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The persistence of family farming: a review of explaining socio-economic and historical factors

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The persistence of family farming: a review of explanatory socio-economic and historical factors

The family farm is a corner institute of West European agriculture. This article highlights the main characteristics of the family farm and reviews both the socio-economic and political-institutional arguments used for the persistence of this structure in West European farming.

At micro level, the socio-economic rationale behind the family farm states that economies of scale tend to increase the optimal farm size, but that this tendency is partly offset by the importance of transaction costs for monitoring labour results. Moreover, the flexibility of family labour, the accumulated human capital within the farming family and the ability to withstand hard (financial) times are factors in favour of the family farm.

At macro level, the availability of food for the population has been one of the major concerns of policy makers. Different protectionist measures have been developed in order to secure enough food over time. Although the kind of farming system is not specified in these measures, the farm lobby has influenced the legislations in order to safeguard the current family farms. In the last decades the governmental concern has broadened due to environmental concerns. To reach these goals, the family farm approach is useful as family farms are essential for the kinds of landscape and rural social life.

Taking into account the history of the family farm, the paper proposes different strategies, related to labour and capital allocation, that can strengthen the survival of the family farm in the next decades.

La persistencia de la granja familiar: una revisión de los factores socio-económicos e históricos que la explican

La granja familiar es una institución fundamental de la agricultura Europea. Este artículo resalta las principales características de la familia campesina y revisa ambos, los argumentos políticos e institucionales, para mantener dicha estructura en la agricultura de Europa occidental.

A micro nivel, el análisis socioeconómico de la granja familiar indica que las economías a escala tienden a aumentar el tamaño óptimo de la granja, pero que esta tendencia es compensada en parte por la importancia de los costos de transacción de la supervisión en los resultados. Mas aún, la flexibilidad del trabajo familiar, el capital humano acumulado dentro de la familia agricultura, y la habilidad para enfrentar tiempos de dificultad financiera son factores que favorecen la granja familiar.

A macro nivel, la disponibilidad de alimentos para la población ha sido una de las mayores preocupaciones de las autoridades. Diferentes medidas proteccionistas fueron desarrolladas para garantizar la provisión de alimentos a lo largo del tiempo. Si bien el tipo de producción agrícola no ha sido especificado en estas medidas, el lobby de los agricultores ha influenciado las legislaciones con la finalidad de salvaguardar las granjas familiares existentes. En las décadas pasadas, las preocupaciones gubernamentales se han extendido debido a las inquietudes medioambientales. Para alcanzar estos objetivos, el enfoque de la granja familiar es útil ya que las granjas familiares son esenciales para el paisaje y la vida social rurales.

Teniendo en cuenta la historia de las granjas familiares, este artículo propone diferentes estrategias relacionadas a la asignación de capital, que pueda fortalecer la supervivencia de la granja familiar en las décadas por venir.

La persistance de l’agriculture familiale: une revue des facteurs explicatifs socioéconomiques et historiques.

L’exploitation familiale est un institut de base de l’agriculture de l’Europe Occidentale. Cet article présente les principales caractéristiques de l’exploitation familiale et présente les arguments socioéconomiques et politico-institutionnels utilisés pour la préservation de cette structure au sein des systèmes agricoles de l’Europe Occidentale.

Au niveau micro, la rationalité socioéconomique derrière l’exploitation familiale suggère que l’économie d’échelle tend à accroitre la taille optimale de la ferme, mais cette tendance est partiellement limitée par la hausse des coûts de transaction pour le contrôle du résultat de travail. En plus, la flexibilité du travail familiale, le capital humain accumulé dans l’exploitation, et l’habilité à dépasser les moments de difficultés (financières) sont tous des facteurs en faveur de ce type d’exploitation.

Au niveau macro, la disponibilité des produits alimentaires pour la population est devenue l’une des préoccupations majeures des décideurs politiques. Plusieurs mesures protectionnistes se sont développées à travers le temps afin d’assurer une sécurité alimentaire adéquate. Même si le type des systèmes agricoles n’était pas spécifié dans ces mesures, la législation a était influencée dans le sens de sauvegarde de l’agriculture familiale. Durant les dernières décennies, les intérêts des gouvernements commencent à être plus généraux due aux préoccupations d’ordre environnemental. Afin d’aboutir à ces derniers objectifs, l’exploitation familiale peut être très utile étant donné qu’elles sont essentielles pour la diversification des paysages et des modes de vie socio-rurales.

Etant donnée l’histoire des exploitations familiales, le présent article propose aussi différentes stratégies liées à l’allocation du travail et du capital, et qui sont supposées renforcer la survie de l’exploitation familiale durant les prochaines décennies.

The persistence of family farming: a review of explanatory socio-economic and historical factors

INTRODUCTION

Within the present European model for agriculture, family farming is mentioned as a cornerstone (Blanc and Perrier-Cornet, 1993). However, the persistence of the family structure in farming is not evident and even inconsistent with predictions made in literature. Karl Marx (1818-1883) was among the first to predict a further concentration and scale increase of farm structures and thus the gradual disappearance of peasant agriculture in capitalistic societies. Family farms would be absorbed by the large farming industry using modern technologies and employing hired labor (Gasson and Errington, 1993; Orwin, 1930; Schmitt, 1991). Also the Fordist model of industrial development was used to explain further scale increases and industrialization of farming (Boyer, 1989; Sauer, 1990). However in some West European countries, there was a fragmentation of land holdings into smaller family farms, and only at the end of the nineteenth, beginning of the twentieth century, the small family farms started to expand. Instead of the development of a main stream modern 'industrial' farming model, we observe today a wide range of multifunctional family farming models (Machum, 2005; Morell and Brandth, 2007; Van der Ploeg, Long and Banks, 2002).

The available literature focuses mostly on a limited number of aspects to explain the persistence of the family farm, but within this article we want to enlarge the scope and review the main arguments and rationales that have been used to explain the existence and persistence of family farming: the socio-economic rationale on the one hand, and the historical rationale on the other hand. Although the persistence of family farms may also be discussed from philosophic, sociological or other point of views, we limit our analysis to the two most common but complementary explanations used.

