

The Value of Farming

- How to count for multifunctional production
from Swedish land use

Nils Fagerberg

Essay in Ecological Economics B

(code: WG 1190)

Mälardalen University

October 2002

Supervisor: Birgitta Schwartz

Background

There is an ongoing political debate in Sweden about the future role of agriculture and general land use in the countryside. In the Ministry of Agriculture some specific issues have been emphasised. First, the negative environmental effects caused by agriculture shall be reduced. Secondly, different goods and values produced by agriculture besides food production shall be supported. Third, the countryside in itself has a value which needs maintenance support¹. These policy issues also correspond to the changes that are actually taking place in practice. The new word that is commonly used to describe the diverse outputs from farms is multifunctionality. A common definition of multifunctional production is that it includes all production from land use except for basic production of food and fibre². Following this definition production of food and wood from forests is regarded as basic tasks in farming, but added monetary or non-monetary benefits are seen as multifunctional production. The general trend in Swedish farming is that these new functions in land use are gaining weight compared to the traditional basic tasks, but this change is to some extent hindered by incomplete compensation for the benefits produced. The current change is caused by new trends in the markets, in the politics and in ethical standpoints³. However, compared to most other productive sectors, the agricultural sector is very much influenced by political economic intervention⁴, which heavily steers cost-revenue analysis for individual farmers. It is therefore very important to discuss how the economic system could develop in the agricultural sector, to provide for a sustainable use of the land resources. This is in the end a political issue, but it should be proceeded with a scientific discussion since farming also depends on physical and biological reality.

Problem

How could multifunctional production from Swedish land use, in relation to neo-classical and ecological economic views, be included in the economic system?

Purpose

The purpose of the essay is to analyse current ideas of development in the agricultural sector that is discussed in the Swedish Ministry of Agriculture. As a starting point for analyse I will use the recent ministry publication; “Den nya produktionen – det nya uppdraget” written by Janken Myrdal⁵.

Science and ideology are interconnected, and ideological standpoints of the analyst will affect the analyse⁶. My aim is to describe the main ideas in the report and compare it with ideological thoughts of neo-classic and ecological economy respectively. I will consider analyse and discussion as partly conditional, due to my own ideological view. I write this as a student in the discipline of ecological economics, which to me means an economic system based on thermodynamic laws. The overall aim with such an economic system is to optimise re-use of natural resources, minimise waste, maintain physical base for nature, have a globally fair distribution of resources and have an efficient resources use⁷.

¹ Ds 2001:68. page 50.

² Definition from OECD, cited from Ds 2001:68. page 17.

³ Ds 2001:68. page 43.

⁴ Ds 2001:68. page 27.

⁵ Ds 2001:68. Janken Myrdal is professor in agrarian history at the Swedish University of Agricultural Sciences.

⁶ Söderbaum, P. 2000. page 6.

⁷ These definitions are primarily developed by Nicholas Georgescu-Roegen and Herman Daly, in this case summarised from Friman, E. 1999. page 172.

The essay will mainly focus on the impacts of ethics and ideology on practical land use. Some few trends in agriculture will be selected and analysed according to historical changes, ethical considerations and ideological standpoints, to achieve a pluralistic description of the economy of agriculture. This will in the end lead to a discussion on how a more sustainable and fair economic system could look like.

Multifunctionality

The word multifunctional includes a wide spectrum of issues and it has been used in different ways in politics and science. As a scientific word there are disagreements on the actual meaning. In the following text the definition of OECD, already explained in the background chapter, will be used. Clearly the meaning of multifunctional differs a lot between countries, regions and specific situations depending on ecological, social and cultural contexts. Some functions from land use are more general like “maintaining cultural landscapes”, “protection of bio-diversity”, “protection against pollution” and “protection against green house effect”. Yet others are more specific to regions like “protection against erosion and salinization”. There is also an evident connection to welfare. With rising welfare new issues like “animal care”, landscape for recreation”, “quality of food” and “a living countryside” are getting more important⁸. The majority of the multifunctional issues are public benefits, which are difficult to include on a traditional market. However, since the OECD definition only excludes the production of food and fibre from multifunctionality, it is possible to think of many other side functions from land use that can contribute with direct private benefits to the farmer. Examples of such activities could be food processing and selling at the farm, horse riding or house renting.

