Management
2013
Vol.17, No. 2

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Mechanisms of valuation of public goods on the agricultural land market - considerations in the context of sustainable development[1]

1. Introduction

The paradigm of sustainable agriculture gives rise to two theses which seem particularly inspiring:

1. Along with affluence of the society, a tendency to pay for recreating utilities of the natural resources grows. The question is why?
2. Natural and social capital (in the meaning of public goods) may be substituted with physical capital only to a certain extent, and the degradation of natural and social capital cannot be compensated with the benefits of the physical capital (Jeżowski 2009, p. 72).

The aim of the paper is to answer the question if and how intrinsic land utility in sustainable agriculture model transform into productivity in monetary units. A deductive analysis of above problem has been supported

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1 *Article was written by the project funded by the National Science Centre in Poland allocated on the basis of Decision No DEC-2011/01/D/HS4/01842 from 13.10.2011* and it is a shortened version of a paper presented on the conference „Determinants of Regional Development in Poland: Society, Economy, Environment", 21-22 March 2013, in Staszic State School of Higher Vocational Education in Piła (published in the conference proceedings).

with empirical research which consist in deriving a land rent value from land prices and comparing it with lease fees in the different regions of Poland. Authors formulate a hypothesis that the rise of the agricultural land prices in Poland after 2004 over-proportional than a dynamics of fees results from an attempt of land market at valorizing public goods.

2. Intrinsic utility *versus* productivity of agricultural land

Since the beginning of human civilization, the land has been creating certain utilities which satisfy human needs. They are created without the participation of other production factors and thus are an undeniable gift of nature. In tribal (natural) economies, when agricultural land in modern meaning did not exist, examples of the above utilities were forest fruits, hunted animals, access to water, or firewood. The creative role of the land factor in providing them was dominant over labour and capital resources. Therefore, we can state that a major part of land utilities came into existence spontaneously. With the beginning of land cultivation and domestication of animals, the part attributed to nature diminished insignificantly in favour of the causal force of a man. However, still the increases of plants and animals mass, building materials or living area were mostly acquired without the participation of outlays.

With the development of the commodity-money economy this part of the land factor utility which came into existence without the participation of capital and labour, transformed into „intrinsic productivity" (from the money perspective). The pure product in F. Quesnay's „economic table" is the first attempt at valorizing the intrinsic productivity of land. According to physiocrats, the pure product could not come into existence in any other branch of economy. However, the pure product was intercepted in total by the land owners as the lease fee which conveys the nature of the land rent.

Thus in the peasant economy, a part of the utility attributed to the exclusive effect of the forces of nature was relatively big and partially expressed in the financial productivity of a farm (since it created a part of the product without the participation of outlays). Its significance started to decrease under the conditions of industrialization of agriculture and activation of the law of diminishing marginal utility. In the industrial agriculture, the intrinsic participation of land in the creation of utilities decreased in favour of capital and hired labour. Moreover, the intrinsic financial productivity of land declined to a considerable degree. With time, however, productive functions of agricultural land, subject to the microeconomic optimization and its obligation to satisfy existential needs,

became competitive towards each other. It gave rise to a need to search for a new concept of economic development, i.e. the sustainable development paradigm.

A question arises, to what extent the thesis about the occurrence of „intrinsic land utilities" in the context of the sustainable development paradigm is true. One of the premises of the development of this paradigm is the fact that the natural environment in highly developed countries became almost entirely anthropogenic. Under such conditions, the way of using natural resources has to change as well. It is forced by the new needs and priorities described above. They discover anew the land factor „utilities" which are marginal for the industrial agriculture and give them the nature of public goods which should be paid for by the entire society. Once again, a bigger and bigger part of the land utility comes into existence intrinsically, however, in the conditions of advanced and irreversible accumulation of capital in the well-being of natural resources. Therefore, it can be stated that in the sustainable agriculture many new utilities of the land come into existence intrinsically, i.e. without additional capital and labour outlays, (but not without their causal force in general), and in some cases without increasing the total amount of capital and labour outlays. Since they have the nature of public goods, they are paid from taxes in great measure (in the EU through the CAP programmes)[2], and this payment goes to the owners of the land resource which created them. Therefore, an intrinsic land utility takes a form of a financial product and can be called „intrinsic productivity" which increases the financial productivity of the production structure.

To sum up, agricultural land spontaneously creates a part of utilities which are subject to the market or institutional valorization, as long as intensity of the agricultural economics is limited to some extent[3]. It is, however, conditioned by a specific level of the „primitive" accumulation of capital due to which the economy is at such a stage of evolution where the society declares a demand for the above mentioned utilities.

