

Land consolidation as Central Europe's panacea reassessed

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SUMMARY

After 1990, the year that marked the collapse of socialism in the former Eastern Block, the land of the kolchozes and sovchozes was given back to the people for reasons of historical justice. As a consequence, however, land was subdivided into many small units. This land fragmentation impedes the emergence of a competitive new farming structure. In the light of joining the European Union, this problem has become a topical issue. The question is what policy instruments are suitable.

Many believe that land consolidation, an instrument that has achieved considerable improvements in the agricultural structure of Western European countries, is the key solution. This assumption is put through the test in five years of research that supports this paper. It analyses the exact nature of land fragmentation in Central Europe, which is then confronted with the targets and prerequisites of fragmentation-reducing instruments.

The main conclusion is that Western European instruments can be effective for reducing Central European land fragmentation, but without a leading role for land consolidation on the short term.

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1 INTRODUCTION

Since the former Eastern Block abolished socialism, the reports of a bad structure in agricultural land use have attracted experts from abroad. The region, that by then was renamed Central Europe, indeed coped with profound problems, but the attraction to foreign experts may have been aggravated by cadastral and agricultural agencies that faced a declining stock of work.

Furthermore, the enlargement of the European Union made the agricultural problems quite urgent. Ten Central European countries attained the candidate status in 1994-95. Poland, the Czech Republic, Hungary and Slovenia have been involved in accession negotiations since 1998 and EU membership was a fact early 2004. With Slovakia, Romania and Bulgaria, negotiations have started in the year 2000. Enlargement resulted in 100 million new consumers, a 50 percent farming-land expansion and a doubling of the agricultural labour force.

The enlargement is a challenge for the EU administrative structure, for which enlargement is expected to be seriously jeopardising decision-making (see Senior Nello and Smith, 1998), but especially for maintaining the balance within the Union. The accessing population has an average purchasing power of roughly one third of that of the EU-15 member states. The average GDP per capita in the candidate countries is approximately 40% of the Community average (see Table 1). Over one-third of the population would live in countries with an income per head below 90% of the Union average – the current threshold for eligibility for aid under the Cohesion Fund. In the present EU-15, this category covers one-sixth of the population.

The imbalance may not only result in social tensions but, regarding the structural problems in agriculture, the costs of the Structural Funds may explode. Several authors (Courchene *et al*, 1993; Grabbe and Hughes, 1998; Brenton and Gross, 1993) suggest an increase in expenditures up to half the total 1999 EU budget (84 billion ECU) in case of all ten applicants entering. Thus, the main recipients of the structural funds in the former EU15 must accept the reallocation of part of the transfers to the Central European countries.

Country	GDP per capita ¹	Unemployment rate	Country	GDP per capita*	Unemployment rate
Bulgaria	22	17	Slovakia	49	16
Latvia	28	14	Hungary	49	7
Romania	28	6	Czech Republic	60	9
Lithuania	31	10	Slovenia	69	7
Poland	36	12	Cyprus	79	3
Estonia	37	12	Malta	n.d.	5

Table 1: Two economic indicators in 12 candidate countries: Gross Domestic Product per capita and unemployment rates. ¹ levels of 1998; EU15=100%. Source: Eurostat.

This paper focuses on whether land consolidation provides a suitable solution to the agricultural problems in Central European countries. By some, this suitability was taken as a fact. Like the FAO, that published a survey on this specific topic around the turn of the millennium and co-organised a special seminar on Central European fragmentation and the prospects for land consolidation in Munich, early 2002. The seminar resulted in the 'Munich Statement', in which the congregated experts from all over Europe laid down guidelines for land consolidation activities.

The FAO seemingly automatically assumed land consolidation to be the right instrument for the job, as many others do. Land consolidation at times is treated as a panacea for all possible rural problems. This paper argues that this presumption is incorrect and that the connection between agricultural problems and solutions must be handled with care.

2 THE CENTRAL EUROPEAN SITUATION

Let us first get an overview of the nature of land fragmentation throughout Central Europe, and you will find that fragmentation profiles are quite diverse indeed. Part of this variety can be traced back to historical facts, which prove to be indispensable for an analysis on Central Europe. Not only does history tell us how the present situation emerged, it can also be crucial for finding a suitable solution. The history of rights on land as well as the use of land reveals the region's cultural characteristics with respect to land tenure. These characteristics will affect the way land is treated in the future.

The first subsection elaborates on how land tenure was perceived and treated under socialism. Then we turn to the conversion of the socialist concept into private property, in terms of the mechanisms that were at hand, and the choices that were made among these mechanisms. The concluding two subsections provide data on land fragmentation in the various Central European countries, and information on Central European initiatives on reducing fragmentation.

2.1 Land tenure under socialism

2.1.1 Pre-1990 production units

Instead of disturbing a stable situation, the implementation of socialist ideology after World War II in the Eastern half of Europe to some countries in fact represented prolongation of an existing process of continuous remodelling land ownership. It did however isolate it from Western Europe. From then on, the Western part would continue to be capitalist market economies, while the Eastern European countries would choose the Marxist principles as their state model. All civilians should be equal. Individual ownership was to be eliminated as much as possible.

Land under socialism was regarded 'an asset that belonged to the community and as such it should not be in private hands. The acquisition by a few, fortunate landowners of the value which society as a whole has endowed the land with is unjustified. In fact it is an expropriation of public wealth for private gain' (Dawson, 1984, p. 191).

