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SUPPORT OF THE LANDSCAPE AMENITY FUNCTION OF AGRICULTURE AND TRADE LIBERALISATION

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Abstract

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Recent agricultural policy and trade discussions have given increasing attention to "multifunctionality", the notion, that agriculture provides multiple outputs that include public goods (such as landscape amenities) as well as privately traded commodities. A frequent point of contention is also whether payment for the provision of non-commodity outputs distorts trade by giving domestic farmers a competitive advantage over foreign competitors. The paper reviews some requirements for environmental policy design and the role of property rights for the justification of the development of compensation programs targeted to landscape protection. The second part of the paper illustrates the possibilities, how to use results of Contingent Valuation (CV) study of landscape amenity benefits of agriculture to prove eligibility for agri-environmental payments in the case of the Protected Landscape Area White Carpathians (Bílé Karpaty). It is documented in the paper, that Contingent Valuation can provide useful information about genuine concern and overall efficiency of compensation programs as well as people's views about alternative ethical ends, besides human well-being, that policy makers should take in consideration.

agriculture, landscape benefits, non-market evaluation, contingent valuation, agro-environmental policy, compensation program, free trade requirements.

Provision of valuable landscapes is one of the most important non-commodity outputs[1] of agriculture, especially when these are representing values linked to cultural heritage and regional identities that are threatened under current market conditions. In general, the potential for a rural area to provide countryside benefits depends on ecological and geographical factors such as presence of species and habitats, the area's capacity to regenerate and generate new habitat, and climatic and geomorphological conditions. However due to the fact that more then half of the total territory of the Czech republic is used by agriculture (54%), the landscape can change significantly over time as a consequence of economic demands and technological innovation in agriculture.

Recent agricultural policy and trade discussions have given increasing attention to "multifunctionality", the notion, that agriculture provides multiple outputs that include public goods (such as landscape amenities) as well as privately traded commodities. The policy significance of the non-commodity landscape amenity outputs can be understood through the concept of

[1] The policy guidelines proposed in the OECD work on multifunctionality of agriculture (OECD, 2001) include landscape, natural habitat and land conservation. OECD does not attempt to establish a comprehensive list for non-commodity outputs.

joint production. Leathers (1991) demonstrated that jointness gives rise to cost complementaries among the outputs, so that producing them separately is more expensive, than producing them together.

Measures to promote agricultural and rural development and the management of the countryside are made subject to a new decentralised programming procedure under the new Rural Development Regulation 1257/99 that forms the basis for a rural development policy. This policy embraces farm and non-farm developments as well as agri-environmental measures and forestry. Considerable discretion is left to the individual member states, which allows taking into account the diversity of rural conditions and circumstances. Moreover, while being co-financed from the CAP Guarantee Fund[2], the rural development policy is horizontal (covering all rural areas) and allows the integration of agri-environmental measures with both farming and non-farming activities (article 33 of the Regulation).

These developments form the background for a future Czech agricultural policy, the primary objective of which is the preservation of a productive agricultural sector in a functioning rural region. Landscape amenity services are public goods, which private markets fail to allocate optimally. The supply of traditional landscape generates external environmental benefits. Public intervention involves direct subsidies based on acreage or on specific action.[3] In addition to a direct payment, the government may encourage provision of non-market services by providing services such as investment in basic infrastructure, help in legal privatisation of access rights for recreational activities at the regional and farm level, coordination between farmers aimed at increasing overall attraction of the region for farm-based tourism. The government should choose the two-policy instruments jointly, taking into account the interactions between their impacts on the welfare of farmers and non-farmers residing in the rural area under consideration.

In accordance with these goals, policies must search for "efficient" solutions, taking account of all costs imposed. This shift of attention within rural areas from agricultural production towards the environment and rural development raises many important issues, which cannot be answered adequately in a single study. In this paper we limit ourselves to the political question of justification of direct agri-environmental payment for the provision of landscape enhancing services under free trade requirements.

The paper first reviews key requirements for environmental policy design and the role of property rights for the justification of the development of compensation programmes targeted to landscape amenity protection.