Agricultural trends in different contexts

What do the trends in Swedish farming look like? Is the work at the individual farm developing towards more specialisation or towards more diversification? Janken Myrdal has the view that both ways are possible development paths in the future. He makes a comparison with the more diverse subsistence farming activities in Sweden two hundred years ago⁹. At that time only 50% of working hours were spent on crop production and animal husbandry. It was not until the transition to industrial time that working hours became more concentrated to these central activities of farming. Myrdal further writes; *“full-time agriculture during the 20th century might become a relatively short phenomenon in the history of farming. However, the end-varied activities slowly created in our time are not the same as the activities of subsistence farming. It will become an end-varied occupation on a higher level due to more differentiated needs in our society”*⁹.

The future possible trends of farming appear differently depending on which ideological viewpoint that is chosen. To give some brief examples I will elaborate on production and capital use and the issue of human labour versus fossil fuels.

Myrdal is using “Engels law” as a base for discussion of the importance of agricultural production compared to total production¹⁰. The law states that, with increasing costs the relative part of the costs used for food will decrease. The law is based on the demand side of the neo-classical economic model and tells us that less income will be used for buying food the higher income there is per capita. If the same law is expressed in production terms it says,

⁸ Romstad, E., and others. 2000.

⁹ Ds 2001:68. page 19.

¹⁰ Ds 2001:68. page 19.

the higher production per capita of food, the lesser part of the total production in society will be represented by food production. In other words most work and most of the economic activity will take place somewhere else in society than in the agricultural sector.

This view is in many ways contradicted if an ecological economic view is applied. Many ecological economists would say that Engels law will not be applicable in the long run, because it does not separate natural capital and human made capital. They argue that replacing natural capital with human made capital is not in line with sustainable development since it contradicts thermodynamic laws. When comparing the classical factors of production, land, labour and capital, ecological economists tend to focus on the limits of land (or resources). Ecological economists also talk about “weak sustainability” when human capital is increased at the expense of natural capital. “Strong sustainability” is defined as keeping intact both the human made capital and the natural capital. Natural capital can be divided into renewable and non-renewable capital, and agricultural production is somewhere in-between¹¹. The idea of strong sustainability therefore seems to contradict the law of Engels, since agricultural production (which is an example of investment in natural capital) would decrease.

Myrdal further discusses the trend of decreasing amount of labour per output of production. When historical figures are compared it becomes evident how much the efficiency of labour input versus crop output has increased. During the 18th century about 900 labour-days would be required to harvest and process 30000 kg of cereals. In today’s mechanised agriculture the same amount of cereals corresponds to one days work of one person. Myrdal concludes that, *“the ongoing technical development means that the workforce needed to produce “food and fibre” will continue to decrease”*¹².

It is clear that technical development is the explanation for this development. Machines have to a large extent replaced human labour. From an ecological economic point of view it is of importance to remember that human and animal labour has been replaced by mainly energy from fossil fuels. The environmental costs of fossil fuels are only to a small extent included in the costs for the individual farmer and therefore it becomes an external cost for the whole of society. Daly and Cobb explain it this way; *“efficiency requires that we maximise the productivity of the scarcest factor. Which is the scarcest factor over the long run, land (resources), labour, or capital? Labour is reproducible, given resources and food, capital is reproducible, given resources and labour, but resources are a different matter. Some, especially the minerals and fossil fuels...are not reproducible on human time scales. It would seem then that...resources are the scarcest factor”*. They then continue to argue that productivity of labour and capital was increased at the expense of land and resources, due to new technology and policies that maximised the use of resources and at the same time minimised the marginal productivity of the very same resources. Finally they conclude, *“from a long run perspective, minimising the productivity of the scarcest factor is exactly the opposite of what should be done”*¹³.

The energy issue in agriculture is therefore a continuous problem for economic policies. The future trend will depend on which ideology that is applied. It is quite clear, however, that the current economic market system does not support a transition away from dependence of fossil energy in the agricultural sector in Sweden¹⁴.