As a consequence of socialist policy, private ownership as well as private revenues had to be replaced by communal farms that would allow an equal distribution of wealth. This goal concretely meant establishing large agricultural production units in which the total group of workers would supply the labour together and thereafter would equally divide the revenues of

their work. The management in theory would be communal as well, through democratic structures as elected boards and general assemblies. But in practice, farm management had an undesirable top-down inclination and it was servant to the planned economy.

The large-scale production units came in two types: collective farms (*kolkhozes*) and state farms (*sovkhazes*). They were two solutions for the problem how to establish these large communal production units. From the socialist's point of view, the land would be best entirely under state control. In order to achieve this, the state could buy the land from private owners, but more often pressure was used to make owners sell (legally speaking a 'voluntary' transaction but in fact without having any other choice and typically for prices well below market levels). And even straightforward expropriation was applied. So, in the case of state farms, all rights to land were taken away from the original owners.

The establishment of collectives (or co-operatives) involved transferring only part of the rights to land from the owners to the collective; the right to use and the right to alienate. The actual ownership titles in principle remained with the members. The separate parcels were physically merged in massive tracks of land that obscured the legal patchwork underneath. Leaving the collective was allowed but could involve important disadvantages, like being assigned a less productive parcel than originally brought in.

Farm workers in collective farms were remunerated at the end of the year with a return on their inputs, based on the performance of the collective farm. Collective farms enjoyed somewhat more autonomy than state farms in their decisions. In state farms all assets, including land, were owned by the state and farm workers were like employees in any other firm and received fixed wages and social security benefits. However, over time, collective farm workers increasingly received the same social benefits as state farm workers.

Besides the collective farms, where the actual production took place, in all countries small plots for the workers were allowed. They did not represent an official economic sector, but they were indeed essential to the system since they prevented starvation of the rural workers that lived under conditions of low wages, shortages and poor distribution. In addition, they provided an increasing share of the fresh food supply (especially vegetables and fruits; see Juhasz, 1991), were used by the collective management to rent out labour intensive activities, and even supplied urban relatives of villagers (Creed, 1999).

These three production units were in fact three degrees of government regulation of land tenure, which varied in their proportions throughout the region (see Table 2). State farms represented fully erasing private interests and transferring all control to the state. In collectives, only part of the rights on land was transferred, whereas ownership stayed in place as well as (regulated) freedom of choice. There was no interference in rights on land on the private plots, but state control in up- and downstream sectors and land markets blocked viable individual farming on these plots.

	<i>Private</i>	<i>Collective</i>	<i>State</i>
<i>Bulgaria</i>	10.0	78.4	21.1
<i>Czechoslovakia</i>	6.1	63.5	30.4
<i>Hungary</i>	13.7	71.4	14.9
<i>Romania</i>	15.6	54.7	28.9
<i>Poland</i>	78.0	3.6	18.4

Table 2: Importance of organisational forms in Central European agriculture in 1987 (in percentage of total agricultural land. Source: Swinnen, et al, 1997)

2.1.2 Widespread misconceptions

Although the socialist logic of equal distribution of wealth is commonly known, a number of persistent misconceptions have emerged among outsiders about land under socialism. Four of them are presented here: (1) all private land ownership was erased after 1945, (2) throughout Central Europe, collectivised agriculture was uniform, (3) collective agriculture was a failure, and (4) suppression of private land tenure meant eliminating any private activity in agriculture.

As for the first misconception, the adoption of socialism did not change agriculture overnight, nor did it erase private land tenure. It was a 'continuous redistribution and redefinition of property rights during the socialist era' and it differed in each country (Brooks, 1993). In most countries in Central and Eastern Europe land was not nationalised. Many families retained title to land for a number of years after collectivisation, and some never relinquished title even though land was collectively managed.

Meurs (1999) extensively discusses misconceptions 2 and 3 about collectivised agriculture: that the process can be characterised as the global application of a single, Soviet-defined model of collective agriculture, and that the experience should be understood as an unqualified failure. As for the fixed model, although socialist states did legitimise their agricultural policies by referring to Marxist principles and the Soviet model, there was a strong influence of local history, geography and political conditions. Economic considerations, for instance, went beyond simply raising agricultural productivity and incomes. They might also comprise mobilising labour from the countryside for industrial labour. In a political sense, collective farms facilitated the control of opposition, and pressure from Soviet Union in cases was an incentive.

As a result of the varying weight of each consideration, the collectivisation proceeded in quite different ways, on different timetables and with different consequences.

Like practical implementations described above, the success or failure of collectivisation (misconception 3) varied regionally. From an economic theoretical perspective, collective farming has advantages indeed. A system whereby landowners hire workers or vice versa offers flexibility. Allocation of resources and changes in operating structure can take place in the most economically efficient way (Currie, 1981). Pryor (1992) shows that in the 1970s and 1980s, agricultural output grows at an equal rate as in non-socialist countries. The factor productivity, however, generally grew at a slower rate in socialist agriculture.

This leads to the conclusion that the eventual collapse of socialism was not simply an answer to the productivity problems in agriculture. Creed (1998) refers to the holistic integration of political, economic and social structures. This integration forced the state to constantly balance potentially contradictory demands. As a result, functions that seemed problematic in one area were often useful, even necessary in another. For nearly every problem or failure within the socialist system there were connections that rendered the resulting difficulties useful in another context, so problems were not only tolerated by the sector but sometimes even accommodated.

The last misconception to be redirected here is the complete absence of private activity in collective agriculture. The socialist planners were not blind for the advantages private farming had, at least in parts of agriculture. The Hungarian system eventually evolved into a symbiosis between the large collective farms and the private plots. Raising cattle, for example, was outsourced to privates.

