Explaining the Changing Institutional Organisation of Dutch Farms: The Role of Farmer's Attitude, Advisory Network and Structural Factors

R. Jongeneel and L.H.G. Slangen

Department of Social Sciences, Wageningen University

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EXPLAINING THE CHANGING INSTITUTIONAL ORGANISATION OF DUTCH FARMS: THE ROLE OF FARMER'S ATTITUDE, ADVISORY NETWORK AND STRUCTURAL FACTORS

*R. Jongeneel and L.H.G. Slangen**

ABSTRACT

Although still the family farm is the dominant farm type there are changes in the legal mode of organization. Applying the new institutional economics and economic organisation theory the different organisation modes are explained, mainly in terms of control and income rights. Important factors are (limited) liability, risk-bearing costs, transaction costs, and residual control and income rights. This is subsequently applied to Dutch agriculture, taking into account its special characteristics. In an empirical follow-up, based on a sample of all the farmers in the Netherlands, the farmers attitudes and the farm advisory network are analysed. Finally, farm types are explained using bivariate logit analysis, taking into account attitudinal, advisory-network and structural variables. Among other factors, especially the financial advisors appear to play a significant role in the organisation mode choice.

Keywords: farm organization, ownership and management, liability, risk, residual control and income rights, attitudes, advisory network

JEL classification: Q12 Farm household analysis

1 INTRODUCTION

One of the salient characteristics of the history of industry is the transition from family firms to large factory-style corporations. Large corporations dominate modern economies. For a long time agriculture, however, has largely resisted the transition to large corporate ownership. In this paper we will describe the current institutional structure or organisational form of Dutch farms.

Household-firms still dominate agriculture, but there has been a remarkable shift in organisational form. According to Allen and Lueck (1998: 347-349) the possible explanation of the domination of the family farm can be divided in three groups: nature of agricultural production process; economical organisational factors and cost production factors

In this paper we would like to investigate the factors behind the shift in organizational form of farms. For that reason we have carried out a survey among all the farmers in the Netherlands. With the result of the survey we would to get insight in

- What attitudes have farmers towards farming and farmership?
- What types of farmers can we distinguish?
- What drive farmers to other organisational forms of farms?
- Is all what we see efficient?

The paper is organized as follows. Section 2 consists of two parts. First, it provides a brief overview of the development of the different types of organizational forms of farms in the Netherlands. Second, it gives a description of the sample. In section 3 we discuss the dominance of the family farm in agriculture and horticulture and we give the theoretical background of the different organizational forms. Section 4 contains the results of the factor analysis of farmers' attitudes. In section 5 we analyse a number of (explanatory) variables that explain the farmer's choice of farm organisation mode. Section 6 presents and discusses the estimation results of the explanatory logit models concerning the four organizational forms: single owner family farm, partnership, partnership firm VOF (and limited partnership CV) and private limited company. Finally, the paper closes with a concluding section (Section 7).

2 DIFFERENT TYPES OF FARM ORGANIZATION

2.1 Development

Table 1 gives an overview of the development of the different types of organization forms in the Netherlands. This table is divided into two parts, because of the different information sources that were used. For the years 1993-2000 an estimation of the number of organization modes was used, because of the incompleteness of the available information (see Munneke, 2003: 31). From the year 2000 onwards information of Central Bureau of Statistics was available on the number of organization modes in agriculture. As the year 2000 shows, the estimation and the numbers according to the Central Bureau of Statistics differ a lot. Table 1 shows that from 2000 until now the number of single owners and partnerships decreases, while the number of partnership firms stays largely the same. For the same period, the number of private limited companies increases slightly, while the number of public limited companies stays the same.

The organizational form is not the same for all the branches within the agricultural sector and also depends strongly from the size of the holding. For example, among greenhouse growers the share of private limited companies is much higher. Among greenhouse growers with more than 1.5 ha glass about 20 % of the holdings is a private limited company. However, Hoon (2003: 63) found in her survey among 1000 large greenhouse holdings that about 40 % of the holdings was a private limited company. The average size of the holdings in her sample was about 3.5 ha glass.

TABLE 1 Farm types in Dutch agriculture

| | | Non-legal entities | | Legal entities | | |
	Total	Single owner	Partnership	Partnership firm	Private limited company	Public limited company
1993	117417	87400	27542	1505	970	0
1994	113709	81760	29319	1625	1005	0
1995	110811	78127	29934	1730	1020	0
1996	108062	74529	30813	1760	960	0
1997	105273	71194	31064	1920	1095	0
1998	101870	66704	32086	2040	1040	0
1999	98286	62717	32204	2230	1135	0
2000	94427	59625	31102	2455	1245	0
2000	102430	81055	5415	9685	6265	10
2001	98235	78065	4785	9165	6210	10
2002	96470	75420	4540	9920	6580	10
2003	93165	72060	4290	10095	6710	10
2004	90440	70085	4080	9770	6495	10

2.2 Sample

A survey was used to get information about the relevant variables. The used sampling strategy was a random sampling among all the farms in Netherlands, including the glasshouse growers. The sample consisted of 3100 farms. A questionnaire was developed and pre-tested by individual farmers. After pre-testing the questionnaire was adapted. The highly structured questionnaire prevented deviations from the central research questions. The mail survey was one of the first and most intensive survey concerning organisational forms of farms across The Netherlands. After about three weeks, all farmers to whom a questionnaire was sent received a reminder letter. In total, 765 out of 3110 Dutch farmers sent back the filled-in questionnaire; a response rate of almost 25 per cent. After incomplete questionnaires were discarded a sample of 744 farmers remained.