THE FAMILY FARM AS INSTITUTIONALISED PRODUCTION FORM

The family farm is a cornerstone of the European agricultural model on which the present Common Agricultural Policy is based, but also in the agricultural landscape of the United States of America, family farms are of major importance (Table 1). Despite of the variation in

size, outputs and production methods, Western family agriculture apparently represents some characteristics, linked to availability of space, the common needs and preferences, and the historical and cultural background of farming, which are important enough to survive and to be preserved.

Based on a literature review (among others Brandth and Haugen, 2007; De Haan, 1993; Gasson and Errington, 1993; Knutson, Penn and Flinchbaugh, 1998; Loyns and Kraut, 1992; Small, 2005) a definition of family farming encloses following elements:

- Both business ownership and managerial control are in the hands of family or near-family members;
- Business ownership and managerial control are transferred within the family over different generations;
- A majority of the labor is provided by the operator and his/her family;
- A substantial part of the capital is furnished by the operator and his/her family;
- The family obtains a major share of its income from farming;
- The principals are related by kinship or marriage;
- The family lives on the farm;

From sociological perspective, the family farm is associated with family virtues, such as solidarity (Szydlik, 2008), continuity and commitment; from economic perspective, the family farm may be identified with entrepreneurial skills, choice, risk and individual achievement (De Haan, 1993). The interaction between these two perspectives entails that family farming is more than a professional occupation. It reflects a lifestyle, based on beliefs and traditions about living and working. The family may be seen as the interface between the farm and the non-farm environment, filtering energies, resources and ideas between them (Arkleton Trust, 1985).

The family goals will differ among households because the family is not a ‘natural’ unit but a cultural one, which is subject to considerable variation in form, value and articulation within the wider socio-economic system (Gasson, Crow, Errington, Hutson, Marsden and Winter, 1988). The primary goal of the family farm is often not only profit maximization as assumed in neo-classical models (Gasson et al., 1988), but also other goals such as maintaining control and passing on a secure and sound business to the next generation (Errington, 2002) are

important objectives for the farming family. This has both family and business implications. It means among others that the business has a longer planning horizon, measured in generations rather than years, and that securing long-term survival may be more prominent among the farm's objectives than maximizing short-run gains.

Family farms can be distinguished from family owned business and industrial farms based on the fact that both the management and entrepreneurship are in the hands of the farming family and not shared with other persons (Table 2). The management refers to the organization and coordination of all activities on the farm, while the entrepreneurship is situated at a higher level and refers to the capacity and willingness to undertake conception, organization and management with all attendant risk, while seeking for profit as reward. Labor, land and capital are also mainly provided by the family owners. Additional labor may be hired, most often on a seasonal basis (Gasson and Errington, 1993), while land may be rented for expansion of the operation (Table 3). Further extra capital may be borrowed for supplies, machinery, and improvements. However, a main feature is that the (financial) risks are taken by the family owning the farm even if part of the production factors is delivered by others. This is not the case in the family owned business and industrial forms of farming where risks are shared among shareholders whether they have family ties or not. Besides the three models mentioned in Table 2, there exist of course other farming structures such as cooperative farming (in which different families work together within a co-operative structure), collective farming and state farming. However, these types of farms are seldom in Western Europe and are therefore not discussed.

Table 1 Importance of family farms in Western Europe (2005) and USA (2007) agriculture (Eurostat, 2007; United States Department of Agriculture: National Agricultural Statistics Service, 2009)

Table 2 Different forms of agrarian production

Table 3 Proportion of agricultural land farmed by owners (%) in 2000 (European Communities, 2003, 2006; United States Department of Agriculture: National Agricultural Statistics Service, 2009)

THE SOCIO-ECONOMIC RATIONALE

The agricultural household model

In the family farm, household and enterprise are combined in one institutional entity (Aït Abdelmalek, 2004). There is no separation of the domestic family life from the work responsibilities as is common in modern industrial organizations (Pfeffer, 1989). Chayanov (1888-1939) in his famous writing on peasant agriculture represented the family farm as an economic form which differs from capitalist farming, especially because run by a family without hired labor (Shanin, 1986). This was of course in a time were farming was mainly labor based and not technology based as is now the case. But still his ideas remain valid because based on his Theory of Peasant Economy (Chayanov, 1923, 1986) an agricultural household model can be developed which provides a framework for analyzing the behavior of the farming family related to decisions of consumption, production and the allocation of time between farm work and home time (family maintenance, reproduction, social obligations, sleep and leisure). In his most simple form the economic household model assumes that the family farm maximizes utility taking into account a number of constraints (Findeis, Swaminathan and Jayaraman, 2003; Singh, Squire and Strauss, 1986; Taylor and Adelman, 2003).

$$\text{Max } U(C_F , C_{NF} , l) \qquad [1]$$

Constraints :

- Production: $Q = f(L, X)$ [2]
- Time: $T = H + l$ [3]
- Full Income: $P_F (Q - C_F) + W(H - L) = P_X X + P_{NF} C_{NF}$ [4]

With:

U = Household utility

C_F = Food consumption

C_{NF} = Non-food consumption

l = Leisure

Q = Output

L = Labor used in production (both household labor and hired labor)

X = Other input used

T = Total time available to the household

W = Wage rate

H = Household labor

P_F = Price of food

P_{NF} = Price of non-food

P_X = Price of other input used

The household utility U (see [1]) represents the ability to satisfy the needs of the household and is a function of the household food consumption (C_F), the household non-food consumption (C_{NF}) and household leisure (l). Utility is maximized subject to the production function [2], the household total time constraint [3] and the household income constraint [4]. The family farm produces output with the labor and other inputs available for production. The amount of labor available for farm production depends on the amount of labor provided by the family members, the amount of hired labor, the amount of labor sold in the market, and the desired amount of leisure time (Figure 1). Taking into account the farm production and the time constraints, the full income of the household consists of the market surplus and the labor surplus that are used to pay the other input used and the non-food consumption. In case of relative low wages the farmer can increase his/her income level by making use of hired labor. In that case, the amount of own labor at income level I_1 is lower than the amount of own labor at income level I_0: more leisure time is available. In case of relatively high wages, the farmer can increase the income level by selling his/her own labor on the market (LL_s). By doing this, the total amount of labor has increased (OL_s) and the amount of leisure time has decreased, compared to the situation at income level L_0. Although a profound discussion is out of the scope of this article, it shows the usefulness of the framework to provide insight in the decision making of farmers with respect to labor and other input allocation.