The „primitive accumulation" should be understood in a broad sense. It concerns technological progress, advancement of urbanization processes, infrastructure development, as well as living standards and already reached level of spatial development, agricultural conditions and agricultural land

2 With the right level of social awareness these utilities can be paid through prices of products and services.

3 The level determines the society's (consumers') demand for given utilities that are subject to evolution in time. Therefore, it is a vague border and every arbitrary attempt at setting it becomes outdated with time.

cultivation. Referring to the example of grasslands, we cannot squander the fact that for many years of cultivation, these grasslands (in today's understanding) were created at all and we cannot allow for a secondary succession of plants (shrublands and woodlots) since in this instance, the essence of land utilities is the ecosystem of grasslands; unless the secondary succession was a conscious choice which would be made to enable the land to create other utilities.

3. Valorization of public goods in land prices and lease fees

The land rent concepts formulated in the history of economic thought show that their assumptions were not adapted to the contemporary realities of agricultural sector. Summing up, the Ricardian theory too strongly believed in the price mechanism; the absolute rent theory assumed that all the values originate in labour; according to the residual rent theory functions of land come down to the location factor; and the neoclassical theory proves that a rent is a result of the market failure (Czyżewski 2010, pp. 227-242). The aim of the modern concept should be to remove these discrepancies and to fill the existing gap in the economics of agriculture. It would help to formulate important recommendations for agricultural policy of the EU, which also undergoes the process of transformation. In highly developed market economies, processes not included in the existing rent theories can be observed. To sum up, it comes down to three phenomena: 1) changes of consumption patterns to more pro-ecological, health-promoting and pro-environmental, which create demand for public goods provided by the land factor; 2) rising efficiency of markets as a result of economic globalization („flows without boarders"), 3) weakening of regulatory role of nation states, and as a result a change of coordination mechanism from the dichotomous system state – market to: market – state – governance structures[4], in which the latter successively takes over the state's role.

The above processes can be defined from the point of view of the final recipient and macroregulators or from the point of view of a supplier of new utilities. In my opinion, the driving force here is the demand side. However, as a result a multifunctional model of agriculture is formed, which supplies public goods

4 Governance structures constitute „economic institutions" at the microeconomic level, defined according to the New Institutional Economics approach as systems of contractual relations between economic entities, coordinating the process of concluding transactions.

as by-products of the agricultural production. A. Vatn includes among them: environmental aspects (landscape, biodiversity, pollution, recreation, cultural heritage, etc.); protection of food supplies; food safety; aspects connected with a rural lifestyle (settlement models, tradition and culture, local economic and social activities) (Vatn 2010).

Scarceness of land and the obligation of consumption of its broadly understood products reveal new needs of consumers. It is impossible to stay indifferent to such a thesis and it is necessary to justify where the new needs that translate into demand come from. If we assume that the Maslov's pyramid of needs is not a universal model of consumer's preferences, and that satisfying basic needs is linked with the necessity of simultaneous response to those from higher levels, there must exist resources that satisfy these needs. Up to a certain point in economic development, these resources are free goods and thus they do not have a price and they do not provide utilities in the meaning of financial product. Therefore, many needs are satisfied imperceptibly which determines their economic non-existence. (*Nota bene,* perhaps this is where the confidence in the versatility of the Maslov's pyramid of needs stems from). The needs are: the taste and health aspects of food, rural landscape, biodiversity of ecosystems, recreation, access to raw materials and other elements of the well-being of rural areas.

On the other hand, the increasing scarceness of land relative to other production factors exacts increase of efficiency of this factor in food production, or in general terms of goods „burdened" with the obligation of consumption. It is possible owing to technical progress which is the key condition for the development of the „industrial model of agriculture". However, technical development still raises the boundaries of the increase of efficiency. Under the market conditions, this process is subject to, inter alia, the criterion of microeconomic efficiency which does not take into consideration the goods of public character. Therefore, consumers get deprived of utilities that previously were free and did not have a price. In this sense, the higher the scarceness of land factor, the more new needs appear, or rather a consumer becomes aware of the existence of needs and utilities which previously were widely accessible.

Land may spontaneously satisfy a significant part of the new needs, i.e. without increasing capital and labour outlays, although the „price" of produced utilities should be returned to the owner (or holder) of the resource in the form of a land rent so that he could „invest it in land", in the sense of the socially desired way of using it.