When looking at farm type and farm scale (# hectares) it appears that the sample is not corresponding to the national averages, and thus is not fully representative. The relative shares of dairy farms, arable farms and other farms at national level are about 38%, 12% and 6% respectively (calculation based on LEI, 2004). 'Other farms' are overrepresented. The corresponding average number of hectares of these farm types are estimated to be 21, 64 and 27 hectare respectively (idem LEI, 2004). The farms present in the sample are relatively large farms in comparison to the whole population.

About 30% of the farms in the sample have multifunctional activities, and about 20% of the farmers have a job outside the farm. For farms with multifunctional activities about 23% of the total income is obtained from multifunctional activities.

3 THEORETICAL BACKGROUND

3.1 Dominance of the family firm

The possible explanations for the dominance of the family farm in agriculture and horticulture can be divided in three groups (Allen and Lueck, 1998: 347-349): (1) nature of the agrarian production process, (2) economic-organisational factors and (3) costs of production factors. These three factors are more or less overlapping. The nature of the production process influences the limited possibilities of advantages of scale. The limited advantages of scale are caused among others by the spatial extent of the land-bounded agriculture. This rapidly leads to relatively high internal transport costs. A second explanation is the season-bounded character of the different phases of the agricultural production processes (Allen and Lueck, 1998: 346-347). A second factor, economic-organisational factors, is more concentrating on the connecting of successive phases of the agricultural production process. This

is not always technically possible to separate them in marketable or contactable transactions, especially for land bounded activities. If it is technically possible at all than it usually involves high transaction costs. In order to overcome the transaction costs the successive phases of the agricultural production process take place in one firm. In that case, the successive phases of the agricultural production process are being coordinated within one firm and not via the market or contracts. This is a matter of vertical integration. Holdings that are able to specialise, will increase in size more easily than companies that are not.

The cost of production factors is the third factor that can be distinguished. Farmers (temporarily) bring own labour, capital and land for a much lower price to their company than the common market price. An explanation for this can be found in: (1) the preference to be farmer or market gardener, (2) mobility bounded values and norms of the group to which farmers belong and (3) the production factors are for an important part asset specific and the costs have become sunk costs, so that it is a matter of lock-in effects.

Farm organization can vary form a single owner or simple partnership, where labour is paid by residual claims, to a public corporation with many anonymous co-owners and specialized wage labour. On the basis of a number of criteria we can distinguish six organisational forms of farms. Table 3 gives an overview of these criteria and organisational forms. Most of the criteria have been based on the economic organisation theory and institutional economics and in particular on the theory of property rights.

The property rights approach has been developed over the last fifteen years to explain the optimal allocation of asset property used in firms, organization or contractual relations[1]. (When there are multiple owners of an asset or firm, they will typically delegate some of the residual control rights to e.g. directors, managers, board of directors.) Residual control or decision rights are like any other good; there will be an optimal allocation of them (Hart, 2002: 185).

Properties (and property rights) are seen as the possibility to practice residual control rights and to capture or appropriate the residual income. The opposite is perhaps more important: those who can practice the residual control rights and capture the residual income are the owners or have the ownership (and the property rights). The problem is that, in practice, residual control rights and residual income can be quite fuzzy and vague concepts. The same holds for the allocation of residual control. In the case of a firm or organization, where often different stakeholders are involved and different assets are brought in, it is not always simple to indicate who has the residual control rights and who can capture/appropriate the residual income. That means that the ownership of a firm is often a vague concept. However, having the residual control rights and residual income, characterizes ownership.

3.2   Single owner

A 'pure' family farm is the simplest case, where a single farmer owns the output and control all farm assets, including all labour assets. The most important characteristic of a single owner is the presence of only one farm head. Other persons present at the farm are always employed by the owner. The farm head is personally liable for all of the farm's debts (cf. Kerkmeester and Holzhauer, 2002: 63). The farm head has full control over the farm's residual income.

It looks likes the old capitalistic firm (cf. Alchain and Demsetz, 1972). In such a firm the owner has: (1) full control rights (i.e. final authority over all of the policies pursued by the firm); (2) full income rights (i.e. the non-restricted right to the firm's residual); and (3) full transfer rights (i.e. complete freedom to assign his rights, in whole or in part, to others). The owner of a capitalistic firm does therefore not only have property rights but also the right to the residual income. The bundle of property rights (with all rights) is completely allocated to one person, this person also has at his disposal the residual rights of control and the residual income. Both are important aspects of ownership (cf. Milgrom and Roberts 1992: 291-292).

The simplest family farm (= single owner family farm) avoids hidden information and hidden actions of labour, because the farmer is complete residual claimant. The transaction costs of recruiting, screening and contracting personnel are relatively low for a single owner, because there is not much personnel. On the other hand, still incentive costs and monitoring costs exist, because

employees do not share in the farm's residual income. Therefore they are not fully motivated for the farm's cause.