Figure 1 Chayanov model with labor market[1] (Department of Agriculture and Resource Economics - NC State University, 2007)

The Chayanovian approach takes into account an opportunity cost of family labor (Findeis et al., 2003). However in practice, the internal resources of the family farm are not valued at the prevailing market prices, but at an internal price leaving a surplus that can be used for (1) remuneration of family labor, (2) reproduction or expansion investments of the farm or (3) savings (Friedmann, 1978; Van der Ploeg, 2000). This means that farmers have a greater flexibility than other structures to divide the net returns of the family farm among (1) expansion of production, (2) family consumption or (3) investment in production factors, allowing them to compete successfully with industrial forms of farming focused on returning a profit (Friedmann, 1978; Van der Ploeg, 2000). In this way, family farms have a higher ability to withstand less prosperous times.

Family labor versus hired labor

As indicated, the fact that labor is mainly provided by family members is a major characteristic of family farms. With modernization of farms, the prevalence of family farming has been strengthened due to the greater substitution of the hired labor input by machinery relative to family labor input by machinery (Schmitt, 1991). This contraction of hired work-forces has been a function of the cost-price squeeze in agriculture, the increasing cost of labor, and the technological advance in the farming industry where expansion of individual farms is highly limited by availability of land (Winter, 1984), but also of the higher transaction cost of hired versus family labor (see further): hired workers have to be considered as an imperfect substitute for family labor and family farms are a response to the difficulty of supervising workers who, for obvious physical and geographical reasons, cannot be gathered in a single location (Schmitt, 1991). This evolution made that agriculture has been gradually more dominated by family farms in terms of labor input (Hill, 1993), but

[1] TVP: Total Value Product (production function); I: income level

within this evolution family farms become more masculine (Bjorkhaug and Blekesauna, 2007).

As an example (due to the non-availability of comparative data sets), Table 4 analyzes the Belgian labor evolution from the end of the nineteenth century. At that moment hired labor made up to 41 per cent of total agricultural employment in Belgium. This was favored by the relative low wages in agriculture leading to a pull effect as illustrated in Figure 1a. However, between 1880 and 1980, due to technological evolution, the importance of hired labor in agriculture declined, whereas the family labor still increased until 1950. It is only from 1950 due to a pull effect from industry that family labor in farming has decreased because the rise in industrial wages increased the opportunity cost of hired labor as predicted in Figure 1b. Further, the reduction of the official working hours due to labor regulations made it more difficult to implement hired labor outside the official working hours, but reduced on the other side the opportunity cost of labor and thus the competitiveness of part-time farming. Another factor is that improved schooling and transportation enabled members of the farming family to work outside the farm, making the labor market less imperfect and closing the gap between market wages and opportunity cost of farm labor (Swinnen, Christiaensen and Felton-Taylor, 1993). Although after 1980 the total number of farmers declined further, the relative and even absolute amount of hired labor on the remaining farms increased again. The decreased family size and the decreased amount of unpaid labor by neighbors need to be compensated by hired labor.

*Table 4 Labor share in Belgian agriculture (*10³)(Federal Public Service Economy SMEs Self-employed and Energy, 2006)*

The advantage of using family labor (supplemented by unpaid labor provided by neighbors) is that family labor can adjust to changes in labor demand resulting from (seasonally) changes in production. This provides an essential buffering system that is not available to non-family farm businesses (Machum, 2005; Wallace, Dunkerley, Cheal and Warren, 1994). By doing so, family labor overcomes the structural requirements for surplus production, but at the same time, it increases flexibility in personal consumption.

Within the family farm, wages are not fully paid out or at least only for short periods of the family life cycle, enabling the family farm to reduce fixed costs (Gray, 1998; Winter, 1984).

The balance between labor costs and consumable income is more in favor of family labor compared to hired labor. When the family members are getting older, it is also more rational to remain in the agricultural sector, as the marginal benefit of the off-farm employment will be lower than the marginal benefit of the on-farm employment.

In general, family farms use highly flexible and different strategies to survive under changing market and production conditions. Attention has been drawn to the capacity of the small family farm to survive under adverse conditions by supplementing farm income or simply by tightening belts and accepting a lower income (Bjorkhaug and Blekesauna, 2008; Gasson et al., 1988; Machum, 2005). However at the present, cheap family labor, willingness to accept a low standard of living in return for unremitting hard work, acceptance of traditional authority, lack of clear division between work and leisure and an emphasis on values like independence, may be less appropriate for survival than they were in the first half of the twentieth century (Gasson et al., 1988).

Scale effects and transaction costs

Not only labor cost plays an important role in the survival (or non survival) of the family farm. According to economic theory, the optimal farm structure minimizes production costs in a competitive environment. If a farm structure cannot meet these conditions, it will disappear. In this context, scale effects and transaction costs are two major economic forces playing a determining role in the optimal farm structure.

Scale effects

In economic theory, the increase in outputs related to the increase in farm scale, is indicated as economies of scale. Scale effects tend to increase the optimal farm size, but at diminishing rate (Hallam, 1991). The optimal farm size is highly depending on external conditions (geography, climate, type of agriculture, …) as shown by the differences both within West European agriculture as in comparison to USA agriculture (Table 1) (Directorate-General for Agriculture and Rural Development, 2008; United States Department of Agriculture: National Agricultural Statistics Service, 2009). Literature on scale economies suggests that scale economies are linked to an increase in capital inputs, but that some diseconomies occur as a result of increases in farm area (Visser, 1999).

Since the 1950s, there has been a strong increase in capital-intensive farm technology. Within the framework of a limited budget, the farmer has been able to improve returns to farming by investments in the efficient application of technology rather than by acquiring more land (Blanc, 1994; Swinnen et al., 1993). Although, the increase in income related to the technological improvements was limited or even non-existing for the average farmer, as shown by what is known as the treadmill theory of Cochrane (Cochrane, 1958): at moment of introduction of a new technology, the first few farmers who adapt it, can benefit by lowering their production costs, and the overall production does not increase to that extent that the selling prices lower. Early adopters can benefit from these technological improvements. When more farmers take up the new technology, the total production increases and the selling prices fall. The average farmer is forced to adopt the technology in order to survive, but not necessarily to increase his/her profitability.