2.2 Variety in privatisation mechanisms

The iron curtain lasted for four decades. Around 1989 the Marxist system collapsed under the pressure of the discontented population. The reformers wanted a Western-model democratic economy, based on private entrepreneurial structures with profit maximisation as the keyword. The economy had to be privatised; state companies had to be commercially managed; means of production had to be in private hands again.

So, the early 1990s brought Central Europe a transition from a centrally planned to a market economy, which involved privatising agricultural land. Privatisation means shifting ownership of land from state and collectives to private persons. The eventual aim is competition in agricultural production, leading to increase in efficiency and production. Privatisation can be conducted in various different ways.

Restitution: means returning the land to the original owners or their heirs. In most cases, the original land distribution is defined as the situation in 1945, just before the introduction of socialism.

Distribution: involves giving the original owners a piece of land that is not the same as they owned before, but is comparable in size and quality.

Compensation: is a system that returns agricultural assets in money or vouchers (Hungary) that can be traded and with which pension, apartments or land can be bought.

Sale: means transferring state owned land to individuals in return for money. In Poland this is the major means of privatisation. The drawback here is, that marketing large amounts of land, the price per hectare declines dramatically, ruining the land market.

Table 3 gives an overview of the major procedures that are used in the different Central European countries, and to what percentages of the total agricultural land the procedures apply.

Most Central European countries chose to restitute collective farm land to former owners. Moreover, former owners who kept legal rights to their land were restituted property rights on their land without exception. State farm land is typically leased, pending sale.

The variety in privatisation procedures is surprising, especially considering most privatisation programs can be classified as inefficient. Why were the procedures constructed the way they were? Swinnen (1996 and 1999) studied these differences, and formulated a number of key factors which have constrained Central European governments in their choice of the land reform procedures and have caused the choice of inefficient land reform process.

	<i>Collective farmland</i>		<i>State farmland</i>	
	<i>Procedure</i>	<i>% of land</i>	<i>Procedure</i>	<i>% of land</i>
<i>Bulgaria</i>	Restitution	72	Miscellaneous ¹	9
<i>Czech Republic</i>	Restitution	61	Sale (leasing)	25
<i>Hungary</i>	Restitution + distribution (physical)	70	Sale for compensation bonds + sale (leasing)	12
<i>Romania</i>	Restitution + distribution (physical)	58	Undecided + restitution	
<i>Slovakia</i>	Restitution	71	Sale (leasing)	
<i>Poland</i>	-		Sale	

Table 3: Most important land reform procedures in Central Europe. ¹In Bulgaria, the distinction between state and collective farms is complicated because both types were merged in the Ago Industrial Complexes. Source: Swinnen, 1996

The most important causal factor of land restitution is the legal ownership status at the outset of the reforms. Agricultural assets that were still legally privately owned in 1989 have been restituted in all Central European countries. Many Central European governments could not use a process other than land restitution unless they first took away the legal ownership rights from the legal owners. It goes without saying that this was not an option for the newly elected governments at that time. Romania is one minor exception to this general rule, where the government has imposed a maximum limit of ten hectares in land to be restituted to former owners, and is distributing the rest of the land among workers. In Hungary former owners, who had been forced to sell their land under the Communist regime, are not restituted their land. Such former owners are compensated through vouchers.

Secondly, the choice of privatisation policy affects the future asset ownership distribution among ethnic groups, both inside and outside the country. This explains why the Polish government did not choose restitution of land. This would entitle much of the land to Germans, as much of present day Western Poland was owned by Germans before World War II. An opposite example of ethnicity-induced decisions is found in Bulgaria (Buckwell *et al*, 1994). A high share of non-land assets was allocated to 'labour contributions' in order to placate the Turkish ethnic minority who was largely employed in agriculture and not eligible for much land, while being an important political factor.

The nature of pre-collectivisation land ownership distribution proves to be a third important factor. If prior to collectivisation land ownership had been egalitarian, as in Bulgaria, restitution of land promoted historical justice as well as social equity. However, if it was more unequal, such as in Albania, where few landlords controlled almost all agricultural land, historical justice and social equity are conflicting objectives.

Finally, the costs of disruption of existing farm structures have led to leasing (pending sales) the state farm land. The fact that these state farms were more capital intensive, used better land, with better technology and were involved in activities with more scale effects, makes that land distribution would imply more costs of disruption than in more labour intensive, low technology production on collective farms. The costs of disruption versus the benefits of land use security were lower for collective farm members than for state farm employees.

2.3 Fragmentation throughout Central Europe

From the papers collected in Tillack and Schulze (2000) and Swinnen *et al* (1997) it becomes clear that the land use structure typically is bimodal. This means that there is a very large group of very small land users and a small group of very large land users. The class of middle-sized farms, that are so characteristic to Western European family farming, is typically small.

In land use statistics, fragmentation is most obvious when we consider the percentage of farms smaller than 5 hectare. When we consider the percentage of all agricultural land that is used by each size class, the image is reverse: the host of smallholders use only a modest share of the agricultural land.

Statistics on this balance must be handled with caution. Data sets can be estimations, are not uniform or comparable in their calculations and may use varying definitions over time. Trend analyses on agricultural structure are therefore practically impossible to perform.

Table 4 presents some figures of halfway the 1990s that do allow some comparison and shows that the balance between the small-scale land users and the larger production units differs throughout the region. More recent figures can be obtained from the so-called EU

country reports that are available on the accession-website (EU, 2002), but these reports do not provide a uniform set of figures for each country.