The aim of the second part is to illustrate how to use Contingent Valuation (CV) technique to assess compatibility of financial support for the provision of landscape enhancing services with free trade requirements in the case of the Protected Landscape Area White Carpathians. CV results were selected according to the theoretical background defined in the first part. It is also documented that CV results can provide useful information about genuine concern and overall efficiency of compensation programmes along with people's views about alternative ethical ends, besides human well-being, that policy makers should take in consideration.

Theoretical background

Under current WTO rules, domestic policy measures may be placed in the Green Box if they have no, or at most minimal, trade-distorting effects or effects on production. They must be provided through a publicly funded government programme not involving transfers from consumers and must not have the effect of providing price support to producers. There arises a challenge for domestic policy-makers to ensure, that designed policy is efficient, compatible with free trade requirements and motivated by genuine concern to improve the overall efficiency of rural resource use.

The choice of policy instrument affects not only the cost-effectiveness criterion but also, and more importantly, the distribution of costs and thus the political acceptability of such policy. The Pareto improvement requires that no one become worse of, hence all losers must be compensated. Changes in rights and duties of agricultural landowners regarding to the provision of landscape amenities require compensations to those, who lose, usually in terms of other rights or subsidies (Faure, Skogh; 2003). Appropriate policy measure targeting the landscape amenity provision is thus compensation programme in the form of Agri-environmental management agreements. A frequent point of contention is also whether payment for the provi-

[2] Regulation 1257/99 also supersedes agri-environmental regulation 2078/92 that allows for environmental cross-compliance conditions for direct payments.

[3] Alongside Agricultural policy support measures, the Government of the Czech Republic adopted the State Nature Conservation and Landscape Protection Programme of the Czech Republic by its decision No. 415 of 17 June, 1998. Protection of the feature of the landscape – protection of identity of cultural landscape according to the Convention on European Landscape.

sion of landscape amenities distorts trade by giving domestic farmers a competitive advantage over foreign competitors.

Theoretical tasks, arising from above mentioned requirements for policy design and evaluation process, I will review in this paper, are:

1. legitimising the incentive mechanism used;
2. providing evidence of genuine concern;
3. measurement of the overall efficiency improvement of the rural resource use.

Legitimising the incentive mechanism used

In order to ensure, that proposed compensation program targeted to landscape amenity protection do not distort trade by giving domestic farmers a competitive advantage over foreign competitors, it is required to demonstrate, that the use of positive incentives (payments) is legitimate and does not represent a contravention of the Polluter Pays Principle of environmental policy. The definition and public perception of property rights over land is crucial in this respect, because it clarifies the landholders' rights and responsibilities for management. Property rights in the rural environment are defined thorough environmental regulation and nationally agreed code of good practice in the Czech Republic. Such legal setting and public perception of property rights determine the "reference level". Payments are appropriate for environmental enhancements clearly beyond this reference level. Public perception of rights and responsibilities over land will also inform about perception of fairness/equity relates to distributional consequences of compensation programme targeted to landscape amenity protection and it's political acceptance.

Providing evidence of the genuine concern

To provide credible evidence of genuine concern of incentive policy mechanism used to stimulate provision of positive externalities, the "evidence of damage test" should be supplemented with an "evidence of demand test" (Latacz-Lohmann; 2001). In case of landscape amenity provision of agriculture, the evidence of the damage represented by sustainability indicators (area of abandoned land or decrease of number of species in the area) should be supplemented by measurement of demand for these services. Direct measurement of demand for public goods such landscape amenity provision is difficult because of market failure to deliver information about the value of external services. There arises a need to employ some of the non-market evaluation technique (Contingent Valuation Technique, Choice Experience Method, Hedonic Price Method) or possibility to use demand indicators (such as level of activity in environmental non-governmental organizations in the area concerned).

Overall efficiency improvement of the rural resource use

In general, economists measure efficiency of resource allocation using criterion of Pareto optimality. Given economy has many possible optimal allocations of rural resources and different starting conditions (notably of income and property rights distribution) will give different Pareto optima. Choosing between them necessarily requires some value judgments.