Land utility[5] is an increasing function of its resource scarceness. From the point of view of the conducted discussion, this regularity is very important since it concerns only the land factor and singles it out at the backdrop of other factors. In practice, it means that the bigger „land pressure" in a given area, the more real benefits it provides – the fact of increasing scarceness of land reveals new and/or larger needs in the economic sense (previously they were satisfied by free goods).

Table 1. The shares of lease fees and land rents in the market prices of 1 ha of utilized agricultural areas (UAA) in Poland (%)

Regions (voivodships)	Avarege rate of change* (2000-2004)	Avarege rate of change (2005-2009)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
SHARES OF LEASE FEES IN THE LAND PRICES (average in Poland)	**0,88**	**0,85**	**9,42**	**9,43**	**8,85**	**6,94**	**5,59**	**3,36**	**3,28**	**3,03**	**2,95**	**2,50**
Average lease fee of UAA in PLN	*0,95*	*1,03*	*451*	*490*	*446*	*399*	*371*	*277*	*304,3*	*368,0*	*453,4*	*426,8*
LAND RENT DERIVED FROM THE LAND PRICES **	**0,88**	**0,98**	**11,79**	**10,68**	**7,32**	**5,78**	**6,92**	**5,23**	**5,26**	**5,5**	**6,09**	**6,13**
Average price of UAA in PLN	*1,09*	*1,21*	*4786*	*5197*	*5042*	*5753*	*6634*	*8244*	*9290*	*12134*	*15388*	*17042*

* a geometric mean of dynamic indexes (previous year=1)
** it means a perpetual rent discounted in the present value of land

Source: Own estimations on the basis of: (GUS 1996-2010a; GUS 1996-2010b; Eurostat)

5 It is a certain mental shortcut since according to the neoclassical economics, a utility is a feature of a product and not of a resource, on the basis of which the demand function is developed. Therefore, it rather concerns the total utility of the land factor products.

It is worth to examine this problem more thoroughly. The development of the market economy is inevitably associated with the following processes: technical progress, industrialization, urbanization and globalization understood as increasing mobility of resources and broadly understood polarization of structures. These processes occur with various intensity, in various places and time. Nonetheless, they have one common feature – they move the land factor to applications outside agriculture and therefore reveal the following consumers' needs, adding the economic dimension to them:

- environmental, in the sense of searching non-degraded natural environment,
- alimentary, in the meaning of increasing demand for food with health-related, taste and energetic values,
- recreational, in the sense of managing free time and recuperation of the labour factor,
- alternative sources of energy[6],
- localization, in the meaning of broadly understood life space,
- cultivation of tradition and „cultural heritage",
- behavioral, in the sense of realization of needs of broadly understood freedom.

Land and well-being inextricably linked with it, continuously produce utilities indispensable to satisfy the needs mentioned above. It happens due to the mere fact of the agricultural land existence and abandoning, at a certain stage, its further transformation into capital and labour products (Gruda, Woś 2008, pp. 5-7). Therefore, as we mentioned, increasing capital and labour outlays is not necessary to produce the listed utilities. However, the condition is to set the limit in the process of intensification and in the inflow of capital and labour linked with it. Thus, the agricultural land market valorizes, above all, its utilities and not services of capital and labour. This is when the land rent is created, whereas the new role of capital and labour is distribution of the land factor utilities for consumers.

Therefore in practice, the land rent pays for certain capital and labour services connected with the described earlier processes of land concentration, recultivation and adjusting the production infrastructure to conditions of the sustainable development. However, these are services falling into the concept of socially adequate „concern for land". Labour and investments in a farm should be remunerated separately. In practice, there appears an evident difficulty in allocating the labour cost in a farm and land rent as well as allocating a part of the land rent which covers the costs of the land factor utilities distribution.

6 Some alternative sources of energy cause negative external effects. Therefore, using them has to be a conscious choice of the society.

It is a market mechanism that decides about a distribution of land rent among land owners and land holders, e.g. leaseholders. In the conditions of sustainable agriculture, if a leaseholder is the one who „takes care" about a land, the adequate part of land rent should be attributed to him since it is recognized by a market mechanism. That regularity is confirmed by the data in the table 1.

In 2005 a significant change in valorisation process is clearly visible. In the preceding period 2000-2004 the lease fees and land rents shares (two last rows of table 1) are almost similar. After accession to the UE market mechanism has realized that agricultural areas deliver also some public goods. This is expressed with a substantial rise of land prices which doesn't influence on the lease fees. According to table 1 the share of lease fees in a land value decreases. There is a question why? As it was predicted above, a market doesn't attributed the hole land rents to the owner of agricultural area but the main part of it is theoretically assigned to leaseholders' (farmers) activities[7]. It stays in accordance with CAP regulations which allot direct payments on behalf of „land users" rather than the land owners. This is a reasonable solution since a „land user" (not a land owner) has to fulfil the *Good Agricultural and Environmental Conditions* (GAECs) and bear essential outlays which entitle to receive subvention from CAP. Thus land rent is accumulated in agricultural area instead of being transferred to other sectors.