According to Schmitt (1991), the gains achieved by increasing farm size due to economies of scale are relatively small compared to the size that can be achieved by optimal use of farm household labor as labor efficiency has increased enormously over the twentieth century due to these technological innovations.

Within the context of family farming, we cannot assume that ‘small’ and ‘family’ are interchangeable labels (Hill, 1993), but we do observe that family farms are mostly of sub optimal size as compared to sizes providing maximum profits, although the economies of scale cannot be neglected. The economies of scale in European agriculture are reflected in the increase of the average economic size unit, the total average utilized agricultural area per farm, in combination with a limited increase of the average labor input per farm. In the United States of America, the economic size of the farms increased also, but there was also an increase in the number of farms, resulting in the fact that the average utilized agricultural area per farm decreased (Table 5). The increased capitalization of the family farm, related to the increased economic scale of the farms, makes that in particular at the moment of farm transfer high amounts of capital are needed to continue the family farm. This capitalization may be a reason for reducing size and may explain reduction in size in the US where bankruptcy has hit several farms who were overcapitalized in the seventies and eighties.

Economies of scale open perspectives to non-family based agricultural production systems, e.g. agricultural cooperatives and super large farms in former socialist states. But these production forms are not of major importance in West European agricultural production as the economic rationale of these non-family based agricultural production systems seems to be

solely due to economies of scale and important factors like management and human resources are omitted in this traditional view (Gorton and Davidova, 2004; Jambor, 2007; Johnson and Ruttan, 1994; Levay, 1983). In agricultural cooperatives, producers can better exploit potential economies of scale from their shared use of pooled factors of production, than if they remained individual farmers. But the major difficulties in the production cooperatives are problems of performance motivation and free-rider behavior – which are generally not faced by family farms – and the conflict between individual interest and group interest.

Table 5 Changes in general farm characteristics between 1990 and 2005 in Western Europe and USA (European Commission, 2008; United States Department of Agriculture: National Agricultural Statistics Service, 2009)

Transaction costs

Transaction costs are defined as 'the costs that arise when individuals exchange ownership rights to economic assets and enforce their exclusive rights' (Eggertsson, 1990). Among other things, transaction costs include the costs related to monitoring and enforcing contracts. In 'the Nature of the Firm,' Coase (1937) argued that the market only functions as the perfect neo-classic market model predicts as long as it is able to operate without causing conflicts, thus at zero or low cost. When the market use cost start to exceed the costs of organizing the exchange within the firm it becomes profitable to abandon the market and organize the exchange internally (Coase, 1937). Figure 2 indicates that at the moment that the resource costs to make a good exceed the transaction costs of buying the good, the market mechanism is used. Opposite, the family farms are expected to produce within the farm if the transaction costs to buy the good are higher than the resource costs to make the good. If both the resource costs and the transaction costs are high, hybrid governance structures will be developed such as e.g. cooperation or other forms in between pure market and individual farms.

Figure 2 Influence of resource and transaction costs on expected transaction governance mode (adapted from: Rangan, Samii and Van Wassenhove, 2006)

The trade-off between ‘cost of using the price system’ and the ‘cost of organization,’ explains the evolution in the farming sector over the last decades. Until the mid-nineteenth century, the family farm was involved in all stages of the chain, from producing to processing goods for retail consumption. There was limited input from the market. The introduction of technology led to the rise of separate specialized firms at the beginning and the end of the production cycle (e.g. equipment, fertilizer, marketing, processing, and transportation). For these production stages, the cost of using the price system was lower than the cost of organization within the family farm (Allen and Lueck, 1998). Farms may be pressed upstream and downstream by horizontally and vertically integrated capital, but the family farm mainly controls the purely biological growth stages of farm production and remains independent and small relative to the organization with which they do business (Roberts, 1996).

Where the neoclassical economic theory assumes that the most efficient firm will tend to survive, the transaction cost theory states that the most efficient governance structure will ultimately prevail in a competitive economy (Williamson, 1979, 1996).

The transaction costs are based on asset specificity, uncertainty and frequency. Related to the asset specificity, the following factors explain why the family farm is still an optimal institutional solution to the difficulty of monitoring and supervising workers in agricultural production:

- Although farming skills are based on scientific knowledge, they are still very location and crop-specific: the scientific knowledge has to be adapted to heterogeneity of soils, weather conditions, … Beside education, the family members acquired this specific knowledge and the related attitudes during childhood and it is a by-product of growing up on the farm (Jaspers, Lubbers and de Vries, 2008).

- Due to technical reasons, the workers cannot be gathered in a single location and be easily supervised. Family labor does not need supervision, since family members are involved in the income it provides (Corsi, 2004). According to Pollak (1985) the family farm is seen as the organizational solution to the difficulty of monitoring and supervising hired workers. This implies that transaction costs are increasing with rising farm sizes and greater numbers of hired workers per farm.

- In agricultural production, labor contracting is more difficult because effort is harder to observe, while outcome is not directly linked: the outcome of the production process is seen at a later stage than the effort itself. Employers will rely on the ‘reputation’ of the

employee, and this is facilitated when there are close links (e.g. family) or loyalty between farm worker and farmer (Wiggens, 1991). Over time, workers become more socially dependent from the farmer, and loyalty and reputation decline as motivating factors, but due to technological innovations, the output per worker has increased (Swinnen et al., 1993).

Beside the importance of human asset specificity, family farms can also better anticipate the changing consumer demands due to their flexibility and the close connection with the agricultural output:

- At the moment that the consumer demand is changing, the agricultural producer has to adapt the production process to remain competitive. The flexible family farm structure can effectively anticipate the changing consumer demands because management, entrepreneurship and labor are provided by one person (Vanhonacker, Verbeke, Van Poucke, Buijs and Tuyttens, 2009; Vanhonacker, Verbeke, Van Poucke and Tuyttens, 2008).