Criteria are needed to judge the desirability of different states of the economy that imply gains for some groups but losses for others. Such criteria are an expression of the *social welfare function* (Sterner; 2003). In particular, it is almost always assumed that the Pareto principle must not be violated in terms of individual utilities. Environmental quality may then affect social welfare, but only indirectly thought the individual utility. According Johanson-Stenman (2002) the standard model in economics does not distinguish between welfare and preferences, but uses utility to represent both, and it is also implicitly assumed that there is nothing intrinsically important besides individual (human) utility. Antropocentric social welfare function can be written as:

$$W = w(u^1, u^2, \ldots, u^n);$$
$$W = w(u^1(x^1, z), u^2(x^2, z), \ldots, u^n(x^n, z));$$

where W is social welfare; u^i is utility for individual i; x^i is i´s consumption of a vector of private goods, and where z is a vector of public goods, including various aspect of environmental quality.

However Hanley (1997), Russel et al (1999), and others found that many people seem to value also nature in itself and more general social welfare function thus can be written as follows:

$$W = w(u^1(x^1, z), u^2(x^2, z), \ldots, u^n(x^n, z), z).$$

Although such efficiency criterion is very difficult to make operational in practical policy evaluation, because of difficulties with the measurement of non-market benefits, it is not superfluous. The second part of the paper will deliver some empirical evidence derived from application of CV study of landscape amenities of agriculture in the Protected Landscape Area White Carpathians.

The role of property rights for the justification of the development of compensation programmes targeted to landscape amenity protection

Agricultural legislation connects rights to land with duties serving the protection of larger benefits originating from the land. The legal framework for deal-

ing with agricultural land was created by adoption of the Act on the Protection of Agricultural Land (Act. No 334/1992 Coll., revised version Act. No 231/1999 Coll.). According this Act:

"owner/user is obliged to use "proper" (not polluting) farming practices to maintain or improve soil quality and not to change land use (arable, permanent grass ...) without approval of agricultural land protection authority."

The definition of "proper" farming practices was not included and thus such requirement was very hard to enforce.

However this law represents *legal restriction of property rights* over land placed by society. Moreover all land as all activities related to nature in PLAs are subjected to *environmental legislation* (Act No 114/1992 Coll., on Nature and Landscape Protection) and the management plan of the local administration of protected landscape area. The direct regulations for the PLA White Carpathians include restrictions on the application of fertilizers and chemicals; restrictions on land use (meadows cannot be converted into arable land); the requirement of grassland management is not explicitly mentioned in the legislation, however it can be seen as implicitly included in above-mentioned "proper" farming practices. These legal reforms have connected land rights with duties to maintain land attributes of a common-pool resource nature.

Regulations in protected areas were initially taken of property rights without any compensation. Property rights have become the site of political negotiations between governments represented way the administration of the Protected Landscape Area. Landowners claim that they hold extensive rights to the land and its attributes. They justify their claims with a vision of land restitution that does not only return land to its original owners but also guarantees them the same rights as they enjoyed historically. They therefore argue that owners should be compensated, if the government imposes restrictions on land use. The central government and local administration of the Protected Landscape Area profess to a different notion of property rights. Their notion presumes that landowners are subject to certain duties in land management for public interests. Land use needs to meet certain environmental criteria, without further compensations. The notion is reflected in recent regulations for the protection of landscape diversity that assume the government's right to outlaw certain land uses perceived as detrimental to the public interest in nature conservation (Sikor; 2002).