4. Conclusions

On the basis of the above deliberations, it is possible to formulate a necessary condition of the sustainable development in agriculture: capital, labour (own and hired) and the land factor utilities must be „fairly" paid for such development to occur. However, two questions arise: what does „fairly" mean and is it a sufficient condition? In my opinion, „fair" capital and labour cost in the capitalist system is determined by the market mechanism. It is not a problem in the case of capital and hired labour. However, the market does not value the own labour remuneration in individual farming. Therefore, its cost should be parity to the market rates in food economy. As for the „fair" value of land rent, relatively the best mechanism should be the agricultural land market, as long as it meets basic conditions of informative efficiency. Is the above condition sufficient for the sustainable development? Yes, if potential chances for social development

7 Assuming that they net incomes correspond with the land rent value derived from land prices.

which are provided by fair remuneration of labour, are used by farmers and if the residual income (i.e. after paying capital and labour) attributed to the land rent is really „invested" in the well-being of agricultural land.

From the point of view of sustainable development, we can paraphrase the motto „social existence determines consciousness" and say that it is „prosperity that determines consciousness"[8]… with time. Long-term prosperity enables development of the institutional sphere in which the above formulated necessary conditions will be sufficient. These processes are nothing new in the economics. They are described by e.g. Kuznets curves, which show that only after exceeding the critical point do the economic, social and environmental goals coincide. As far as the sustainable development theory is concerned, an issue whether the development requires a transformation of human nature, is often raised. I agree with H. Rogall that „ethics of sustainability should not strive to change a man" (Rogall 2010, p. 154) although many researchers of social processes underline the necessity of change of our political culture (in a broad sense), and propagate the ethics of responsibility. Wrong way. The process has to be grassroots and evolutionary. The moment, when there appear benefits of cooperative behaviours „homo oeconomicus" is replaced by „homo cooperativus". With time, economically successful societies develop social institutions (norms and values) which are oriented to thinking in terms of community and satisfying needs. It is a very well rational process. It appears that the societies concentrated solely on individual benefits lose profits resulting from lower transactional costs (Rogall 2010, p. 154), and at a certain stage, building institutions of social cooperation becomes more profitable than incurring these costs. Similar conclusions are supported by the theory of rational choice and game theories. In most cases of so-called decision dilemmas, cooperative solutions appear to be the most profitable (e.g. in „the prisoner's dilemma"). However, in order to make the right decisions, one needs to mature on the basis of gathered experiences (own or of others).

Is the Polish society at this stage of development? Probably not. However, the processes of integration with better developed countries stimulate mentality changes, and in my opinion, paradoxically, this „quality convergence" has a chance to catch up with the quantity convergence. Perhaps this way it will be possible to avoid seemingly inevitable delays in the development of the institutional sphere regarding the economic development of the country.

8 Certainly, prosperity „costs money". It is developed within long-term processes of capital accumulation in the entire economy, and above all in activities outside agriculture. Their analysis, however, exceeds the issues of the hereby paper.

The issue of the „institutional change" as a condition for the sustainable development is not new in the economics and has already been largely operationalized by modern institutional economics within E. Ostrom's theory of managing common property and M. Olson's economic theory of collective action. Many institutions have already implemented basic premises of these concepts, and the question of building institutions supporting sustainable development is not any longer only an enigmatic creation of academic discussions. An example can be the „Protection of Man and the Environment Commission" operating in the German Bundestag, which already in the 90's defined a basic strategy for creating effective structures governing well-being of the natural environment in agriculture. It assumes, inter alia, such solutions as (Hagedorn, Arzt, Peters 2002, pp. 14-19): establishing markets enabling the external effects trade e.g. for marketable pollutant emission quotas; effective allocation of property rights to common resources e.g. in favour of social organizations (Żylicz 1995, pp. 10-11; McKean 1993, p. 5); creating so-called hierarchical structures of governing agricultural productions and environmental resources, in which the role of a coordinator is taken up by e.g. a governing body; propagating contractual integration of e.g. farms management contracts; supporting non-market horizontal linkages; building information systems and networks; developing methods and infrastructures for measuring and monitoring negative and positive external effects related to the well-being of the natural environment; developing procedures for resolving conflicts, dividing costs and benefits, and responsibility for the negative external effects, e.g. through introduction of the *„ecological tax"*(Żylicz 1995, p. 5); supporting pro-ecological innovation and education. Detailed guidelines concerning the above points can be found in the OECD reports.