- In the last decades market trends tend to push towards an increasing quality diversification of food (Vermeir and Verbeke, 2008). Diversification of agricultural products requires location-specific technical skills.

The asset specificity argument of the agricultural production may explain why the argument that production is generally less costly when organized in larger units with a considerable number of workers within one location (Bowles, 1985) does not apply to agriculture. This asset specificity, and in particular the linked control and monitoring cost, explains to a large extent why family farms were able to withstand the industrial agriculture in the past.

A second element of the transaction cost theory is uncertainty. Uncertainty is an exogenous factor that influences farm production. Random shocks (weather, biological factors, financial crises or changes in inputs) influence the production and causes heterogeneity in production. Flexibility enables family farms to cope with factors affecting the production and to absorb the random shocks.

Finally, the frequency of transactions has also an influence on the transaction costs. Seasonality and the lack of continuous operations are the main features that distinguish agricultural institutions from ‘industrial’ organizations. Farm workers need to be flexible and able to shift from one task to another. In farming, it is impossible to organize the labor force on the basis of a minute division of labor. Seasonal parameters (e.g. production cycles) limit

gains from specialization and cause timing problems between stages of production. Greater efficiency due to economies of scale is therefore limited. When the production cycle is relatively short, when the seasonal factors can be reduced by means of controlled environments, and when the production process can be easily monitored in terms of input and output, other forms of agricultural organizations often overshadow family farms (e.g. industrial pig and poultry production, greenhouse production).

THE HISTORICAL RATIONALE

Not all authors are convinced of the socio-economic arguments as grounds for the persistence of the family farm (e.g. Christensen, 1991; Swinnen et al., 1993). Although they recognize that there are limits to growth and some economic arguments for family farms, they express the opinion that the survival of small family farming is mainly a political choice because the growth of farms in many countries is restricted by law as the politicians try to protect smaller family farms. To understand the role of government in the survival of the family farm, we might have a look in the West European history of farming. Although the tendencies described are a generalization of recent history, with certainly differences according to the specific prevailing conditions and specific political settings in each country, and certainly in comparison with the US, it illustrates perfectly that political choices have a major influence on structural changes in farming.

The eighteenth and nineteenth century

In the eighteenth century, there were already different tendencies related to the occurrence of family farming in Western Europe. In Great Britain, the tripartite structure of agriculture that emerged, was based on a division between (1) landlords providing land and eventual capital, (2) tenants providing capital and labor and (3) hired laborers providing a high share of labor. This model was seen as a model for other industrializing nations (Demblon, Aertsen, Goeteyn, Groessens and van Doninck, 1990; Gasson et al., 1988; Gasson and Errington, 1993; Tracy, 1989). The enclosure in Great Britain enabled large enterprises to further expand, and increased the productivity of the farms, but smaller farmers lost their right to use to common grounds. There was a high increase in population and people started to work in the industry.

In other West European countries, there was a fragmentation of farms that is explained by the law of inheritance within the Code Napoleon, a rapid increase of the population, a slow increase of commercialization and the limited availability of land (Seghers, 2008). The farmers were clung to the small family farm and the alternatives were limited due to personal attachment with the farm and the land. This opened perspectives to intensive production.

The nineteenth century is characterized by large possibilities for technical improvement in agriculture. However, the Industrial Revolution hardly reached the rural areas due to deficiencies in transport and communication systems and the little flow of new ideas into the countryside (Tracy, 1989). As there was a need for low-priced food for the industrial workers in order to maintain wages low and as the domestic food production was not sufficient to the total demand, food was imported from overseas with large imports from 1870 on, referred to as the agricultural invasion (Craeybeckx, 1980; Tracy, 1989). Within this context of free trade, liberal legislations replaced protectionist measures. However, grain prices collapsed, farmers went bankrupt and independent family farming was doomed to disappear (Demblon et al., 1990; Gasson et al., 1988; Tracy, 1989; Van Molle, 1990). Some governments did not continue their liberal legislations, but returned to protectionism, although differences occurred between countries: Great Britain and the Netherlands depended largely on trade and continued their free-trade system; Belgium needed the import of basic commodities, but specialized products were protected; in Germany and France, protectionist measures were installed. To overcome this crisis, there was a shift from crop production to the small scale livestock production and modern horticulture, which was mostly suited for smaller family farms (Tracy, 1989). By doing so, family farms anticipated the increasing purchasing power.

It was in this period that the Conservative Catholic movement strengthened his power in the countryside. At the end of the nineteenth century, liberal political parties relied on support of the industrial entrepreneur and the socialist party increased its power by supporting the industrial workers. The establishment of democratic voting systems made that the importance of the small farmer increased for conservative catholic groups. In exchange for political support the conservative catholic parties in government established policies and regulations that benefited farmers. The conservatives supported the family farm because the family was regarded as the cornerstone of a religious society and they thought that the family farm, as small independent profession, could combat the socialist influence on the countryside (Demblon et al., 1990; Gasson et al., 1988).

Around the first and second World War

At the beginning of the twentieth century, there was a more prosperous situation for farmers and a better agricultural environment (Tracy, 1989). Different kinds of cooperative societies in favor of the small family farm, emerged (e.g. milk and fertilizers cooperatives) (Seghers, 2008). Farmers' organizations stimulated governments to induce protectionist measures, especially in low competitive sectors. This was desired in order to maintain high agricultural prices, compared to the international standards.

The First World War changed the production environment of West European agriculture. During the war, the agricultural production decreased as the production capacity was to some extent destroyed. But nevertheless, the farmers still benefited as the price of their produce was relatively high. The first years after the war were in general characterized by scarcity, hunger and international food deliveries (Ortmayr, 2007). But farmers were able to invest in land and machinery. The increased production in combination with protectionist measures by government resulted in an overproduction in the 1930s. At the end of the interbellum period, there was a revival of the economy.

The first years after World War II, the agricultural policy had the aim to end all compulsory measures that were established during the war and to liberalize the sector (Bublot, 1980; Van Molle, 1990). The immediate concern all over Western Europe was to raise agricultural production as fast as possible to combat hunger and famine. Beside the problem of food shortage, there was a general need to save foreign exchange by keeping imports as low as possible (Tracy, 1989). Due to the American help under the Marshall plan, in which agriculture was treated equally as the other sectors, the recovery was rapid and successful.