Income patterns in todays agriculture

¹¹ Friman, E., 1999. page 176.

¹² Ds 2001:68. page 22.

¹³ Daly, H. and Cobb, J. 1994. page 116.

¹⁴ Brorsson, K-Å. and Karlsson, R. 1998. page 144.

In order to understand the economy of farming, it is interesting to know how the average Swedish farmer gets his/her income. Olsson has made the following summary. Between 50 and 60 % of the incomes are from sales of vegetable and animal food production. 15 to 20 % is direct economic compensation, 15 to 20 % is indirect economic compensation and between 5 and 15 % are other private incomes¹⁵. These estimations are difficult to make. One problem is that the majority of Swedish farms are part time farms where at least one member in the household gets income from other employment. Since part-time farms are more abundant than full-time farms, more than two thirds of the incomes are from “outside” activities if all farms would be included in the calculation¹⁶. Economic returns are low for farmers compared with economic activities in other sectors. Therefore, in order to maintain farming activities there are different systems for economic compensation. There are directly paid supports for crop cultivation, pastures, export and so on. Added to this there are invisible support for the farmers through different trade barriers for imported agricultural products to Europe. Swedish agriculture is due to this quite far from a free market situation since at least 30-40 % of the incomes is connected to these different compensations.

These extra incomes for farmers can be explained in different ways. The neo-classical theory of public choice would describe the compensation as a result of pressure groups of well-organised farmers with common economical interests¹⁷. If farmers are seen as one of the largest homogenous categories in the Swedish workforce regarding common interests, it is believed that they are able to steer policy design more in their own favour compared to other groups. The result would be that farmers get more of public funds compared to less organised groups.

An alternative explanation, supported by Myrdal, is that the democratic system on the contrary is capable enough to support a fair distribution of public means. The view is that the democratic system has more dimensions than implied by the public choice theory. The diversity of communication channels and stakeholders ensure that the transition to new systems always remain close to the general opinion of society. According to this view, the economic compensation to farmers only reflects the public benefits that society experience from the farming activities. One could say that the democratic process succeeds in putting a price on the public part of the multifunctional benefits that the farmers produce. Myrdal explains, *“my hypothesis is that the population is paying for something, apart from just food. But it is not clear what this “something” is that is wanted by the population. If that is not clarified the willingness to pay will decrease”*¹⁸.

The limits of the markets

This chapter will mainly deal with the shortcomings of agricultural markets, leaving most other aspects of the market model outside. Some of the new trends in the agricultural sector, which are connected to higher living standards, are easily adopted by the market. When welfare levels rise food products are no longer bought just for its nutrient and energy content. Other qualities in food products of growing importance are health and “luxury” aspects. Farmers adjust their production to these trends since these aspects normally become included in the market prices.

There are also examples of multifunctional production that easily fits into the market model. Horse riding, on-farm selling of ready products and house renting have already been mentioned. Incomes from tourism and recreation are other often discussed possibilities with

¹⁵ Gustav Olsson quoted from Ds 2001:68. page 23.

¹⁶ Ds 2001:68. page 24.

¹⁷ Söderbaum, P. 2000. page 50.

¹⁸ Ds 2001:68. page 28.

several practical options. When needs and wants from society becomes more diversified it is likely that land use practices responds with new ideas in the area of private multifunctional production.

So far, only private benefits (i.e. direct income through market sales) have been discussed in this chapter, and for these issues the market has a managing role for all resources attributed to a monetary value¹⁹. However, the limits of the market become visible when we start focus on issues without a market value. Such non-monetary values are often discussed as external costs and benefits. They are external in the sense that they can not be bought or sold on a free market. One example of an external cost among others is nitrogen leakage from fertilised agricultural fields. This problem causes a cost for society, but only to a small extent for the farmer himself. For the farmer the cost is external as long as he does not have to pay for it. A similar but opposite problem is common for the external benefits produced by farmers. Examples of such public benefits have already been given in the previous chapter “Multifunctionality”.