The sustainable development paradigm seems to be supported by societies of the European Union and by most of the highly developed countries. However, the concepts formulated above are disputable. In an appalling way a Canadian economist, T. Weiss diagnoses mechanisms of the food economy development at a global scale: „with untiring striving for broadening markets and increasing profits, big supranational corporations make farmers more and more dependent on components, and standardize more and more the agricultural production. They contribute to more and more brutal treatment of the increasing population of farm animals and to polluting soil and water, they externalize environmental costs, change dietetic habits, break local links between production and consumption, and lower the value of labour replacing it with technology" (Weis 2011, p. 162). Above all, this

vision concerns the emerging markets, but it is far from stipulations of the sustainable development. In my opinion, these processes can be stopped only by grassroots consumers pressure, and to a small extent by the rhetoric of international institutions. The researches show that the life cycle of food products is relatively the longest and due to that it may resist the unification resulting from globalization processes (Szymański 2001, p. 58). However, the life cycle of utilities of the natural environment well-being (the land factor) may turn out even more resistant, in the sense that the needs connected with it are difficult to be created „artificially" and/or distorted by broadly understood marketing. Simply speaking, as numerous tests concerning pro-environmental technologies show, it is not cost-effective. The global society has to realize that these needs exist and only this way can it „keep a tight rein" on supranational corporations. This moment, however, still remains ahead of us.

Summary

Mechanisms of valuation of public goods on the agricultural land market - considerations in the context of sustainable development

Since the beginning of human civilization, the land has been creating certain utilities which satisfy human needs. When the dangerous side effects of industrial agriculture have occurred intrinsic land utilities are being discovered anew. They have a nature of public goods and constitute a hard core of the sustainable agriculture paradigm. Despite irreversible accumulation of capital in the anthropogenic environment many new utilities of the land come into existence without additional capital and labour outlay. Since they are public goods, they are paid from taxes in great measure. This way an intrinsic land utility takes a form of a financial product and can be called „intrinsic productivity" of land. The aim of the elaboration is to identify the mechanism that make intrinsic land utility transforms into productivity in monetary units. A conducted research consists in deriving a land rent capitalized in land prices and estimating its share in land value in comparison with the share of lease fees in the different regions of Poland in years 2000-2009. In the authors' opinion since accession of Poland to the UE a market valorizes intrinsic utilities of land, whereas the new role of capital and labour is distribution of those utilities for consumers.

Key words: *public goods, agricultural land market, sustainable development, intrinsic land utility.*

Streszczenie

Mechanizmy wyceny dóbr publicznych na rynku ziemi rolniczej - rozważania w kontekście zrównoważonego rozwoju

Od początków cywilizacji człowieka ziemia tworzy samoistnie pewne użyteczności, które zaspokajają jego potrzeby. Od kiedy pojawiły się niebezpieczne efekty uboczne rolnictwa industrialnego ta twórcza rola ziemi jest odkrywana na nowo. Jej użyteczności stają się dobrem publicznym, którego ochrona jest istotą paradygmatu rolnictwa zrównoważonego. Pomimo nieodwracalnej akumulacji kapitału w środowisku antropogenicznym, wiele wspomnianych użyteczności powstaje bez dodatkowych nakładów kapitału i pracy. Jako że są one dobrami publicznymi opłaca się je z podatków. W ten sposób samoistna użyteczność ziemi przybiera formę produktu pieniężnego i może być nazywana „samoistną produktywnością". Celem opracowania jest identyfikacja mechanizmu transformacji użyteczności ziemi w produktywność w wymiarze finansowym. Przeprowadzone badania zakładały oszacowanie rent gruntowych zdyskontowanych w cenach ziemi rolniczej, a następnie określenie ich relacji do wartości ziemi oraz do czynszu dzierżawnego w przekroju województw w Polsce w latach 2000-2009. W opinii autorów od momentu akcesji Polski do UE rynek waloryzuje w cenach samoistne użyteczności ziemi rolniczej, podczas gdy rolą czynników kapitału i pracy jest ich dystrybucja od rolnictwa do konsumenta.

Słowa kluczowe: *dobra publiczne, rynek ziemi rolniczej, rozwój zrównoważony, samoistna produktywność ziemi.*

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