In Slovakia and the Czech Republic, some three-quarters of all agricultural land used in large units (Voltr, 2000; Kabat and Hagedorn, 1997). Romania and Bulgaria on the other hand are very fragmented. More than half of all agricultural land is used in private holdings smaller than 2 hectares on average, corresponding with 4 and 1.8 million farmers respectively (Davidova et al, 1997; Benedek, 2000). Poland and Hungary's characteristics are intermediate (Borek, 1993; Harcsa et al, 1998).

		Number	Share of TAL	Average size (ha)	Remarks
Poland (Borek, 1993)	Private farms	2,100,000	76.4	6.3	50% under 5 ha
	State farms	1,300	18	2.700	
Hungary (Harcsa et al, 1998)	Private farms	1,400,000	17	0.81	44% under 5 ha
	State farms	136	15	7.036	
	Co-operations	1,267	68	3.456	
Bulgaria (Davidova et al, 1997)	Private farms	1,777,000	52.5	1.48	86% under 1 ha
	State farms	980	6.5	311	
	Co-operations	2,344	40.8	815.3	
	Farming companies	122	0.7	283.5	
Romania (Benedek, 2000)	Private farms	3,973,000	52.1	1.94	40% under 1 ha
	Private companies	3,800	11.6	443	
	Family associations	9,500	6.8	105	
	State farms	560	11.8	3.120	
Czech Republic (Voltr, 2000)	Natural entities	24,380	23.8	34.6	
	State farms	41	1.69	732	
	Legal entities	2,753	74.6	966	
Slovakia (Kabat and Hagedorn, 1997)	Private sector	8,632	79.2	201	54% under 5 ha
	Public sector	299	20.8	1,526	

Table 4. Impression of land use fragmentation halfway the 1990s. TAL = total agricultural land

The figures on the fragmentation halfway the 1990s show quite a varied pattern. The location of the balancing point between large-scale and small-scale farming determines to what extent a country manages to mask the ownership fragmentation. Large-scale production organisations still dominate production in several Central European countries. Many new landowners lease their land to the large-scale successor organisation of the collective and state farms. In 1994, they cultivated more than two-thirds of the total agricultural area in Bulgaria, Hungary, the Czech Republic and Slovakia.

2.4 Central European initiatives on fragmentation-reduction

Although the introduction to this paper may suggest otherwise, Central European countries are already trying to deal with fragmentation. Some countries apply formal instruments, some countries have informal efforts.

Three Central European countries already have an operational land consolidation Law: the Czech Republic, Slovakia and Poland. The Czech Republic adopted the Act on Land Consolidations and Land Offices in 1991 already (Act No. 284/1991). It still is in place, with amendments from 1993 and 1997. The Act discerns simple and complex land consolidation (Pesl, 1996; Trnka, 2002). Slovakia also adopted a land consolidation Law in 1991 (Law No. 330/1991). Polish legal land consolidation (the first Law was adopted in 1923) never really

disappeared. During the heydays in the 1970s, about 400,000 hectares were consolidated annually. Between 1968 and 1982, one quarter of all agricultural land in Poland has been subject to land consolidation (Mucsynski and Surowiec, 1995). Hungary is on the verge on installing a land consolidation Act. A draft Law is in the process for approval by the Hungarian parliament.

The absence of land consolidation legislation in the rest of Central Europe certainly does not imply that people are passive toward the land fragmentation problem. Farmers, as they have to face the direct practical implications of fragmentation, come up with informal ways to optimise production. Sabates-Wheeler (2002) gives an overview of informal consolidation initiatives and argues that policy-makers should take these initiatives, being bottom-up, more seriously.

When comparing the nature of consolidation initiatives with the severity of fragmentation, an intriguing paradox arises. Because why is it that the countries with the least fragmented production structure are the most advanced in applying formal land consolidation? It is already mentioned that the Polish land consolidation tradition never ceased to exist. And it is true that the Czech and Slovak Laws to an important extent intended to facilitate a smooth settlement of privatisation instead of optimising farming.

Still, on the vast and highly fragmented plains and mountains of Romania and Bulgaria no steps toward formal land consolidation have been taken. The absence of formal land consolidation initiatives in the most fragmented part of Central Europe may indicate that rural problems there are more complex than fragmentation figures alone suggest. In the case studies in the next section, the answer to this paradox may be found.

3 IS IT REALLY A PROBLEM?

Before turning to the question of suitable instruments for reducing fragmentation, let us first take a more narrow look at the necessity of solving fragmentation. We must acknowledge that land fragmentation is not disadvantageous by definition nor that it should be considered to be the main problem of Central European agriculture. There are more restrictions to agriculture than land alone (Sabates-Wheeler, 2002) and land fragmentation provides opportunities as well as threats.

3.1 Meso-economic impacts

Technically speaking, the overall productivity of that limited amount of land is reduced by its fragmentation because the borders between the parcels (hedges, ditches) are space-consuming and cause the adjacent zone to be less productive (less moisture, more wind damage, lower supply of fertilisers and pesticides). Also, mechanisation is not likely to be applied by small-holders and other diseconomies can be expected.

On the other hand, a fragmented situation does provide employment to a relatively large number of people. Large estates with modern equipment can be managed by only a few persons, whereas the same acreage may allow many families to earn a living. But what standard of living do families in a fragmented situation have? The amount of land limits the amount of crop and therefore it is a restriction to the household income, although a high productive value per acre (as in horticulture) and low costs may compensate.

These contradictory considerations make land fragmentation more foremost a problem of rural poverty instead of food security, as Frenkel and Rosner (1999) demonstrate.