According to Slangen (2001) a large extent of uncompensated regulations on resources would result in their incomplete or inefficient use. In the case of the PLA White Carpathians, the result of uncompensated regulations was not only the loss of income, but also the incomplete use (land abandonment of 620 ha), which reduced the provision of valuable landscape at early 1990. It was obvious, that allocating the rights over public good, provided by certain type of land management, to the public failed to deliver socially optimal level of this environmental services. The adoption of multifunctional model of agriculture during the preparation of the Czech Republic to join EU has shifted the presumption of rights to land to presumption of right to commercial farming within the policy-making process. There were introduced compensation programmes targeted to landscape protection. First was introduced by Ministry of Environment and administered by the PLA administration. Later launched agricultural legislation (Agricultural Act No 252/1997 Coll.), and following decrees on multifunctionality of agriculture; particularly the Decree 505/2000 recognizes compensations to regulatory taking off in landscape protected areas (as specified in Act No 114/92 Coll. and Management Plan of PLA). This agricultural legislation recognizes compensations for "voluntary" provision of landscape in less favoured areas. As a result of harmonization to the EU legislation (EC 1257/1999) the Agro-environmental program for the PLA White Carpathians has been introduced, which recognizes compensations for "voluntary giving up" certain property rights (by adoption of good agricultural practices and provision of services beyond reference level) in favour of environmentally concerned society.

The key question in designing and evaluation of this compensation programs is what society understands by "provision of landscape". As the landscape of the PLA White Carpathians is cultural one, its state will be always dependent on the values and preferences of current local, national and global population and compensations for provision of landscape services will be dependent on the public perception of property rights.

Contingent Valuation – study area, methodology and main objectives

The protected area of the White Carpathians (715 km^2) is located in the South Eastern part of Czech Republic along the border of Slovakia. Although from the private viewpoint farming is at the margin of economic performance in this area, it still has an important role from the social viewpoint in terms of ration of actively farmed area over the total territory of the PLA (49%). Maintenance and enhancement of landscape amenities by farmers are considered essential for the environmental protection, quality of life in this region, protection of cultural heritage and prosperity of tourism. It includes activities of farmers such as mowing grassland (important for protection of the species diversity such as orchids),

care for rural trail along rivers and brooks, care for pastures, preservation of species through diversified arrangement of groups of trees, and brushwood and maintaining of typical settlements surrounded by fields and orchards. Through these activities the agricultural sector provides landscape amenity benefits for society, and proposed compensation programmes should create incentives for its provision.

The logic of Contingent Valuation (CV) studies is that of inferring the distribution of economic benefits in a target population from statements of Willingness To Pay (WTP) elicited from a random sample of respondents (see also Hanley, Shogren, White; 1997). The information on the expected landscape amenity changes as a result of the "policy-on" situation is complex. By using the Information Pack, however, a large amount of information of these expected changes were conveyed to respondents in an easily understandable way and the visualisation of landscape changes was provided.

The CVM survey instrument (questionnaire) was produced after extensive pre-testing. The questionnaire was administered in two forms (face-to-face interviewing and personal collection). Trained researchers from March to December 2003 carried out all interviews and data collection. The three target population were general public, residents of the PLA White Carpathians and visitors[4]. Respondents were chosen randomly.

The total sample size was 1441 useful responses from 1 750. Of these, 34% were in person interviews and 64% personal distribution and collection of questionnaires. Some 77,31% respondents were from the general public, 14,37% from residents and 8,33% from visitors. Regarding awareness of PLA White Carpathians and taking the sample as a whole, 41,77% do not know this landscape, 58,22% of respondents are familiar with the landscape of this area, of which 73,06% (i.e. 42,53% of the total sample) had either visited or lived in area.[5] If residents and visitors are excluded, then these figures change to 54,03%, 45,96%, and 55,85% (25,67%) respectively. The sample median income bracket is 25 000 CZK per month per household with median 4 persons in the household and the median age group is 30 - 35 years.

Objectives of data analysis here are investigation of:

1. property rights over land and their perception in terms of the financial responsibility for the landscape amenity provision (target subgroups of the general public and residents);
2. existence of the genuine concern for the provision of landscape amenity services by agriculture and the perception of intrinsic values of the agricultural landscape (target subgroups of the general public and residents);
3. evaluation of landscape amenity benefits of agriculture in the study area (target group of South Moravian population – total sample).