TABLE 2. Summary of the five organization modes

	Single owner	Partnership	Partnership firm	Limited partnership	Private limited company	Public limited company
Ownership	One farm head	Multiple farm heads Organization mode for succession	Multiple farm heads	Difference between silent and active partners	Shares not traded publicly Separation of ownership and management	Shares traded publicly Separation of ownership and management Who has the residual control rights and residual income?
Corporate status	Non-legal entity	Non-legal entity	Non-legal entity	Non-legal entity	Legal entity	Legal entity
Liability	Farm head personally liable	Farm heads personally liable for their share	All farm heads personally liable for their entire estate	Silent partners for their brought-in capital Active partners for their entire estate	Shareholders only liable for their brought-in capital	Shareholders only liable for their brought-in capital
Fiscal aspects	Profit taxed by income tax	Profit taxed by income tax	Profit taxed by income tax	Profit taxed by income tax or corporation tax	Profits taxed by corporation tax Dividends also taxed	Profits taxed by corporation tax Dividends also taxed
Transaction costs	TC Relatively low	TC increase with more members	TC increases with more members High monitoring costs	Limiting agency costs by allowing active partners to share in the profits	Incentive problems because of lack of separation between ownership and management (in agriculture)	Incentive problems and difference in interests between managers and shareholders

3.3 Partnership

   A partnership (maatschap) is a non-legal entity, all the members of the partnership bring in something of their own, like land, buildings, labour or capital. Each member is personally liable for an equal share of the farm's debts and losses. Each member is entitled to carry out duties concerning normal farming activities. Only together the members can decide over important management decisions concerning means of production (like labour, capital and non-factor inputs) and investments and means of the partnership. There is often chosen for a partnership as an organization form when there are a number of farm heads, who are often family related. A partnership is the most suitable organization mode to use for the hand over of the farm from the parents to their successors, their children.
   In the case of partnership ownership does not coincide with individual property. The bundles of property rights of all assets do not belong to one person. There are two or more co-owners. This has also consequences for who is having the residual rights of control and is able to capture the residual income. An important difference with the single owner family farm is sharing residual rights of control, the residual income and the incentive problem.

The profits (or losses) are usually divided by the members for their share in the partnership. The profits are taxed according to the (progressive) income tax rates. The best incentive for each member to work hard is to divide the profits according to their share in the partnership. This brings about measurement problems. However, because of each individual's contribution it is difficult to measure. More complex rewarding systems are more difficult to implement and lead to a rise in decision-making costs. As the number of members of a partnership increases, incentive problems also increase.

3.4 Partnership firm

A partnership firm is a partnership that is operating under a common name, and therefore it has to be registered to the Chamber of Commerce. The ownership and management (including directorship) is shared by all of the members of the farm. They are the co-owners. Contrary to a partnership, all of the members of the partnership firm are personally liable for their entire (personal) estate. A creditor can address each member of the partnership firm for his credit and not only the member he has done business with.

Also in the case of partnership firm ownership does not coincide with individual property. The bundles of property rights of all assets do not belong to one person. There are two or more co-owners. This has also consequences for who is having the residual rights of control and is able to capture the residual income. An important difference with the single owner family farm is sharing residual rights of control, the residual income and the incentive problem. The same problems as for partnership holds for sharing profit, paying taxes, measurement problems of each individual contribution, rewarding systems, decision-making costs and incentive problems.

It means the economic organisational motives to choose for a partnership firm are largely the same as for a partnership. The monitoring costs will increase with the number of partners, because each member is allowed to act on behalf of the partnership firm and because each member is liable for his entire estate. This implies that all risks are shared equally by the members of the partnership firm (Kerkmeester en Holzhauer, 2000: 68-69).

3.5 Limited partnership

A limited partnership is a special form of a partnership firm with one (or more) active partners and one (or more) silent or limited partners. The silent partners are not allowed to be actively involved in the management of the partnership and are therefore only liable for their brought-in capital. The active partners are responsible for daily decision-making within the partnership and are liable for their entire (personal) estate. Within families a limited partnership is sometimes used when younger generations want to take to over the farm and the older generation acts as a silent partner who brings in buildings and/or land (Koppenol, 2000: 40).

The profits are shared and taxed in a similar way as in the case of a partnership firm, with the exception that the silent partners can also be taxed according to corporation tax. The economic organisational motives to choose for a limited partnership are largely the same as those for a partnership (firm). For the silent partners a favourable aspect of the limited partnership is their entitlement to a share of the profits instead of a fixed interest percentage. To limit agency costs the active partners are allowed to share in the partnerships profits (Kerkmeester and Holzhauer, 2002: 70).

3.6 Private limited company

A private limited company is a legal entity and can be viewed as institutionalized form of co-operation which is recognized as a legal personality by law. A legal entity has its own capital, and accompanying rights and obligations. A private limited company is a legal entity with its share capital divided by the shareholders. The company is not permitted to offer its shares for sale to the public and shares are listed to a certain shareholder, so they cannot be traded publicly. A private limited company must have a shared capital of at least €18,000. The company has to be founded before a Notary Public and the company and its statutes have to be registered legally. Because a private limited company is a legal entity, it has its own possessions and debts. In exchange for a share in the firm, shareholders

make means of production, like capital and land, available for the firm. The shareholders are only liable for their share in the capital of the private limited company.