What viability of farms is concerned, it entails a wider economic setting than its outlay and equipment. Productivity is about access to services and markets that have to provide a supportive economic environment. Therefore, on an imaginary 4 hectare, 10-parcel farm the income can be acceptable when produce is of high value (either due to its market value per unit, like in horticulture, or due to its quantity), inputs are cheap and marketing channels fit small-scale farming. Under conditions of a 'price scissors' and unsuitable marketing, however, that same farm could be far from viable.

Hughes (2000, p.83), after empirically analysing the relationship between supply performance and farm structures (type and size), concludes that 'economic efficiency is not guaranteed by the innate economic superiority of any kind of farms, and so the economics of agriculture continue to favour the existence of a wide variety of farm structures in Central and Eastern Europe.'

An unambiguous economic qualification on land fragmentation in terms of 'good' or 'bad' is thus hard to give, since (i) there are positive as well as negative sides, (ii) that have different weights according to the economic and political climate, and (iii) that suggest that the qualitative rating may have an optimum somewhere in the middle instead of at an extreme.

3.2 Level-dependency

In addition, a land use structure must be reviewed in its complete rural context, in which there are many non-economic criteria. For instance for ecological, scenic and recreational quality, some degree of fragmentation is preferable above a rational and productively efficient situation. And fragmentation may also be desirable in the context of political stability, since fragmentation allows a considerable share of the civilians to grow their own food and thus survive independently from food distribution networks and economic crises (for instance inflation).

The need for reducing fragmentation will be felt differently within the rural community and on each of the political levels of scale. Among the small-scale farmers, a part will seize every opportunity to make the farm a viable undertaking, but for another part, subsistence farming is an acceptable way of living (for instance see Kostov and Lingard, 2002). On a regional level, considerations of income can be an important reason to ask for intervention by the national government. The national government will be susceptible for parity in income and also for national food security and agricultural exports. Food security is not a problem in Central Europe, but export of agricultural produce can be of national importance. Especially for Bulgaria and Romania, the favourable natural endowments (warm climate, fertile soil) are the main economic asset that as such must be exploited. The presence of major non-agricultural assets could have eased the urgency of fragmentation.

On another level up, the European Union faces a paradox as it neither wants additional agricultural surpluses or rural poverty. On a global level, in the light of a growing world population, all loss of production may be regarded as a problem, but fragmentation is only a minor impediment to world food production.

It is beyond the scope of this paper to give a detailed overview of how the above mentioned considerations apply to every part of Central Europe. This paper assumes that there are certain Central European regions in which economic considerations give rise to a demand for reducing land fragmentation. The EU-context of which the Central European countries will soon be a part will further aggravate the need for optimal farm size in regions where commercial production is the main objective.

3.3 Choices in government intervention

With regard to governmental action with the objective to reduce land fragmentation, three questions need to be answered: whether, when and how to undertake action. The question whether to intervene depends on the likeliness of spontaneous improvement that may occur as a result of the land market on which economic forces stimulate consolidation of holdings. Central European land markets are improving, but transaction costs, economic wealth and alternative labour are restrictions to spontaneous consolidation (Van Dijk, 2003) that are not yet optimal for spontaneous consolidation.

With regard to when to intervene, there has to be a specific trigger that makes a government intervene. In post-war programs from Western governments (for instance Hofstee, 1959), the main justification for intervention is parity between urban and rural standards of living. If (i) the standard of living in cities is considerably higher than in rural areas, (ii) rural residents are aware of this difference, and (iii) land fragmentation is believed to contribute to this difference, then fragmentation is a problem to farmers and regions.

This problem-definition implies that no fixed figures are at hand with which a region can be assessed on its fragmentation. We cannot prove that a farm is not viable below, let's say, 4.21 hectares. The parity issue is a matter of balance and as a consequence, a booming industry and service sector in the major cities will demand more farm-income to reach a comparable standard of living for rural dwellers. So, the threshold for intervening in land fragmentation to an important extent depends on the prosperity in cities.

The question how to intervene is in fact a twofold question for it requires a strategic choice (which instrument out of a range of options is suited) as well as an operational choice (when foreign examples serve as a source of inspiration, which country's example is suited).

4 THE PITFALL: MULTIPLE DEFINITIONS OF LAND FRAGMENTATION

For making a strategic choice (which instrument to apply), the Central European fragmentation issue holds a treacherous pitfall. As said in the introduction, some presume that land consolidation is the right solution and the operational details are the main challenge. The presumption that land consolidation is the proper way to improve Central European agriculture seems logical because land fragmentation is an important problem.

However, that one term 'land fragmentation' is used for very different problems and not every problem can be tackled with land consolidation. Thus, people think to be talking about the same problem, but have very different perceptions. Surprisingly, no publications on land fragmentation have been found with attempts to formulate a definition.

Four definitions are discerned here, three of which are schematically represented in Figure 1. **Ownership fragmentation** was a popular way of painting a picture of Central European agriculture in the early 1990s. At that time, the privatisation agencies provided such statistics, and generally these figures were the only statistical information available on agriculture. But ownership alone does not give a complete image of fragmentation, because that does not always correspond with the functional parcelling of the landscape. The actual use of agricultural land may be quite consolidated through tenancy. Privates or enterprises may have succeeded in acquiring tenancy on large amounts of leased land, typically hundreds of hectares. In other cases, like in Romania, private landowners join forces and form family associations.