Open Ended CV results and discussion

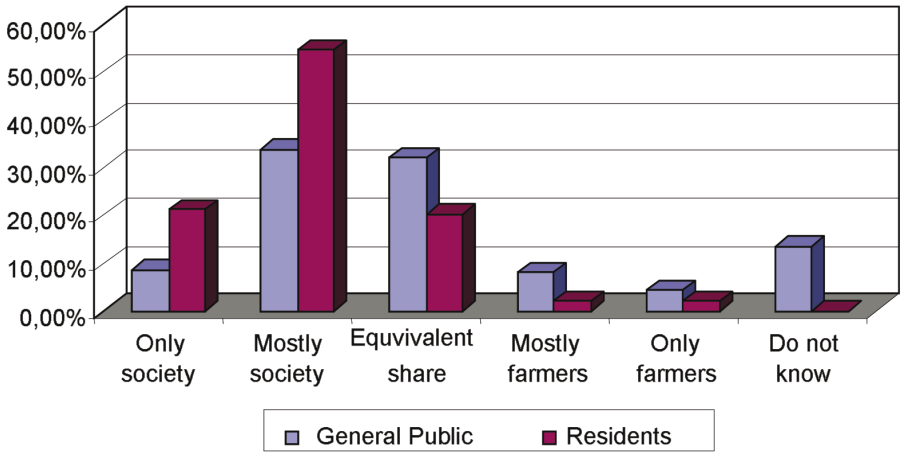
Results CV data analysis can be summarised according survey objectives as follows:

1. Property rights over land and their perception in terms of the financial responsibility for the landscape amenity provision

The CV investigation of the property rights perception in terms of financial responsibility for landscape amenity provision has shown that 82,32% of respondents from the general public and 98,07% of residents consider any type of government participation on financial costs of landscape enhancing services as essential. Figure 1 shows the comparison of preferences for the different levels of the state participation for defined subgroups of respondents.

[4] Sub-groups of target population - general public, residents and visitors – were chosen by reason of different structure of estimated Total Economic Value (TEV) of landscape amenity benefits which is not relevant for the purposes of this paper. The sample size was determined by the target population, 95% confidence interval and open-ended CV format according to CV methodology.

[5] By using the Information Pack a large amount of information about PLA White Carpathians and expected landscape changes were conveyed to respondents in an easily understandable way to minimize information bias.



1: *Perception of the financial responsibility for the landscape amenity provision*

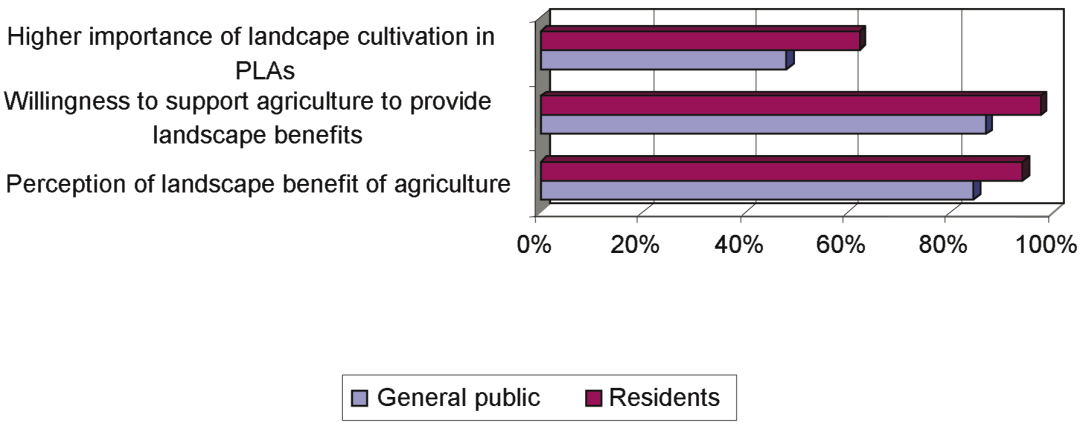
2. Existence of the genuine concern for the provision of landscape amenity services by agriculture and the perception of intrinsic value

For the target groups general public and residents, respondents were asked questions investigating consensus among them regarding the perception of the role of farmers as a providers of the landscape enhancing services, the willingness to support agriculture to provide landscape cultivating services and the perception of higher importance of landscape cultivation in protected landscape areas. The comparison of levels of consensus regarding defined three issues is summarized in the Figure 2.