The advantage of limited liability is that it opens the possibilities of more large scale activities. A single owner with unlimited liability would be expected to undertake fewer or more small scale activities than it would be the case after turning the firm in into a private limited company. Even if the available activities were identical in the two cases, the additional risks faced by a proprietor will induce him or her to apply a higher discount rate, and fewer of the activities will yield expected returns which exceed the 'cost of capital'. Thus the cost of capital to the firm, is likely to be lower in the private limited company, but this just another way of saying that risk-bearing cost are lower to the decision makers (Ricketts, 2002:110).

The shareholders are the legal owners (= owners in a juridical sense) of the company and are responsible for appointing the board of directors. Often a private limited company involves separation of ownership and management. However, farms with a private limited company as organization mode often have one shareholder (but more is also possible) who also acts as director. In case of not separation of ownership and management there are hardly incentive problems.

In the case of more than one shareholder ownership does not coincide with individual property. The bundles of property rights of all assets do not belong to one person. Together with separation of ownership and management it has consequences for who is having the residual rights of control and is able to capture the residual income, and it creates an incentive problem.

Profits are divided over the shareholders according to their share in the company. The profits are taxed according to the corporation tax rate of 34.5%. The dividends received by the shareholders are also taxed.

3.7 Public limited company

A public limited company is a legal entity with its share capital divided by shareholders in which each shareholder has on or more shares. Contrary to a private limited company, it may offer shares and securities to the public and these shares and securities can be traded publicly. The foundation formalities are the same as for a private limited company. Because a public limited company is a legal entity, its shareholders are only liable for their share in the capital. Corporation tax and dividend tax are the same as for the private limited company. From an economic organizational perspective there is an important difference between a (small) private limited company and a (large) public limited company. At a private limited company there is often no separation between shareholders and management, whilst at a public limited company these are separated.

A public limited company is an enterprise with private property. However, in this case, private property does not coincide with individual property. The bundles of property rights of all assets do not belong to one person after all; different groups of people are involved shareholders and managers, employees, external capital providers and the board of directors (cf. Kerkmeester and Holzhauer, 2003: 13). It is an organization in which various interest groups (stakeholders) work together. Shareholders can be viewed as persons who make capital (or land) available for the company on a contractual basis. The contract between shareholder and company is relational and incomplete. In exchange for their brought-in capital/ contribution the shareholder receives voting rights, reasonable returns and some uncertainty (hidden information) (Kerkmeester and Holzhauer, 2000: 83). In modern large firms, shareholders (= owners in a juridical sense) are no longer the ones who have, or practice, the power of decision-making (Kerkmeester and Holzhauer, 2000: 78). The ability to having the residual control rights and of capturing the residual income determines in fact which people or groups of people are the owners (Milgrom & Robertson, 1992: 314).

Based on the theory and Table 2 the following general conclusions can be drawn concerning the spectrum of farms' organizational forms from a single owner to a public company:
- ownership becomes vaguer;
- separation of ownership and management will increase
- who has residual control rights and who is able to capture the residual income become less clear;

- transaction cost increase because of (1) reducing the problems of adverse selection and moral hazard and (2) giving incentives, both caused by de use of workers and managers;
- more possibilities of sharing and bearing risk. An important between on the one hand single owner, partnership, partnership firm, and limited partnership and on the other hand private limited company is the reduced liability and with that the level of risk;
- more possibilities for specializations of work and management;
- more possibilities of spreading of fixed cost over more transactions;
- more possibilities of building up reputation
- the governance structure becomes more complex and more robust[2]

3.8 Specific circumstances in the agriculture

According to Williamson (1998:30-31) the (1) characteristics of human decision makers and (2) environmental characteristics of the transactions determine the comparative advantages of governance structure. If we broaden the term transaction to activities both arguments also hold for the governance structures in the agriculture (see Table 2). In the agriculture we have to deal with specific circumstances concerning human decision makers and production processes that determine the choice of the organizational mode.

Concerning the human decision makers we will discuss two examples. First, the organization mode is often adapted for handing over of the farm from parents to their children (mostly they make use of partnerships). Furthermore, the changes of organizational mode (e.g. from single owner to private limited company) does not always mean a separation of ownership and management. For example, in a private limited company it is still possible that we have one shareholder who is at the same time director and manager also.

Second, in the EU, but also in USA, Australia we had strong diminishing of the price support of the government. On the supply side, there is a continuing strong increase in productivity in Western countries. This increase, together with a nearly constant demand for agricultural products, will lead to decreasing real prices. In order to survive, one option for farmers is farm enlargement. This necessitates a reorganisation, from a family farm to a partnership farm, or even to a private limited company. A change in farm organisation implies a change in the contractual relationship between labour, capital, and management of the farm. At the same time, the liberalisation of the EU-price policy will lead to more price uncertainty. More robust governance structures can help to adapt to the farm structure and reduce this price uncertainty.

Uncertainty and complexity of in the production processes influence the level of transactions costs. Uncertainty by seasonal influences plays an important role in agricultural production. According to Allen & Lueck (1998: 347) if the random and systematic effects of nature cannot be controlled, farming is dominated by family farm production. Generally speaking, family farm production provides many opportunities for avoiding moral hazard and few for exploiting economies of size. It means that some type of farming are more suitable for is for family farm than other production. Seasonal influences are especially noticeable for arable farming, vegetable and fruit growing in the open.