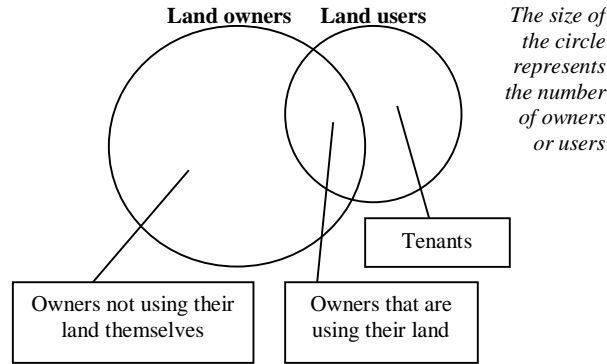


Figure 1: Schematic representation of three types of fragmentation. In addition, this article discerns internal fragmentation as well.

So, besides fragmentation of ownership, the **number of users** (or the size of use-units) is a second type of fragmentation. The use situation, as said, is visible in the landscape, although you cannot tell if a fragmented parcelling points to small farms or fragmented farms (the German language calls the latter *'Zerstreuung'*, opposed to *'Zersplitterung'* that refers to a high density of land users and the consequent small farm size). The overlap between these land users and landowners represents owners that at the same time are users, i.e. the share of owners that are using their land themselves.

A third type of fragmentation is the number of parcels exploited by each user. This is the fragmentation within a farm. **Internal fragmentation** has traditionally been the main subject of Western land consolidation experts who tried to demonstrate the importance of land consolidation. Internal fragmentation not only considers (i) parcel size, but (ii) parcel shape and (iii) parcel distance as well. Models have been made that proved that decreasing the distance of parcels to the farm saves time, a better parcel shape raises yields and increased parcel size both saves time and raises yields. Although the exact numbers that followed from the referred studies no longer apply today, the causal relationships they demonstrate do. For more recent empirical data, see Coletta (2000).

The literature on problems in Central European agriculture tends to ignore the internal fragmentation, although the internal fragmentation is locally severe in Central Europe. Statistics on the situation are few and unreliable, though. Apparently, the problem is not felt to be the most urgent. That is logical to some extent. Reallocating the 10 parcels of a two-hectare farm still does not enable the farmer to make a good living. And the surveying and transaction costs will be relatively high. (Surprisingly, this imaginary reallocation improves efficiency very strongly in proportionate terms, far more than joining 10 parcels of a two-hundred-hectare farm.)

If the **overlap of use and ownership is small**, another fourth potentially problematic situation occurs. A small overlap means that tenancy is playing an important role in agricultural land use. A certain percentage under tenancy is desirable to allow farms to change size in a cheap and flexible way, so we cannot entirely do without tenancy (De Haan, 1964). However, analyses on Central European land markets, for example in Schulze (2000) and Swinnen (1999) as well as economic theory (Currie, 1981), suggest that land use that largely depends on tenancy suffers important drawbacks.

We thus have four types of fragmentation: (1) number of owners, (2) the number of users, (3) the number of parcels per farm, and (4) the discrepancy between ownership and use (see

Figure 1). This implies that reduction of fragmentation occurs by definition when the number of owners and/or users declines, the number of parcels per farm falls and when the share of owners that use the land themselves raises.

5 STRATEGIC ANALYSIS

5.1 The core problem

The fourfold definition of land fragmentation raises the question which one is the most important for Central European agriculture. The symptoms that can be observed in Central European statistics are small-scale owner-occupancy and economically viable units that to an important extent rely on tenancy – badly protected and expensive tenancy. Therefore, the actual problem seems to be that ownership of land resides at the wrong parties, namely elderly small holders. The owners are not the most desirable category, from an economical point of view.

The most important challenge therefore is redistributing solid rights on land (ownership or to be developed tenancy structures with a proper long-term continuity) to farmers of a viable size. Adjustments to the land use units (i.e. farming structure) are on the long run ineffective as long as ownership and use remain this widely separated. In a situation where commercial land users do not have solid rights to their land, basic requirements for economically healthy farming are impeded: investments (through rural financing), competitiveness and autonomous changes in farm-size (see Swinnen, 1997, p.360 for a similar view). Ironically, ownership fragmentation has only few direct disadvantages.

Central European fragmentation thus differs profoundly from the Western European situation at the start of large-scale fragmentation reduction, despite the treacherous similarity when we look at statistics on farm-size distribution. Statistics on farm size do not reveal the problem of ownership-distribution that is hidden underneath.

5.2 Choosing from alternatives

When picking an instrument from an array of alternatives, we should ask ourselves two questions. To what types of fragmentation does the Western instruments apply and do they correspond with the Central European problems? And: what are the prerequisites for the effective adoption of an instrument? In other words, we want to check the similarity in problems as well as the ‘transplantability’ of Western experience.

With regard to the similarity between Western Europe and Central Europe, it appears that Western Europe has addressed two types of fragmentation, out of the total four types mentioned in section 4. Only the farm-size problem and internal fragmentation have been subject to the Western European fragmentation-reducing instruments. Instruments for the remaining two types (i.e. dealing with ownership fragmentation or with a large gap between ownership and use) have not developed in Western Europe. They probably did not need to be developed because these specific problems did not occur. They can be regarded as particularities of Central Europe that stem from the privatisation process.

One of the two types that Western Europe does have experience with is the same type that we discovered to be a main fragmentation problem of Central European, namely farm size. Land banking is the instrument that concentrates on this type of fragmentation. Therefore, land

banking makes the best match with the Central European fragmentation-problem on the short term, when we take into account whether similarity in problem and experience exists.

But matching goals and problems is just one criterion, because the prerequisites for effectively applying an instrument also have to be considered. For success in one country does not guarantee success in another. Prerequisites are the conditions that allow an instrument to be operational, adopted and achieve its goals. The prerequisites for each of the instruments are derived from Western European practice, and listed in Table 5.