The results in the Figure 2 show the existence of significant consensus among respondents from both target groups that agriculture plays an important role in the provision of landscape benefits and farmers should be supported to provide landscape-enhancing services. Lower level of consensus among respondents was observed in the opinion that landscape cultivation in protected landscape areas is more important than in other areas. It can indicate increasing demand for landscape services in the Czech Republic, but there is a need of further research to make any sound conclusion.

Intrinsic value of landscape was investigated as a follow-up question after the WTP question and results show that this value is perceived by 92,2% of respondents, who stated it as part of perceived value of landscape amenities.

This can be, together with WTP results, interpreted as a quantitative proof of genuine concern for compensation program targeted to landscape amenity protection.



2: *Assessment of the consensus among general public and residents regarding to the perceived importance and the willingness to support agriculture for landscape cultivation*

3. Evaluation of landscape amenity benefits of agriculture in the PLA White Carpathians

Despite of the difficulties associated with Contingent Valuation surveys and aggregation processes, it seems obvious, that there is a positive WTP for the provision of agricultural-landscape cultivating services in PLA White Carpathians 262 CZK per person per year (288 CZK when respondents with protest or negative WTP are excluded). WTP was compared according to whether the respondent was a member of the general public, resident or visitor (Table I).

This table shows that general public of PLA White Carpathians value the landscape benefits of agriculture more highly (268 CZK/person/year) than residents (246 CZK/person/year) and visitors (235 CZK/person/year), but that the later two groups still place only slightly lower value on landscape benefit services. However after protest and negative bids exclusion, the results show that residents perceive the highest value (292 CZK/person/year). The most common reason for protest bids of residents (protest level of 12,56%), but also for the sample as a whole, was that they do not believe, that their money will be used for stated purpose. It can indicate the need to ensure the transparency of proposed policy programmes.

I: *WTP data analysis results*

VARIABLE	UNIT	GEN. PUBL.	RESIDENTS	VISITORS	TOTAL
n	Resp.	1114	207	120	1441
WTP > 0	%	55,57%	53,62%	93,33%	58,43%
WTP = 0	%	36,36%	30,43%	1,67%	32,62%
WTP < 0	%	2,06%	3,38%	0,83%	2,15%
Protest	%	6,01%	12,56%	4,17%	6,80%
n*	Resp.	1047	181	115	1312
MEAN (n)	CZK/p/year	268,17	245,83	235,18	262,21
MEAN (n*)	CZK/p/year	285,33	292,45	247,55	287,99
MEAN (WTP)	CZK/p/year	482,62	458,44	251,97	448,75

n* - shows the total of genuine zeros plus positive WTP bids
1 € = 31,30 CZK

As the share of respondents with a positive WTP is 58,3%, the protest level is relatively low 6,8% and the share of negative WTP bidders is only 2,6% we can conclude, that policy gainers should be able to fully compensate losers and still remain better of than without it. An agro-environmental compensation program targeted to landscape enhancing services thus can pass the test on whether the particular policy leads to a potential Pareto improvement.

Conclusion

Provision of valuable landscapes is one of the most important functions of agriculture. The supply of traditional landscape generates external environmental benefits for which farmers receive little if any remuneration. Under these conditions, farmers have no stimuli to deliver socially optimal level of landscape enhancing services.

A number of policy mechanisms can be used to redress such agri-environmental problems and to reduce imbalances between agricultural policies and environmental objectives. Optimal agri-environmental policy should be efficient, compatible with free trade requirements and motivated by genuine concern to improve overall efficiency of rural resource use. In order to be considered for inclusion in the Green Box even if they have more than minimal impact on production and trade, domestic policies should meet following criteria, which should ensure that only "trade correcting" measures can be approved:

- evidence, that measures target problems of genuine concern;
- maximisation of environmental, or more generally, "multifuncionality gain" while avoiding excessive costs to the trading system;
- assessing of distribution of benefits and costs.