This is an issue of concern both for neo-classical economists (environmental economists) and ecological economists, but their approach to the problem differs. Environmental economists tend to focus on the pricing of resources. When non-monetary benefits or costs for society are detected, the solution is to estimate a price for the issue to be able to include it in the market. Ecological economists on the contrary try to avoid such money reductionism. Their view is that the forces of economic growth are in itself creating vested interests opposing internalising of external costs. They prefer to emphasise on other means of change in society than just economical means²⁰.

Myrdal writes, “*what is considered as production is determined by ethics, and ethics are creating production*”²¹. Ultimately, what is produced on Swedish farms is decided by ethics and ideology translated into political interventions and market behaviour. Some few issues has so far been touched upon in this literature survey, where the aim has been to show that diverse ideological and practical interests in land use sometimes have difficulties to fit into one common framework, i.e. the present political and economic system. Are there any possibilities to find alternative valuation methods for these very diverse interests?

Alternatives for valuation of multifunctional products

In order to concentrate and simplify this chapter I will only discuss valuation of multifunctional benefits that fits under the description “external benefits”. The term “external benefit” shall be understood from the farmer’s perspective, i.e. a side-product that is not giving direct income from market sales, but still benefits society. Further on my aim is not to fully cover all known valuation possibilities, but to highlight some central and important issues.

Neo-classical economics has monetary valuation as a guiding principle. If something needs to be protected that is done by putting a price on it and including it in market transactions²². For instance, to reduce emissions a tax can be put on the emissions making it costly for the one emitting. This is actually a basic idea for all economics regardless of ideological framework. The easiest way to compare two alternatives is to evaluate them in the same units, and it is of course possible to think of separate alternative systems, but in reality money is the generally accepted unit²³. Therefore, as long as we have free markets as a base in economy, the question

¹⁹ Friman, E., 1999. page 168.

²⁰ Friman, E., 1999. page 180.

²¹ Ds 2001:68. page 55.

²² Friman, E., 1999. page 171.

²³ Ds 2001:68. page 87.

is not if we shall evaluate external values, but rather what we shall evaluate and on what ethical grounds.

Environmental economics tends to neglect ethical issues since the aim is to be objective. There are several methods in use to evaluate externalities, e.g. “willingness to pay” and “willingness to accept”. However, there are criticisms of various kinds to these methods, with perhaps the most valid one pointing at the undemocratic process. For example, the willingness to pay for clean air is depending on income level of the respondent, implying that rich people often are more “willing” than poor people²⁴.

Ecological economists, on the other hand, are using a more subjective approach to the issue. External values are not fixed in any sense, and there is no such thing as a “correct” value. The value of benefits and costs outside the markets is depending on ethical and ideological considerations. The following text is elaborating on this line of thought.

A basic ethical issue is whether evaluation should be done on anthropocentric or biocentric grounds. Myrdal is in favour of an anthropocentric valuation, but he aims at a broadened definition of production in the area of agriculture, to incorporate also the multifunctional production. His definition is, “*A product is something which costs work, which responds to a need even for others and not just the producer, and of which there is scarcity*”²⁵. One of the main achievements with such a definition is that the needs of society as a whole, and not just individual producers and consumers, are in the evaluation. However, it has to be seen as a contribution to the ethical view of production rather than a practical instrument, because remaining is the tricky question of; which activities can be considered as work? What one person thinks of as work might even be looked upon as leisure by another.

In the following chapters Myrdal further discusses if time is a useful measure of work or human contribution as a scarce resource in production. He concludes, “*distribution of time is not a measure of production. A large part of what we are doing we do for our own interests. To include all self-satisfying activities as production would weaken the analytical use of it, since all activities (including sleep) would be counted*”²⁶. Those politicians that argue for an equal citizen salary would probably oppose this argument.

Some scientists are of the opinion that nature in itself has a value even if there are no visible values for humans. This view makes practical monetary valuation even more difficult. Jacobs puts it this way, “*the environment is not a commodity like produced goods and services; as the context within all life occurs, it is part of what constitutes the common human good, and as such (as well as for its intrinsic value) it is the subject of ethical consideration.*”²⁷. Foster points at the impossible task of putting a price on nature in this way, “*our deeper valuing of nature is grounded in “Promethan fear”, a fear of taking too lightly or inconsiderately our relations to a nature which is “independent of us, something not made, and not adequately controlled”. It is of the essence of our deep environmental values that they should resist any approximation to economic value*”²⁸.