Again, land consolidation appears to make a poor match with the Central European situation. Especially complicating for the application of land consolidation is the absentee-ownership, so typical for rural Central Europe that collides with the required willingness of the land users to invest in better parcelling. Absentee-owners will face costs and might be wary of losing their parcel or be subject to other disadvantages. These negative sides are not compensated by advantages, because the absentee owners by definition do not enjoy these positive sides. The implementation of land banking, however, does not seem to face fundamental problems as far as prerequisites are concerned.

Land banking can also help reducing the gap between use and ownership. By acquiring small, leased out parcels and selling them to the present user, a gradual accumulation of user-ownership will occur, with the land banking institution as the driving force that generates transfers of ownership to the most efficient user. This double effect – land banking can address both farm size and segregation of use and ownership – further stresses the importance and suitability of land banking.

The conclusion therefore is that land banking, generally speaking, makes a better match with the Central European land fragmentation than land consolidation does.

	<i>Land banking</i>	<i>Land consolidation</i>
<i>Main agricultural target</i>	Farm size	Parcelling (number, distance, average size)
<i>Non-agricultural targets</i>	Providing space for infrastructure, water management, etc.	Comprehensively improving regional quality
<i>Time dimension</i>	Ongoing	Long projects (> 10 years)
<i>Affects</i>	National farmers population	Between 50 and 300 farmers
<i>Prerequisites for success</i>	One or more agencies that acquire and redistribute parcels Owners/occupiers that pursue farm enlargement	Owners/occupiers with internal fragmentation Who are willing and able to invest time and money Governmental financing for non-agricultural improvements
<i>Cross-relations</i>	Involving land-banking parcels can improve effectiveness in voluntary exchanges	Redistribution of land-banking parcels can be integrated in land consolidation projects

Table 5: Tabular overview of characteristics of all three Western European fragmentation-reducing instruments.

6 DRAWBACKS FOR LAND CONSOLIDATION

Although land banking makes the best match in general, there will be regions where internal fragmentation is urgent and prerequisites are met. In fact, land banking activities will stimulate the emergence of regions with middle-sized farms that have many parcels. So, land consolidation will have a role in Central European agriculture, but on the short term not the leading role.

When a particular region in need of land consolidation, there are a number of specific Central European particularities that have to be cared for. This section gives an overview, which never is complete. Both the Central European problems on land, and the Western practice are far too complex to enable a perfect overview, let alone an analysis on how the first affects the second. The features presented here are a tentative overview, resulting from extensive literature review that has been published in Van Dijk (2001a, 2004).

6.1 Macro-economic conditions

The first and perhaps most crucial discrepancy that affects fragmentation-reduction is the economic situation. Western European land consolidation has especially thrived in the 1950s and 1960s. For example, around a quarter of all agricultural land in the Netherlands was being consolidated, and also in Germany huge investments in structural improvements were made. At that time, fragmentation was of comparable severity as it is in Central Europe now. Looking back, we can regard it to have been effective (Van Dijk, 2000).

But we have to bear in mind that in the decades after World War II, the Western economies were growing. Trade, industry and the service sector were expanding, allowing the essential drain of labour from agriculture (Hofstee, 1959). This growth generated favourable financial circumstances for the governments, making it possible that the agricultural market became more and more protected and supported. Bottom line is that national governments as well as farmers had confidence in the future and were willing and able to invest.

The Central European situation is quite the opposite. The high inflation makes farming unprofitable for three reasons: (1) the states lack financial resources to support their farmers, (2) inflation has declined purchasing power, leading to a decline in consumption and consumer prices for agricultural products, while (3) prices of inputs have gone up, resulting in the infamous 'pricing scissors'. Thus, income from agriculture is low and uncertain. This makes investments risky. Partially due to these conditions, a large proportion of the Central European land is used for subsistence farming only, in which context production efficiency is of low importance.

The bad prospects and the fear of investing are blocking progress. Because of the bad prospects, investments are postponed, and because of the lack of investments, prospects are bad. This raises the question whether fragmentation-reducing instruments should wait for better times, or can they ignite progress?

6.2 Type of owners

As a result of the economic conditions and due to the nature of some privatisation mechanisms, the rural land is not exclusively owned by people who are eager and able to build a healthy farm. Especially in countries where restitution was applied, many people received a parcel of land without asking for it. This has led to the emergence of absentee-owners; landowners that are not able to actually use it, or think that another profession will give them a better or more reliable income. Selling the land would not be sensible, because land prices are low. And because of the raging inflation, land has a more constant value than cash. So the land lays fallow (in 1996 around 28% of all Bulgarian agricultural land according to Wegren, 1998).

The presence of absentee-owners leads to a tricky starting position, especially for land consolidation. A large share of the landowners has no benefit from consolidation because

they do not use the land. But being participant in a project means having to pay a share of the costs. The result is, they oppose to land consolidation, leading to a deadlock.

Another problem is co-ownership. For example in Slovakia, one parcel can be owned by an extensive list of co-owners. All owners have a saying in what happens to the parcel, meaning they all have to agree on the reallocation plan. Finding all owners is one problem, but making decisions would be the second. Co-ownership is not investigated in further detail in this article.

6.3 Land psychology

Another reason why Central Europe is a special case is the different relationship that people have with their land. The Western view at land is more or less economic (although regional differences may occur). From an economic viewpoint, land is just one of several means of production. By exchanging parcels of land, the use of this production factor can be optimised. The productive value of land (in terms of soil quality and location relative to the farmstead) has more importance than the location.

