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Agricultural Adjustment and the Diversification of Farm Households in Central Europe

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Contributed paper selected for presentation at the 25th International Conference of Agricultural Economists, August 16-22, 2003, Durban, South Africa

ACKNOWLEDGEMENT

Research for this paper was supported by the EU Framework Five Programme, IDARA Project QLRT-1999-1526. The authors are grateful to Jerzy Wlikin, Dominka Milczarek, Adriana Lukaszewicz, Tomas Doucha, Zdena Cihelkova, Ladislav Jelinek, Katerina Nucova, Frantisek Nohel, Tibor Ferenzi, Gyula Modos, Maria Kyostal, Tamás Mizik and Peter Csillag, who organised the data collection and provided insights into the studied regions.

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ABSTRACT

Survey evidence from three Central European Countries (Czech Republic, Hungary and Poland) is analysed to identify the degree of non-agricultural farm diversification and the factors facilitating or impeding it in individual farms. The effect of diversification on rural job creation is investigated. The results indicate that the level of diversification is relatively small and enterprise diversification by farmers is unlikely to generate sufficient new jobs and solve the problem of high rural unemployment. The attempt to transpose the Western European model of agricultural diversification to the acceding countries via the SAPARD programme is questionable, as non-farm centric rural policies appear to be more appropriate.

Farm households, non-agricultural diversification, job creation, Central Europe

1. Introduction

Over the past two decades EU policy has gradually embraced agricultural diversification as a vehicle for rural development. Support programmes have been tailored to the structure of farming in the EU and to ease realignment to a more market oriented agricultural policy in the Union. A Western European model of agricultural diversification has emerged and this is currently being transposed to the acceding countries of Central and Eastern Europe as an option for funding under the EU's Special Accession Programme for Agriculture and Rural Development (SAPARD). This paper, first, investigates the current nature of, and factors affecting non-agricultural farm diversification in three Central European states (Czech Republic, Hungary and Poland), focusing on individual farms' non-agricultural enterprises, and, second, attempts to assess the appropriateness of the transfer of the Western European model.

The paper is divided into five sections. The next section reviews the main tenets of the Western European model of agricultural diversification and how its assumptions

differ from problems in the three acceding countries. The methodology is presented in section 3 and data employed in the study are described in section 4. The analysis of data is reported in Section 5. In the conclusion, the appropriateness of the transposition of current Western European policy on agricultural diversification to the Central and Eastern European countries (CEECs) is questioned.

2. The Western European Model of Agricultural Diversification and the Conditions in the Acceding Countries of Central and Eastern Europe

Within the EU, strategies to aid agricultural diversification have been developed which rest on four main assumptions. These four assumptions can be listed as: (a) diversification is a process of decreasing dependence on agricultural activities; (b) real protection to farmers is being reduced; (c) farm households possess a relatively high level of physical assets, and (d) farm diversification can make a significant contribution to rural development. These assumptions are discussed in turn and contrasted with conditions of the three candidate countries.

a) Diversification is a process of decreasing dependence on agriculture

Western European studies of agricultural diversification have assumed that adjustment occurs as the household steadily decreases its dependence on agriculture. The starting point is therefore that of households fully engaged in agrarian activities. This is an inappropriate supposition for the CEECs. During the process of land reform households in CEECs gained land, thereby entered agriculture. Thus, diversification in some incidences occurred through entry into agriculture rather than as an explicit strategy to move away from it.

b) Farmers have a considerable asset base

It has been typically assumed that family farms in the EU have a considerable asset base from which they can embark on diversification. For example, several schemes have attempted to promote the conversion of farm physical assets into new uses (renewal of redundant buildings and development of farm tourism) or the conversion of land into sporting and leisure uses (Ilbery et al. 1998). In the CEECs, individual farms have typically less physical, financial and landed capital than their EU counterparts and often the only thing they own is a parcel of land.

c) CAP reform

The promotion of agricultural diversification in the EU has been against a backdrop of CAP reform that is lessening the real protection afforded to agriculture (Shucksmith and Winter, 1990). CEEC agriculture has a very different history of relationships with the state and overall, during the 1990s, received significantly less market price and direct payment support than in the EU, with the exception of Slovenia (OECD, 2002). While the final package of support given to the new members on accession has not been finalised, in general, the level of price support and direct payments are expected to be higher than that which CEEC farmers currently receive. Whereas diversification is promoted in Western Europe as a strategy for dealing with falling government protection, for the CEECs it is necessary to consider the attractiveness of diversification in an environment of rising support and its compatibility with the adoption of the CAP.

d) Agricultural diversification can make a significant contribution to rural development

In Western Europe, by creating new non-agricultural enterprises and consequent job generation, diversification has been seen by some as a plausible strategy for rural

development. However, the rate of agricultural diversification has been spatially uneven (McInerney and Turner, 1991). The highest levels of diversification and new job generation have been recorded in accessible and wealthier rural areas. In contrast, where diversification is most needed, in remote low-income localities, performance has been extremely modest. Stimulating economic development in rural areas in the CEECs represents a serious challenge, as income levels are significantly lower than in the existing member states.

From the above it can be concluded that important differences in agrarian actors, involvement in agriculture and the history of diversification exist between the EU member states and the associated countries. There is therefore a requirement to accurately document the current level of non-agricultural diversification in Central Europe in a manner that accounts for the specific historic evolution of individual farms and engagement in agriculture. In doing so one can critically analyse the feasibility of transposing existing Western European models of agrarian adjustment to the CEECs and the degree to which new solutions are required.