In those cases where nature's seasons and uncertainty can be controlled, agricultural production tends to be organized as large-scale firms as in much of the modern economy (Allen & Lueck, 1998: 347). This is the case with glasshouse farming and factory farming, where technological advances and new means of production limit seasonal influences on production processes and reduce transaction costs.

Besides uncertainty, the complexity of production processes also plays and important role in the level of transaction costs. When the complexity of production processes increases, the transaction costs of labour will also increase. At glasshouse holdings and factory farms activities tend to be routinely and simple; transaction costs at these farms will be relatively low compared to farms with complex activities. According to Allen and Lueck (1998: 361) family farming is less preferable when the number of (routine) activities per product increases (glasshouse horticulture and factory farming fulfil this condition).

The same can be said about the number of production cycles per year. When this increases, activities tend to be more routinely and it is easier to hire employees to perform those activities. This

leads to a high level of specialization, which (in combination with routine activities) enables the realization of economies of size. With an increase in farm size, an organization mode of a limited partnership, a partnership firm or a (private or public) limited company tends to be more suitable. When the number of cycles is low, like at arable farming, the advantages of specialization will be limited (Allen and Lueck, 1998: 363) and a organization mode of a single owner or a partnership is more suitable.

4 COMPRISING FARMER'S ATTITUDES

A host of questions about attitudes toward farming and social capital were asked to farmers. For details see in particular the question 43 and the question(s) related to trust (63), see the Annex Excerpt questionnaire. In order to single out a limited number of attitudinal characteristics factor analysis was applied to these questions. This technique, which can be considered as a kind of data-reduction, makes it possible to measure the answers given to the original questions on a limited number of 'new dimensions'. These 'new dimensions' can subsequently be interpreted as common denominators reflecting shared underlying factors. We analyzed these factors and labelled them in terms of attitude characteristics. For some further details about this method see the Annex Factor analysis or the references.

A rotated factor analysis was carried on the data concerning the attitude of farmers using the STATA/SE-package (STATA 2003). The Kaiser criterion was used for selecting the number of underlying M factors or principal components explaining the data. As a consequence, only factors with eigenvalues larger than 1.5 were retained in the analysis.

From the factor analysis on the attitude of farmers, we retained four orthogonal factors reflecting independent reasons to explain the farmers' choice for an organization mode. The obtained eigenvalues for these factors were 4.69, 3.13, 2.57, 1.97 and 1.92 respectively. Eigenvalues can be used to evaluate the explanatory power of the extracted factors. Collectively the distinguished factors accounted for 37,6% of the variance. This indicates that the answers given provide a somewhat dispersed picture, which cannot be comprised in one or two underlying attitude-characteristics. After a varimax rotation and inspection of the pattern of factor loadings, the five factors were labelled as 'farmership', 'land (ownership)', 'trust', 'land as a form of equity' and 'expansion drive', respectively. Table 3 gives the detailed results.

TABLE 3: Five aspects of the attitude of farmers

	Component				
	Farmership	Land ownership	Trust	Land as a form of equity	Expansion drive
A farmer without land is not a farmer	-0.024	-0.761	-0.003	0.008	0.050
Without land I don't feel like a farmer	0.074	-0.794	0.049	-0.031	-0.013
Land ownership has a positive influence on the farm's solvability	-0.022	-0.059	0.003	-0.704	0.026
Land as a buffer against financial risks	0.014	-0.041	0.011	-0.637	0.001
Assets have positive influence on the farm's solvability	0.046	-0.060	-0.009	-0.649	0.028
Striving for a larger farm/holding	-0.041	-0.260	-0.046	0.052	0.694
Desire for business growth	0.102	-0.042	0.039	0.083	0.723
Being free and independent	0.716	-0.088	-0.094	-0.104	-0.020
Being your own boss	0.750	-0.141	-0.114	-0.081	-0.019
Enjoy farmer life	0.711	0.087	0.130	0.058	0.159
Being proud of the farmer's profession	0.628	0.075	0.066	0.043	0.237
Trust in the local government	0.035	-0.020	0.711	0.002	0.011
Trust in the national government	-0.038	-0.065	0.790	0.054	0.023
Trust in the EU government	-0.098	-0.060	0.730	0.009	0.088

In the first column and eight row of Table 3 there is a value of 0.71591, which represents the correlation between the seventh variable and the first factor. The factor loading of 0.71591 indicates that the seventh variable is strongly correlated with the first factor. So for a farmer who has a positive attitude towards farmership, the issue of being free and independent is relevant. Moreover, the positive sign (0.716) indicates that in principle there is a (significant) positive relation between the answer given on the seventh question and the 'farmership' attitude. A farmer who finds being free and independent very important (and who would have marked this question with a '5' on a five point scale) will typically be a 'farmership' type of farmer. This seems plausible. Farmers who enjoy the life of a farmer will find aspects of freedom and independence an important part of farmer life.

