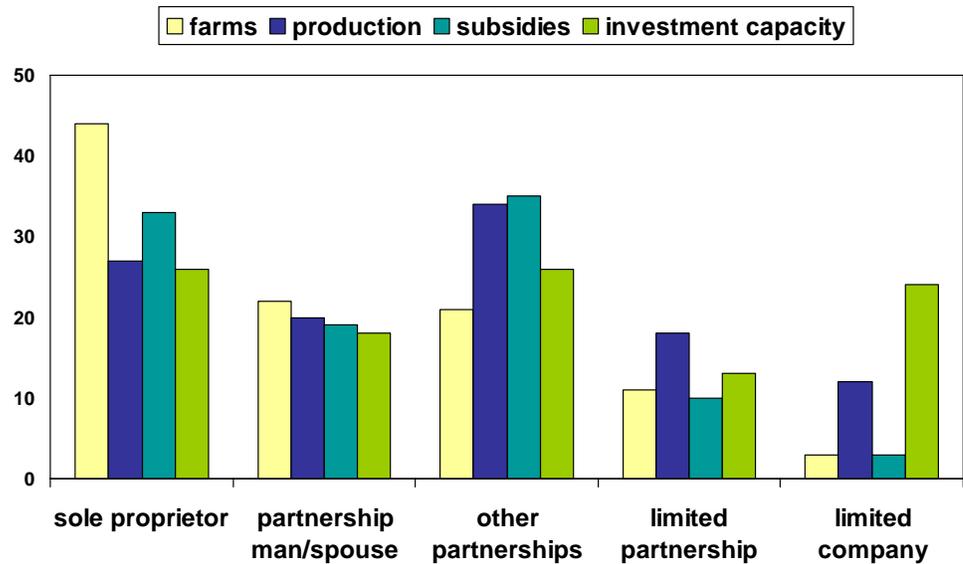
Source: Agricultural Resource Management Survey, 2007

Figure 17. Number of households sharing net income of farms by the number of operators on a farm, 2007



Source: 2007 U.S. Census of Agriculture

Figure 18. Share (%) of the types of farms by legal organization in production, subsidies and total flow of funds (investment capacity) the Netherlands, 2007



Source: Dutch FADN, 2007