Analysis and discussion

The report written by Janken Myrdal contains many new ideas about quantifying and appreciating multifunctional production in agriculture. It is a step in the right direction in

²⁴ Söderbaum, P. 2000. page 82.

²⁵26 Ds 2001:68. page 75.

²⁶ Ds 2001:68. Page 87.

²⁷ Jacobs, M. 1997. page 229.

²⁸ Foster, J. 1997. page 243.

order to meet new demands that scarce resources and human development are causing, but does it cover all the necessary issues?

One could argue that there is still one fundamental concept missing, and that is the issue of sustainable development. The validity of “Engels law” and the future size of agricultural workforce are not properly matched with long-term thermodynamic requirements. The idea of “Engels law” seems to be based on neo-classical economic theories about economic growth. Therefore, if the economy of Sweden instead would be held on a sustainable steady-state level, where investments were made in renewable capital such as agricultural production, then there is little support for the law. “Engels law” is derived from social sciences based on a context of a continuously growing economy, but in the same way as thermodynamic laws question economic growth, thermodynamics will also question the validity of “Engels law”.

The issue of future workforce predictions in agriculture is also connected to thermodynamics. The mechanised methods of today are heavily dependent on oil, and oil is an ending resource. The question is not if, but when the resource will be depleted. The high exergy level in oil makes it hard to replace with other energy resources, and since it is difficult to produce “man-made” or “technological-made” high quality energy it is plausible to believe that there has to be some adjustments in agricultural production methods. One likely change would be that more human labour would be needed to produce the same output.

The idea of Myrdal that public economic support to farming is corresponding to the value of external benefits (exclusive costs) is an attractive and elegant explanation for a complicated web of impacts. However, if the validity of the theory proves strong, would it still be preferable from an ethical point of view? When economic compensation is discussed, the issue of fairness automatically follows as an ethical consideration. Compared to wages in other sectors in Sweden, many would say that it is fair to give producers of agricultural goods and services some compensation, since economic outcome from market sales generally are low. However, in an international comparison, the same support becomes unfair because of harder production conditions in many other countries. Even if the theory is valid, it is still a matter of scale to claim that it is democratic, because democratic influences are weak outside a nationalistic perspective. From an international fairness perspective it could never be fair to have trade barriers as in-direct support to Swedish farmers. The ideal case in a globally fair production would be to cancel all support directly or in-directly connected to products sold on the market. In terms of global ecological and social equity, compensation to farmers should only cover the external benefits. In theory, the optimum economic support, would be equal to the net difference between external benefits (e.g. landscape maintenance) and external costs (e.g. CO₂ emissions caused by use of fossil fuels).

Based on above covered discussion, there are at least two major issues, which will decide the future paths of Swedish land use. First, how will the ethical opinions change? Will there be a change from individuality towards community responsibility? To be able to deal with social and environmental problems in society, a broader ethical viewpoint is required to some extent. In the end, the value of farming will be decided by general ethical opinions of people in society. Secondly, how will the energy issue be solved? Dependence on fossil fuels is almost complete in today’s agriculture. What measures will be taken to prepare for the day when oil becomes very expensive? Structural changes can either be forced upon production in a rather painful way by changes in oil-abundance, or it can slowly be adjusted by foresighted political and economical means.

Ethical support for community issues and concern for renewable energy sources are close to the ideology of ecological economics. In another terminology, the same ideas could be explained as trends towards “strong sustainability”. Agricultural land use, just like other production in other sectors, has to be evaluated according to its compatibility to strong

sustainability. Clearly many basic structural issues need a further discussion because of this. A reduction of non-renewable resources would for instance probably require smaller production units. Smaller production units would further require a different distribution system for the products. It would also require other technological solutions in many respects. The practical issues of debate are almost endless.

However, the scope of this essay is to cover the economical incentives in agricultural change. It has already been emphasised how important it is with economical tools, for shaping the practical results in the field. The present system of economic compensation has many weaknesses in terms of fairness in international trade and long term ecological effects. One obvious measure would be to adjust the economic support to consider these neglected side effects.