For each selected factor, indicators (original variables) with factor loadings of around (±)0.60 or more are included (see numbers printed in bold). The factors showing high loadings (high correlation) are the most interesting (and influential) ones. Questions which had a factor loading lower (or higher) than (±)0.60 on all of the four factors were not included in Table 3. Having explained the principles for reading and interpreting Table 3, subsequently the focus is on discussing the attitudinal factors.

The first factor is a measure for the attitude to 'farmership'. Variables with high loadings include the statements that being free and independent and being your own boss are important aspects of farmer life. The first factor also scores highly on the statements that farmers are proud of their profession and the way they enjoy farmer life. All of these variables reflect the special characteristics which represent 'farmership'.

The second factor is a measure for the attitude towards 'land ownership'. Variables with significant loadings (correlations) include the statements that a farmer without land is not a farmer and without land I don't feel like a farmer. Both of the factor loadings concerning land ownership are negative. This implies that the scores on the factor land ownership will have to be interpreted the other way around. In other words, farmer's who find of both of these aspects important, will have a low (or negative) score on the factor land ownership. Farmer's who find the aspects of land ownership not important will tend to have a high score on this factor.

The third factor is labelled as 'trust' of farmers. Variables heavily loading on this factor are the trust of farmers in the local government, the national government and the EU government respectively. The fourth factor is a measure for the attitude of farmer's towards considering 'land as a form of equity'. Variables heavily loading on this factor are the following: land ownership has a positive influence on the farm's solvability, Land as a buffer against financial risks, and assets have positive influence on the farm's solvability. Similar to the factor land ownership, the factor loadings for 'land as a form of equity' are negative. This implies that the scores on this factor will have to be interpreted the other way around. In other words, farmer's who find of all of these three aspects important, will have a low (or negative) score on the factor land as a form of equity. Farmer's who find the aspects of land as a form of equity not important will tend to have a high score on this factor. The fifth and last factor, labelled as 'expansion drive', is interpreted as a measure of the farmer's desire to expand his farm. It includes the farmer's desire for business growth and his strive for a larger farm/holding in the near future.

We expect that the five attitude characteristics farmership, land ownership, trust, 'land as a form of equity', and expansion drive will influence on the choice or the governance structure or organizational mode. For trust and expansion drive we expect the sign to be positive. The presence of trust is a necessity for farmers to in a co-ownership or a separation of ownership and management. Furthermore farmers who have a positive attitude towards expanding their business are more likely to be engaged in co-ownership or a separation of ownership and management. Because land ownership has to be interpreted in a 'negative' way, we expect the sign to be negative. This implies that we expect that farmers, who value land ownership highly, will prefer to be single owner (because they will keep the residual control rights and the complete residual income). For farmership we expect the same as for land ownership.

The result of the foregoing analysis is that farmers are characterized by five attitudinal characteristics. The ranking of the factors followed the magnitude of the associated eigenvalues, reflecting their relative power to explain the variance in the sample. So far this analysis could suffice to create a kind of farmer typology. However, it does not yet provide a clear linkage between a farmer's type and a farmer's choice for an organisational form. Up till now the analysis has be too descriptive. This was a worthwhile exercise because it gave us insight in the common denominators,

i.e. farmers' attitudes. However, it raises as a further question what the explanatory power of the different attitudinal characteristics is with respect to the choice for organisational form. This question will be taken up further in the next Section.

5 EXPLAINING THE FARMER'S ORGANISATION MODE CHOICE

Besides the variables concerning the attitude of farmers, the data set also contained a number of other explanatory variables. Firstly, the variables concerning the influence of advisors will be discussed. Secondly, some selected other explanatory variables, which we expected to be highly relevant, will be discussed.

5.1 The role of advisors

From the factor analysis focusing on the advice given to farmers by their environment we retained three orthogonal factors reflecting the people in the environment of the farmer who influence his decision of changing organization form. The obtained eigenvalues are stated in table 6. Only factors with eigenvalues larger than 1.0 were retained in the analysis. Collectively these factors accounted for 63.0 % of the variance. After a varimax rotation and inspection of the pattern of factor loadings, the three factors were labelled as 'advice colleagues', 'internal advice', and 'advice financial advisors' respectively. The associated eigenvalues were 2.33 (colleagues), 1.53 (internal) and 1.18 (financial).

Detailed results are provided in Table 4 where the variables and their factor loadings are stated. For each selected factor, indicators (original variables) with factor loadings of around ($\pm$)0.70 or more are included (see numbers printed in bold). The first factor is interpreted as the contribution of the 'advice of colleagues' on the decision of changing organization mode. It includes the influence of other farmers and the influence of advisory experts on the choice of organization mode.

TABLE 4: Component matrix advice environment

	Advice colleagues	Internal advice	Advice financial advisors
Influence of farm head himself	-0.098	0.809	0.015
Influence of other farm heads	0.018	0.783	-0.078
Influence of accountant	0.039	-0.087	0.877
Influence of tax advisor	0.198	0.276	0.742
Influence of advisory expert	0.815	-0.083	0.111
Influence of colleagues / other farmers	0.799	-0.159	0.110

The second factor concerning the advisory aspect is labelled as 'internal advice'. This factor includes the influence of the farm head himself and the influence of other farm heads on the decision of changing organization mode. The third and last factor is a measure for the influence of financial advisors on the choice of organization mode, and is labelled as 'advice financial advisors'. This factor includes the variables influence of accountant and influence of tax advisor.