The post-war years were also important for the increasing influence of farmers' unions in policy making (Tracy, 1989; Van Molle, 1990). Because of equal representation of rural areas, a high number of farmers or people with interest in farming and rural areas were elected often with the support of the farmers' unions (Tracy, 1989). At that moment, the institution of the family farm became a political goal in itself. In theory, agricultural legislation and policies were indifferent regarding the kind of farm organization. In reality, politicians mainly supported independent family farming. Governments funded an extensive network of agricultural research, extension and education institutions. Extension networks aiming at disseminating new agricultural technologies to individual farmers, were organized in combination with farmers' organizations (Craeybeckx, 1980). The farmer's organizations

provided extension services for their members: the organization of agricultural credit supply, the provision of seeds and fertilizers and the transfer of information through farmers' organizations and cooperatives was actively supported. By building this country-covering network, the farmers' organizations obtained a strong position within policy making. The government improved gradually the competitive situation of the family farm. At the end of the fifties (and moment of negotiations about CAP and other international treatments) agriculture was still mainly dominated by small family farms who were organized in strong farmer's unions.

The Common Agricultural Policy

The need for food self-sufficiency explains why the treaty of Rome (1957) and the Stresa agreement emphasized the importance of an efficient agriculture. In 1958 with the introduction of the Common Agricultural Policy (CAP), the European agricultural policy aimed mainly at making farming more efficient and productive in order to protect food supply, while keeping price of food products low and safeguarding farmers' income. We hereby refer to the five principles of Article 33 (39) of the treaty of Rome (CAP Monitor, 2005): (1) To increase agricultural productivity through rational development of agriculture towards the optimum utilization of the factors of production; (2) To ensure a fair standard of living for agricultural producers; (3) To stabilize agricultural markets; (4) To guarantee regular supplies of food to consumers; (5) To ensure reasonable prices of food to consumers. These objectives were attained in the first place by means of market and income support measures.

The CAP favored the modernization of agriculture through markets and technical improvement and enabled industrialization of the agricultural production process with separation of production and environment (e.g. industrial pig production). But for some time, the Mansholt Plan, including a fundamental reform of the CAP, was not established due to a well-organized and institutionally entrenched farm lobby (Murdoch, 1995; Tracy, 1989). Some family farms could not counterbalance low world market prices by a sufficient increase in production, but the idea, developed in the 1960s as 'the theory of peasantry' (Mendras, 2002), that Europe's farmers deserve a special treatment because they are farmers was never likely to offer a plausible long-term rationale for state support.

During the early 1970s, a combination of falling world market prices for agricultural products, a decrease in the job opportunities outside agriculture, and a growing appreciation of the cultural significance of the family farm shifted the 'restructuring rationale' to 'state assistance' as dominant policy principle under the CAP (Potter and Lobley, 2004). Although the CAP did not mention the family farm as a target group (Moehler, 2003), the lobby of farmers' unions was attentive to make that the family farm was not disfavored in the agricultural policy. Not only in Europe, but also in e.g. America and Australia, policy programs were constantly trying to balance the apparently conflicting objectives of encouraging modernization and scale increase of the farming sector and protecting the family farming model (Cockfield and Botterill, 2006; Lobao and Meyer, 2001; Variyam and Jordan, 1991). Through the CAP, Europe became an agricultural welfare state, in which the incomes of millions of farmers and their families would be underwritten by the state over the long term (Rieger, 2005).

By the end of the 1970s, the European agricultural policy was so successful that it resulted in agricultural overproduction. It was expected that the system of price subsidies and border protection, covered by the CAP, should be self-financing, because the costs of price support would be offset by the expenditure raised from levies on agricultural imports. But the technological revolution in farming during the 1960s and 1970s enabled the more efficient farmers to respond to these high price guarantees by increasing output (Potter and Tilzey, 2007).

At the end of the 1980s, environmental problems such as manure surplus, disappearance of landscape elements, eutrophication and loss of biodiversity became apparent (Merz, 1997). Market and competition were capable of attributing economic value to commodities, but failed in the remuneration of the value of non-commodities to farmers (Hagedorn, 2003). The concept of sustainability gained the attention of policy makers. The Brundtland-definition stated sustainable development as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (WCED, 1987). Around the same time, the European Commission publishes the paper 'the Future of Rural Society' (CEC, 1988) to clarify the rationale for state assistance to marginal farmers by linking their vulnerability to market processes with the need to underwrite their role as stewards of the countryside. The combination of these two concepts is implemented by the European Commission (2006) in one of the recent objectives of the Common Agricultural Policy as follows: "to have a sustainable, efficient farming sector which uses safe, clean,

environmentally-friendly production methods providing quality products to meet consumers' demand." Policy measures related to non-commodities were developed. As an example, the manure action plan in Flanders was developed (1996), but family farms with animals got advantages related to e.g. permissions and transfers on the manure market (Gabriëls and Van Gijseghem, 2003).

Policy makers gradually started to recognize that agriculture is producing not only commodity outputs such as cereals, beef, etc. which can be sold in the market, but also non-commodity outputs such as biodiversity, landscape, safeguarding of the rural environment, food security and rural viability. The 'European Model of Agriculture' promotes the idea that farming, and especially family farming, is essential for the kinds of landscape and rural social life valued by society as a whole. Therefore, policy makers supported public goods and social equity justifications for shielding farmers from world market forces and offering them income support (Potter and Tilzey, 2007). For example, the MacSharry reform of 1992 agreed on lower institutional prices, but at the same time, farmers were compensated with progressively increasing direct payments (Gasson and Errington, 1993; Potter and Tilzey, 2007). Farmers deserve this state assistance not only because their incomes tend to be lower and more volatile than those of other groups in society, but also because, without farmers, the communities and environmental endowments of the countryside would not longer be sustainable or meaningful in wider social terms (Potter and Tilzey, 2007).