This discussion will be ended with some alternative thoughts on how a fair and practically useful compensation to farmers for net external benefits could look like. It builds on the idea that time as a unit has some advantages compared to the money unit in the case of multifunctional production. First it is a resource that is scarce for all humans and therefore all of us try to maximise the output from it. The output might differ from individual to individual, but each individual try to use his/her time in an optimum way. Secondly, time is distributed in fairly equal shares to all humans. It is harder to get power through getting rich in time. Time can not be discounted, it has to be used immediately, and that is actually the prerequisite for an optimum use. Thirdly, if individuals are using the time in an optimum way, one can apply a similar theory as the neo-classical economy does on the "economic man". The economic man is expected to do the best for society, simply by following his own interests. An individual using his/her time as a scarce resource assists the society in a similar way, with one important difference. The economic man can gain power and influence through capital strength, while people paying with their time are equally important in terms of influence. Myrdal disliked the use of time, with the argument that it would be impossible to separate activities of self-interests from interests of common good. However, if it is accepted that our own interests also serve the interests for the society, which consists of autonomous individuals, the argument of Myrdal becomes invalid.

Time further has the advantage of measuring and supporting production input rather than output. That is an advantage when it comes to external benefits in agriculture, since it avoids steering of products and therefore also production methods. If you are compensated according to work input in hours, you are freer to choose what products to produce and how they shall be produced. In that way diverse ideologies and flexible practices are supported in land use methods.

The above given view is of course only valid in relation to some kind of institutional framework. In order to fit into an agricultural situation, it would for instance require that property rights are clearly defined. However, when property rights are clear, the output from a particular land property will mainly be decided by the amount of time spent on cultivating it. If it would be agreed upon that each farmer gets support according to the time they spend on farm-work in relation to other employment or duties, it would be quite easy to calculate a net external benefit value per working hour. Such a calculation could be based on a value of total net external benefits from farming in Sweden and compared with total amount of time spent on farming. In that way each farmer would get the same small compensation per hour for their work, and they would become freer to choose their own methods. If it shall be functional it is of importance that the level of such compensation only contributes for a small part of the incomes in a family. The idea is just to compensate for the unpaid multifunctional production.

All biocentric valuation is left out in this discussion of farmer compensation. This is not to say that it is unimportant but that it perhaps could be better taken care of somewhere else in the economic system. Biocentric valuation is important not only for the interests of other

living beings, but also for future human generations. The interests of future generations can be included in biocentric valuation, since they, just like any animal or plant, are not able to protect their own interests today. Secondly, we can never be sure what ecological values the future generations will be interested in to protect.

Conditional conclusions

- Future multifunctional production from farming will be influenced by ethical choices of citizens and their selected politicians.
- If farming shall develop into more long-term sustainable practices it is important that economic incentives are adjusted to include social and ecological aspects.
- Economic compensation for Swedish farmers should only cover net external benefits, to avoid unfair market competition.
- Economic compensation on production input supports diversity in production methods.
- Time has many advantages as a unit to measure economic compensation to farmers.
- There are values in life, which are impossible to connect with monetary value.

References

Brorsson, K.-Å. och Karlsson, R. 1998. Ekologiskt lantbruk ur ett hållbart och företagsekonomiskt perspektiv. Rapport 122. Inst. för ekonomi. Swedish University of Agricultural Sciences.

Daly, H. and Cobb, J. 1994. For the common good. Redirecting the economy toward community, the environment, and a sustainable future. Boston.

Ds 2001:68. Den nya produktionen – det nya uppdraget. Swedish Ministry of Agriculture.

Foster, J. 1997. Valuing nature? Economics, ethics and environment. London and New York.

Jacobs, M. 1997. Environmental valuation, deliberative democracy and public decision-making institutions, in Foster, J. (eds.) Valuing nature? Economics, ethics and environment. London and New York.

Romstad, E., m.fl. 2000. Multifunctional agriculture. Implications for policy design. Ås. Norway.

Söderbaum, P. 2000. Ecological economics. A Political Economics Approach to Environment and Development. London.