The result of this analysis shows that different advisory groups can be distinguished with respect to the decision on organization mode. It is possible now to distinguish their individual contributions to the decision making process. The farmer uses his advisory network and reference groups as an input for his decision making process, but not as the only input. Therefore we try to explain the farmer's own role in the decision-making process by using the attitude factors. Moreover, we would like to account for other farmer and farm characteristics.

5.2 Other variables for explaining farmer's choice of farm organisation mode

The data set also holds some other variables which, we expect, can be used to explain the farmer's choice of farm organisation mode. The dummy variable 'age difference' is included to see

whether the age difference between the "heads of the farm" has influence on the decision to change the farm organisation. The variable is equal to 1 if the age difference between two farm heads is larger or equal to 25 years and 0 if not. We expect that a large a difference between two of the farm heads will influence the choice of organization mode.

The dummy variables 'dairy farming', 'intensive livestock farming', 'arable farming', 'horticulture farming' and 'other' represent the type of farming activities. The dummy 'other' also contains farms with multiple farming activities. We will try to find out whether certain farming activities influence the choice of organization mode.

The variable 'education level' refers to the highest level of education one of the farm heads has attended. We hypothesise that the level of education influences the choice of organization mode.The variable 'business size' is an indicator for the size of the farm. This variable measures the number of working hours at a farm by farm heads and employees. We expect that farm size will influence the choice of organization mode.

Finally, the variable 'continuation' is included to see whether the farm will be continued by a family member or some other person, or not. The variable values 2 if the farm will be continued, 0 if not, and 1 if farmers do not know whether their farm will be continued. We hypothesise that the fact whether the farm is continued will have influence on the choice of organization mode. For a detailed (theoretical) motivation one is referred to Oosterbosch (2003).

6 ESTIMATION RESULTS

Four binary logit models are used to explain the institutional structure of Dutch farms. Each model comprise as explanatory variables farmer attitude characteristics, the role of the advisory environment, as well as the selected other variables (like age, education, farm size, etc.). The dependent variables in the four models are dummy variables that represent the four types of organization mode that are distinguished. These are: (1) single owner, (2) partnership, (3) partnership firm (vennootschap onder firma) or limited partnership (= commanditaire vennootschap) and (4) private limited company (besloten vennootschap) or public limited company (naamloze vennootschap). A binomial regression procedure was applied on each model.

TABLE 5: Summary of the four model estimates for organization modes (coefficient sign and significance)

	Single owner	Partnership	Partnership firm or limited partnership	Private limited company or public limited company
1 Farmership	−	+	+	−
2 Land ownership	+ (s)	−	+	+
3 Trust	+	+	+	− (s)
4 Land as a form of equity	+ (s)	−	+	−
5 Expansion drive	−	+	−	+
6 Advice colleagues	−	+	−	−
7 Internal advice	+	+ (s)	− (s)	+
8 Advice financial advisors	− (s)	− (s)	+ (s)	+ (s)
9 Age difference	−	+ (s)	−	−
10 Education level	− (s)	−	+	−
11 Farm size	−	− (s)	+	+ (s)
12 Continuation	−	−	+	− (s)
Chi square	26.86	41.30	24.88	48.98
Count R2	0.9186	0.7014	0.656	0.891
Pseudo R2 (McFadden)	0.2153	0.1383	0.0831	0.2916

The maximum Likelihood Method (MLE) was used to estimate several specifications for the model to explain organization mode. We started with a model specification which included all the variables simultaneously. Subsequently we tried to simplify the model by eliminating variables based on their theoretical and statistical significance. The statistical significance was based on the test results of the null hypothesis that the effect of an individual explanatory variable is not different from zero, using p-values. For a consistent analysis, all four models used to explain organization mode include the same set of explanatory variables. The criterion to include an explanatory variable in the models are (1) theoretical relevance and (2) statistical significance of the variable in one of the models. The models failed to include the variables representing the dummy variables concerning the type of main activities. The estimation results of the binomial regressions for respectively single ownership, partnership, partnership firm (or limited partnership) and public limited company are not reported in this version of the paper due to space limitations[3]. Table 5 summarises the results obtained for the four estimated organization mode models, by stating the estimated coefficient sign and its significance.

Out of the 14 significant factors 3 had to do with farmer's attitudes (explanatory variables 1-5), 6 with the advisory network (e.g. variables 6-8) and 5 with structural farm (family) characteristics. In particular the advisory network is playing a significant role and even outpaces the role of structural characteristics. Below follows a more detailed analysis.

6.1 Farmer's attitudes

Farmers with a strong preference for land ownership and 'land as form of equity' prefer the single owner legal type. They highly value 'independence'. Trust works positive for all legal farm types, except for private limited companies. For the latter category it has a significant negative impact. An explanation could be that in general farmers have less trust in the government (cf. Hoon, 2003: 86-94); Oosterbosch, 2003:98-99). Furthermore Hoon (2003: 91-94) shows that low trust in government can go together with trust in own holding. Trust in own holding means have faith in one' own. Being not dependent from the government a way to realise it, is looking for governance structure that can take care for it, by making use of a more robust organisation mode of farming. This can include farm enlargement.