To emphasize this 'jointness of production,' a 'second pillar' based around the rural development regulation 1257/99 was added to the 'first pillar' that was oriented towards market support (Matthews and Monnet, 2002). The focus on non-commodity support implies that farmers are regarded important in the realization of these measures. This is emphasized within the Mid Term Review by stating that market revenues alone are not enough to ensure an acceptable standard of living for many farm households, and that direct payments continue to play a central role in ensuring a fair standard of living and stability of income for the agricultural community (Matthews and Monnet, 2002). So in all these policies the EU clearly accepts the specific value of family farming systems.

CONCLUSIONS

The family farm is the cornerstone of the Western agricultural system. Family farming is not only an occupation in which capital, land and labor are used to produce agricultural output,

but also a lifestyle based on and involving beliefs about living and working on the farm. However the question is why the family farm remains so important in Western agriculture, compared to other kinds of production systems. Therefore we analyzed the underlying reasons starting from two different rationales.

Both the socio-economic and historical rationale are based on the importance of an efficient farming system that ensures the food availability within countries. The socio-economic rationale is based on a micro economic point of view, while the historical rationale looks through a macroeconomic lens . The two rationales enhance each other and interact to some extent.

At the micro level, family farms went to considerable changes over the last decades. The increased scale of production and limited transaction costs enabled farmers to produce in a competitive world economy. The comparison between West European and USA agriculture indicates that the increase in economies of scale in USA agriculture is limited, compared to West European agriculture. This can be explained by the decreasing average farm size in USA agriculture after the big agricultural crisis in the eighties.

West European farm structures are organized in such a way that within the given production methods and production environment, a shift to other non-family based farming systems would entail a high increase in transaction cost. In order to increase the scale of production without a drastic increase of transaction cost, there is need for a change in the production environment, the kind of production or the business legal structure of the farms.

At macro level, the availability of food for the population has been one of the major concerns of policy makers. Through history, protectionist measures alternated with more liberal policies in order to safeguard the national production. Within this policy making process, a rather strong farm lobby influenced the legislations in favor of the existing farming systems, who were, due to history, mainly family farms. This is an important reason why from historical point of view, the family farm persisted. From 1980 on, the governmental focus on food production has broadened to a sustainable production in which both commodities and non-commodities are important. Within the historical rationale, the family farm has shifted from an implicit to an explicit tool to develop the political goals.

The persistence of the family farm is based on both the socio-economic and the historical rationale, but especially the interaction between farm and family enables the family farm to remain viable. However, the family farm has also changed as production system over time.

The change in the family farm structure over the last decades indicates that the family farm has become a capital intensive form of agricultural production in which the farmer and his/her family make the capital available for production. Taking this history into account, the continuation of the family farm will depend on the availability of a successor, and his/her ability to cope with this changing situation and the increasing capital need.

RECOMMEDATIONS

The socio-economic and historical rationale of the family farm hold important lessons for the future of agriculture. The increase of labor and capital in the past decades within the family farms questions the viability and sustainability of family farms in the next decades.

An important key of the agricultural past that can be used for the future of the agricultural landscape, is the use of labor. The history has shown that agricultural production is adapted to the availability of labor, stimulating a quantitative increase of agricultural production. But at this point in time, a further increase of production will put a burden on the sustainability of the production and the family farm system. Therefore, the future agricultural production will have to be redirected towards other ways of using labor within the production system. One direction might be the increase of off-farm labor in combination with a family farm system that maintains a high quantitative level of production with a limited amount of farm labor. Another direction is the enlargement of the on-farm activities in which the available labor is used to produce (non-)commodity products that are asked by the consumer (e.g. tourism, landscape). In a third direction, farming might be seen as a sustainable way of production: all available on-farm labor is used to produce high-quality products, including organic production. A combination of different ways might be appropriate in some cases.

The optimal allocation and availability of capital is the second key for survival of the family farm. The contemporary agricultural landscape is characterized by globalization of agricultural production which entails high price variation in particular by the occurrence of crises (e.g. economic crisis, outbreak of pests and diseases). On the one hand, the contemporary capital intensive family farms bear more financial risk, but on the other hand, they have also the ability to cope to a larger extent with this price variation, because of the limited fixed (labor) costs. At macro level, policy makers should take the increasing capital need into account in policy making, and facilitate alternative legal business structures for family farms in which, for example, capital can be provided by non-family members. This

can stimulate family farms to grow further in order to stay competitive and viable. It will help family farms to use the comparative advantage of their transaction costs, within a structure that limits the financial risks. At micro level, family farms have to timely consider the transfer of the family farm: the designation of a successor stimulates the economy of scale within the farm and increases the competitiveness of the individual family farm.

All of these strategies are tools to the further improve the family farm as a sustainable agricultural institution in the next decades. If no further strategies are applied, the future of family farms might be questioned because of the power of the world market (e.g. price volatility in combination with high investments): due to the relative disappearance of a safety net, the future link between family farm and poverty might become stronger and result in the disappearance of the family farm.

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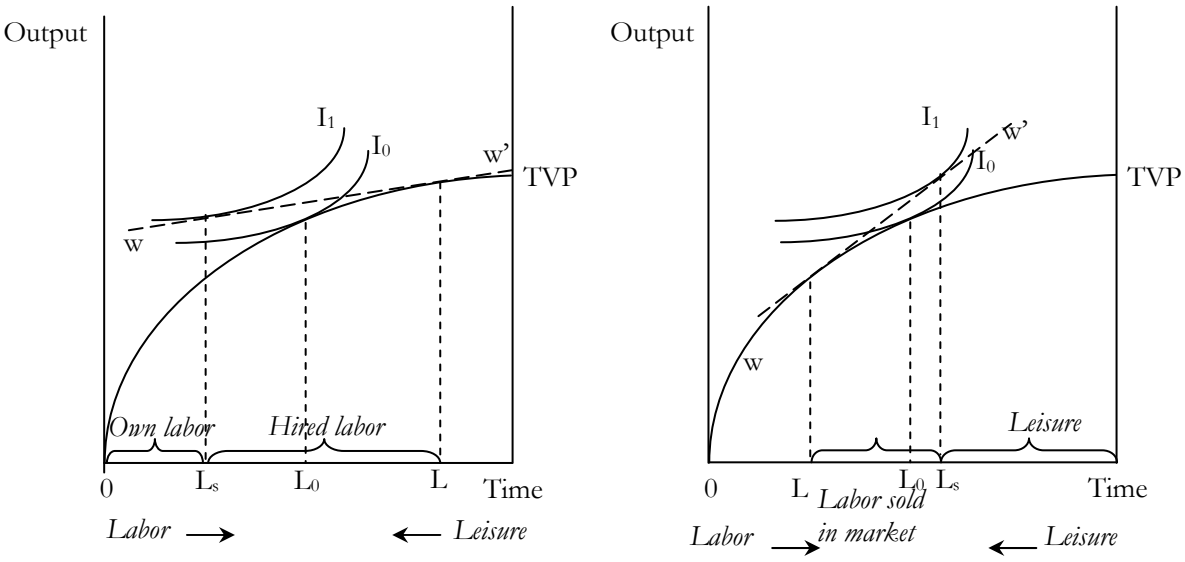