More strongly than in Western Europe, the farmers in Central European countries often have an emotional attachment to their land. A plot can have been family property for ages. This makes exchanging parcels a more sensitive issue than it is in Western Europe. Exchanging parcels in a way that leads to economic benefit can be fiercely objected to. Emotional considerations may include (1) keeping parcels of which the entire village can confirm who owns it, gives more security than a paper document from the land registry, (2) sentimental considerations, and (3) the parcel provides food security for the family. These strong emotional elements constrain the land market (Dale and Baldwin, 2000) as well as fragmentation-reduction and therefore cannot be ignored.

6.4 Infrastructure

When a region was collectivised, the original pattern of parcels, settlements and roads in many cases have been erased. Road infrastructure and waterways were adapted to large-scale farming, i.e. the pattern was made much less dense. In that case, facilitating private farming involves restoring suitable infrastructure. A market-oriented private farm may demand more road length for reaching the parcels, supermarkets for its own household supplies, a telephone connection, processing industry at reasonable distance and locations to sell its produce. All this asks for rural development: investments in facilities together with investments in farm outlay.

Poland, a country with a considerable consolidation experience already, is now confronted with these kinds of problems, yet lacking experience with more complex projects. Projects that embrace farm structure, but also road infrastructure and village restoration. Complex projects involve co-operation of different institutions and disciplines. Mucsynski and Surowiec (1995) point out that the rural development aspect up to now only means allocating state land for public interest purposes. They also criticise the failing spatial and temporal co-ordination. Pijanowski (1993) also mentions the lack of comprehensive planning. Czechowski (1992) states that the current Land Consolidation Act is not suitable for comprehensive planning.

6.5 Privatisation

In some parts of Central Europe, the privatisation process is not completed yet. This backlog can be due to several factors. In the Czech Republic, the Law dictates that the parcelling structure of 1948 has to be restored. This is not always possible. Many original parcels are impossible to determine in the field (missing parcels) or they may lie under roads or buildings. The original owners or their heirs can also be difficult to trace (missing owners). These practical difficulties combined with the rigid regulations can lead to excessive delays or even missions impossible. It goes without saying that reallocation of rights on land is not possible when distribution of rights in the original situation is not definite yet. Another result of the privatisation process may be a moratorium; a frozen situation. Most Central European countries forbid or restrict sale of restituted land for a number of years.

<i>Land during socialism</i>	<i>Type of privatisation during 1990s</i>	<i>Features affecting land consolidation:</i>				applicable to:
		<i>type of owners</i>	<i>bond</i>	<i>infra-structure</i>	<i>privatisation</i>	
<i>Disruption of original structure</i>	<i>sale of original compensation restitution</i>	occupiers	weak	unsuited	in progress	Western Poland Hungary Plains of Romania and Bulgaria; Czech Republic, Slovakia Eastern Poland; Mountains of Romania and Bulgaria
		occupiers	weak	unsuited	finished	
		absentee	strong	unsuited	problems	
<i>No disruption</i>		occupiers	strong	suited	finished	

Table 6: Four types of regions, described in terms of five features relevant for land consolidation

The distribution of the rest of the features over the region shows distinct patterns. Four typologies can be distinguished (Table 6). Whether the features from the former subsection apply depends on the history of land ownership and privatisation.

In areas that were disrupted (complete adaptation of the landscape to large-scale farming) the infrastructure typically is not suited for private farming. Where restitution took place, a large share of the land ownership resides with people who are unable or not interested in farming, in other words the absentee owners. At the same time, the emotional bond to the land is strong, because of the historical importance of the location of the land. This applies to both the absentee-owners and the people that do use their restituted land.

In case of compensation (that does not involve the reconstruction of old structures) the owners have actively pursued ownership of their land, and absentee-ownership is less common and since they acquire land that has no historical value to them, the emotional bond is weak. When compensation claims are smaller than the available land, land funds could become available. Also in cases of sale of former state land, the owners are occupiers and do not have strong bond with their land. Land funds are present in this situation.

For the areas where no disruption occurred, this implies that these regions have not really been collectivised. Old boundaries are still visible and well-remembered. Privatisation plays a relatively small role and ownership structures changed only little. Land funds in this case are absent or already used.

7 CONCLUSIONS AND RECOMMENDATIONS

During the second half of the twentieth century, Western governments have actively intervened in agricultural structures using three instruments: land banking, land consolidation and voluntary parcel exchange. The three instruments have been used for addressing two

types of fragmentation: the farm-size problem and internal fragmentation. Instruments for the remaining two types (i.e. dealing with ownership fragmentation or with a large gap between ownership and use) have not developed in Western Europe.

One of the two types that Western Europe does have experience with is the same type that we discovered to be a main fragmentation problem of Central European, namely farm size. Land banking is the instrument that concentrates on this type of fragmentation.

Land consolidation, the instrument that is more prominent in the debate on Central European land fragmentation, spatially optimises land use of each participant but by definition does not change the amount of land of each participant. Therefore, land banking makes the best match with the Central European fragmentation-problem on the short term, when we take into account whether similarity in problem and experience exists.

Also with regard to prerequisites, land consolidation appears to make a poor match with the Central European situation. Especially complicating for the application of land consolidation is the absentee-ownership, so typical for rural Central Europe, that collides with the required willingness of the land users to invest in better parcelling.

Land consolidation addresses internal fragmentation, which is topical among larger farms. However, a prerequisite is the cooperation of landowners, which is not very likely to be met considering the large number of absentee-owners that large farms typically lease from. It may have a role in more advanced regions and on the longer term. Land consolidation is likely to meet a growing demand when land banking is effective.

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Land consolidation as Central Europe's panacea reassessed

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BIOGRAPHICAL NOTES

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