Farm(heads) with a low trust score prefer organisation modes that minimize liability risks. This is a very strong point of the private limited company (see theory section).

6.2 Advisory network

Internal advice (viz. within family discussions) has a positive and significant coefficient sign in the partnership model and a negative significant coefficient sign in the partnership firm/limited partnership. This is not surprising when one realizes that the partnership model is often used as a device for facilitating farm succession within the family. The limited partnership might be a less likely outcome of internal family consultation because it implies silent stakeholders. Family members prefer to have their say in the farm operation, probably as a means to protect their interests and maybe also for reasons of accountability within the family (not all family members may be involved in farming and have different interests and limited loyalty to continuation of the family-enterprise.

External financial advisers are a significant factor for all organization modes. With respect to the choice of single owner and partnership there is a negative response. Given the scale of measurement, this means that farmers who highly value information of financial advisors are less likely to have or choose a single owner or partnership mode. This might suggests that financial advisers propose other farm modes, which is confirmed by the positive coefficients found in the partnership firm/limited partnership and private limited company. In other words, if farmers value the advice of financial advisors highly, it will increase the possibility of a partnership firm/limited partnership or a private limited company. For the financial advisors themselves this choice could be also interesting, because it creates work and make the farmers more dependent of them/ or it has a financial advantage for them. Anyway, the significance of the found coefficients emphasizes the importance of financial advisors.

6.3 Structural characteristics

Explanatory variables 9-12 measure structural factors, among which the age difference, education level, farm size, and intention to continue the farm operation. Of these factors only the coefficient for age difference is positive and significant for the organisation mode partnership. This implies that if there is a large age difference between the farm heads, the possibility of a partnership increases. A large age difference indicates that a partnership may be chosen for the succession of the eldest farm head. This confirms the farm family life cycle hypothesis, raised in Oosterbosch (2003: 111).

Education level is significant in the single owner-regression: if the education level increases the probability on a single owner organization mode decreases.

The coefficient for farm size is negative for organisation mode partnership and positive for private limited company. The negative coefficient for farm size for the organisation mode partnership implies that large farms will often choose for another organization mode than a partnership, like partnership firm or a limited partnership.

As said, the coefficient for farm size is positive for private limited company. This implies that farm size has a positive influence on the likelihood of a private limited company or public limited company. The reason for this is that large farms will often choose for a private limited company as an organization mode, which has the advantage of lower risk baring cost, limited liability and better access to capital. Often enlargement brings about a more robust governance structure.

The coefficient for continuation is only significant for the private limited company organisation mode and has a negative sign. The continuation-question in the survey asked whether there was already a farm successor available or known to become available. This implies that if the farm is continued by a family member, the possibility of a private limited company or public limited company decreases. One explanation for this finding could be is that other organization modes may be better suited to handle the succession of the current farm head(s). Another explanation could be that that the farm family life cycle is less important in the case of public limited company because of the separation of ownership and management.

The goodness of fit of the four models are also highlighted in Table 5. The pseudo R2 for the models for the models varies between 0.0831 (partnership firm or limited partnership) and 0.2916 (private limited company or public limited company), which is still rather low. It appears that organization modes are hard to explain given the choice of explanatory variables. Although the models do not to include several variables, expected to have influence on the presence of organization modes, its goodness of fit remains fairly reasonable. All four models have significant Chi-squares, indicating that all variables are jointly different from zero for each model. This confirms the relationship between the dependent and explanatory variables in the model. Overall between 66% (partnership firm or limited partnership) and 92% (private limited company or public limited company) of all the farms were correctly classified as having a certain type of multifunctional activity or not.

7 CONCLUSION

Farmers who prefer to be independent and to be their own boss (land ownership & land as form of equity) have a high probability to have or choose for a single owner organization mode. Farmers who have a high trust-score have a low probability to have or choose for a private limited company or public limited company structure. Financial advisors appear to play a significant role in explaining the organization mode of Dutch farms. Farmers who appreciate and/or follow their advice have a relatively high probability to have or choose for a limited partnership or limited company mode. The choice for these latter organization modes is also significantly influenced by farm size. For large farms the likelihood to have a private limited company mode increases, because of limited liability, lower cost of risk bearing and access to capital . The partnership model plays an important role in facilitating within family farm succession (farm family lifecycle).

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End notes

* Roel Jongeneel is Assistant Professor and Louis Slangen is Associate Professor, Department of Social Sciences, Wageningen University. The authors wish to thank Erik Slangen for his assistance with this project. Paper presented at the EAAE Seminar on Institutional Units in Agriculture, held in Wye, UK, April 9-10, 2005.

1. This approach is also labeled the new property rights theory. It is based on the idea that it is often difficult to make and to write complete and enforceable contracts. The new property rights theory is also called the incomplete property rights theory (Foss and Foss, 2002: 21). In the incomplete contract theory having the residual control rights and the residual income is taken as a definition of ownership (Hart, 1995: 30).

2. A governance structure is concerned with how decision are made (= decision rights), i.e. exercise of authority, guidance and control, en with the income rights. The organizational structure of a holding is a governance structure (Hendrikse, 2003: 243)

3. Estimation results are available from the authors on request. Non-significant factors are not discussed because of space limitations.