In this paper it is argued that in case of compensation programmes targeted to landscape amenity provision, most economic relations and variables are very difficult to quantify, but they steel should be consi-

dered to be of practical importance for decision-making and proving of eligibility to be included in the Green Box. Employment of CVM study for purposes of policy evaluation, as it was empirically documented in the case study of PLA White Carpathians, can provide useful quantitative but also qualitative information. As the share of respondents with a positive WTP is 58,3%, the protest level is relatively low 6,8% and the share of negative WTP bidders is only 2,6% we can conclude, that policy gainers should be able to fully compensate losers and still remain better of than without it. An agro-environmental compensation program targeted to landscape enhancing services thus can pass the test on whether the particular policy leads to a potential Pareto improvement. The relevance of the order of magnitude can be expressed by comparing aggregated WTP with actual levels of agricultural subsidies in the future research.

The answer for the last question: Should an intrinsic value of environmental resources influence political decisions? is not easy to resolve. However if most people (92,2% of respondents) perceive the value of landscape per se in addition to their own welfare, government should also do so.

SOUHRN

Podpora krajinotvorné funkce zemědělství a liberalizace trhu

V rámci modelu multifunkčního zemědělství je krajinotvorná funkce považována za jednu z nejvýznamnějších mimoprodukčních funkcí zemědělství. Krajinotvorné služby zemědělství obecně představují vytváření a udržování široké škály vizuálních atributů venkovské krajiny. Za krajinotvorný přínos je považována hodnota krajinotvorných služeb, které zemědělec poskytuje nad úroveň, která je společností očekávána a stanovena jako referenční.

Politický problém narůstá proto, že zatímco existuje trh pro komodity, chybí trh pro krajinné přínosy zemědělství. Krajinná hodnota se nepromítá do rozhodování o způsobu využití půdy a dochází k neefektivní alokaci tohoto vzácného přírodního zdroje. Aby bylo možno vytvářet stimuly pro optimální způsob využití půdy v zemědělství prostřednictvím státních zásahů založených na internalizaci těchto externích krajinotvorných přínosů zemědělství, je nezbytné tyto přínosy kvantifikovat. Zároveň je nezbytné zajistit, aby zvolené nástroje odpovídaly požadavkům volného trhu.

Na základě výše uvedených skutečností lze identifikovat klíčová kritéria pro formování optimální strategie podpory poskytování netržních environmentálních služeb zemědělství kompatibilní s požadavky WTO (World Trade Organization).

- legitimnosti kompenzací za poskytování krajinotvorných přínosů;
- prokázání veřejného zájmu;
- identifikace zvýšení celkové efektivnosti využití venkovských zdrojů.

Cílem druhé části příspěvku bylo analyzovat roli vlastnických práv pro zdůvodnění implementace kompenzačních programů a dokumentovat způsob a možnosti využití metody kontingentního hodnocení pro účely posouzení kompatibility podpory krajinotvorné funkce zemědělství s požadavky volného trhu. Na základě výsledků aplikace metody kontingentního hodnocení krajinotvorných přínosů zemědělství v CHKO Bílé Karpaty lze prokázat, že krajinotvorná funkce zemědělství je veřejností ČR pozitivně vnímána. Existuje konsensus v názoru, že by zemědělci měli být za poskytování krajinotvorných služeb kompenzováni. I přes diskutované problémy spojené s aplikací metody kontingentního hodnocení lze konstatovat, že jednotlivci jsou průměrně ochotni přispívat na údržbu kulturní krajiny CHKO Bílé Karpaty dodatečnou částkou 262–288 Kč/os/rok. S využitím Kaldorova kompenzačního testu je možno dokumentovat, že implementace kompenzačních programů v CHKO Bílé Karpaty je Pareto efektivní a podle pravidel WTO přijatelná. Analýza preferencí cílové skupiny respondentů rovněž prokázala, že 92,2 % respondentů vnímá kromě svého blahobytu také vnitřní hodnotu životního prostředí. Tato hodnota by proto měla být v procesu tvorby politických nástrojů rovněž zohledněna.

multifunkční zemědělství, krajinotvorná funkce, požadavky volného trhu, kontingentní hodnocení, netržní evaluace

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