a. Net buyer of labor (relatively low wages) b. Net seller of labor (relatively high wages)

Figure 1 Chayanov model with labor market (Department of Agriculture and Resource Economics - NC State University, 2007)

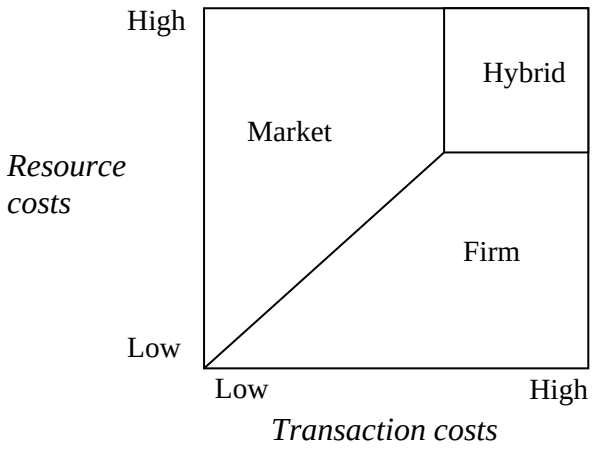

Figure 2 Influence of resource and transaction costs on expected transaction governance mode (adapted from: Rangan et al., 2006)

Table 1 Importance of family farms in Western Europe[1] (2005) and USA[2] agriculture (2007) (Eurostat, 2007; United States Department of Agriculture: National Agricultural Statistics Service, 2009)

	Total number of agricultural holdings	% family farms	% of total agricultural area utilized by family farms	% family labor units in total agriculture labor units	Average farm size (acres)
Belgium	51,540	93.1	91.3	80.4	102
Denmark	51,680	99.2	97.2	63.2	175
France	567,140	75.6	50.9	49.4	185
Germany	389,880	94.0	70.5	69.9	189
Ireland	132,670	99.9	99.5	93.0	99
Italy	1,728,530	98.3	72.4	82.0	40
Portugal	323,920	97.9	76.0	82.8	56
Spain	1,079,420	95.2	61.3	65.4	73
The Netherlands	81,830	92.9	90.1	63.1	81
United Kingdom	286,750	95.6	84.8	68.6	381
United States of America	2,204,792	86.5	69.8	55.9	418

[1] Definition of Agricultural holding within the European context: a single unit both technically and economically, which has single management and which produces agricultural products

[2] Definition of a farm within USA context: a farm is any place from which $1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the census year

Table 2 Different forms of agrarian production

	Labor	Management	Entrepreneurship
Family farm	Family	Family	Family
Family business	Family or hired labor	Family or hired manager	Family shareholders
Industrial farm	Hired labor	Hired manager	Shareholders

Table 3 Proportion of agricultural land farmed by owners (%) in 2000 (European Communities, 2003, 2006; United States Department of Agriculture: National Agricultural Statistics Service, 2009)

Belgium	33
Denmark	75
France	37
Germany	37
Ireland	81
Italy	77
Portugal	74
Spain	73
The Netherlands	72
United Kingdom	66
United States of America[1]	70

[1] refers to data of 2002

*Table 4 Labor share in Belgian agriculture (*10³)(Swinnen et al., 1993;Federal Public Service Economy SMEs Self-employed and Energy, 2006)*

	Wage labor units	Percentage of total labor (%)	Family labor units	Percentage of total labor (%)	Total labor units	(1880= 100%)
1880	230.6	37.1	391.6	62.9	622.2	100.0
1895	262.4	41.1	376.9	58.9	639.3	102.7
1910	217.3	34.0	421.3	66.0	638.6	102.6
1920	120.6	25.6	350.2	74.4	470.8	75.7
1929	95.6	18.9	410.5	81.1	506.1	81.3
1937	77.3	15.8	410.6	84.2	487.9	78.4
1950	43.7	8.9	445.1	91.1	488.8	78.6
1960	22.1	6.6	312.4	93.4	334.5	53.5
1970	11.7	6.1	178.9	94.9	190.6	30.6
1980	5.3	3.9	130.2	96.1	135.5	21.8
1990	5.9	5.7	98.4	94.3	104.3	16.8
2000	7.3	9.3	71.1	90.7	78.4	12.6
2005	14.1	20.1	55.9	79.9	70.0	11.3

Table 5 Changes in general farm characteristics between 1990 and 2005 in West Europe and USA[1] (European Commission, 2008; United States Department of Agriculture: National Agricultural Statistics Service, 2009)

	Number of farms	Total labor input per farm	Average utilized agricultural area per farm	Average economic size of farms
Belgium	-29%	+12%	+56%	+83%
Denmark	-52%	+24%	+100%	+115%
France	-31%	+17%	+62%	+101%
Germany	-33%	+33%	+144%	+140%
Ireland	-15%	-14%	+1%	+9%
Italy	-41%	-1%	+55%	+129%
Portugal	-69%	-6%	+94%	+126%
Spain	+4%	+21%	+45%	+140%
The Netherlands	-32%	+13%	+48%	+68%
United Kingdom	-29%	-4%	+31%	+69%
United States of America	+13%	n.a.[2]	-17%	+37%

[1] The changes in USA refer to the period 1992-2007
[2] n.a.: not available