3. Methodology

For the purposes of this paper, agricultural diversification has been defined as the existence of other gainful activities by farmers outside the primary production of food or fibre (derived from Slee, 1987). Four potential sources of income are considered: non-agricultural on-farm enterprises, non-agricultural off-farm enterprises, non-agricultural employment and unearned income. Income will be diversified where a household does not rely on core agricultural activities as a sole income source.

In order to determine the factors stimulating or impeding diversification in the three CEECs, multinomial logit analysis was utilised. Farms were classified into four types, non-diversified, diversified through enterprise creation, diversified through off-farm

employment, and diversified through both off-farm employment and enterprise creation. Categorical dependent variables were adopted since a continuous measure of diversification was difficult to obtain. Respondents have been reluctant to provide absolute income level data and time allocations are unreliable due their reliance on memory and possible difficulties in apportioning them between activities.

The independent variables, selected both from the literature on agricultural diversification and an empirical spreadsheet model, were general education, agricultural education, use of agricultural extension and advice, unearned income, specialisation within agriculture, and frequency and distance to public transport.

The reference category used in the multinomial logit model was non-diversifiers. Thus the coefficients for each category measure the change relative to non-diversifiers. The model can be formulated as:

$$\Pr ob(y = j) = \frac{e^{\sum_{k=1}^{k} \beta_{jk} x_k}}{1 + \sum_{j=1}^{J-1} e^{\sum_{k=1}^{k} \beta_{jk} x_k}} \qquad (1)$$

As previously mentioned, in CEECs land reform brought about diversification into agriculture from non-agricultural activities. Since the main interest of the study is diversification outside agriculture, households diversifying into agriculture were excluded from the multinomial analysis. Diversification into agricultural contracting, woodland activities and off-farm paid labour on a non-own farm was also excluded since these activities were not consistent with the adopted definition of diversification. However, for Hungary these adjustments proved not to be feasible due to the resulting small sample size when the above mentioned cases were excluded. As a result, the models for the Czech Republic and Poland were run twice, with the exclusions being omitted the second time. The results were not substantially different. For this reason

the results without such exclusions are presented here in order to facilitate comparisons across the countries. The quantitative analysis was expanded with insights gained through qualitative research based on semi-structured interviews with the most successful job creators.

4. Data used

The study is based on primary survey data. In each country data were collected in three regions using enumerators who visited randomly-selected farms. The regions were selected by local experts with the aim of reflecting contrasting rural environments in each country.

For Poland, the sample consisted of 342 households which mostly cultivated, either between 2-5 ha or over 15 ha. In comparison to the agricultural census large farms have been over-represented. In the Czech Republic, the sample consisted of 294 households whose average farm size was 35 ha. This was above the mean size of 18 ha identified by the agricultural census returns.

The Hungarian sample incorporated 267 household farms with a mean area of 48.5 ha. As in the other countries, the sample was biased towards larger farms. The main over-representation was in the 5-10 ha range, while there was an under-representation of farms below 2 ha.

5. Results

Incidence of diversified enterprises

The sample farms accounted for 46 diversified enterprises in Poland, 120 in the Czech Republic and 96 in Hungary. When the definition of diversification was expanded to include agricultural contracting, biomass and woodland, the number of diversified enterprises increased sharply, particularly in Hungary where the increase was by

nearly 45%. In Poland, where individual farms are the smallest, the frequency of diversified enterprises was the lowest.

Examining the types of diversified activities, in the Polish sample services were most frequent, while in the Czech Republic retailing was the most prevalent activity. Agricultural contracting was the most common activity in Hungary. It appears that adding value to raw agricultural products through on-farm processing or using the farm for tourist accommodation, which are both common in EU countries, are poorly developed in Central Europe.

Factors affecting diversification

The results of the multinomial logit models are presented in Table 1. The results show that the **level of general education** has a positive and significant effect on the propensity to diversify. Hungary recorded the only case for which this did not hold (for diversification through enterprise creation alone). The positive and significant effect of general education on diversification has been observed in previous studies (Huffman, 1980; Woldehanna et al., 2000). A higher level of education is significant for enterprise diversifiers for several reasons. It may reduce the risks in starting an enterprise caused by a lack of knowledge and skills; it may enable households to be more aware of loans and grants that are available, and make them more capable of completing applications for any such funds. The qualitative study further indicated the importance of human capital in diversification. One Czech household had diversified into a garden centre due to the spouse having attended a horticultural high school. A Hungarian household had a translating business, which was possible due to the spouse's education in England. In addition, the qualitative study indicated the importance of practical experience in the decision to diversify. For example, a Polish household had a stone-masonry enterprise which had been started after the head of

household had spent time in the USA earning money to purchase farm machinery. During this time he gained extensive stone working skills. His own experience in the craft enabled him to be able to train new employees as his business expanded, thereby allowing unskilled persons to gain employment. This example also illustrates how migration by a family member to earn remittances can facilitate the gaining of experience that can lead to enterprise and job creation on return.

When **agricultural education** was considered, there was considerable disparity between the countries. The Czech results showed no significant effect of agricultural education on diversified activity. Hungary had a significant negative effect on off-farm employment only and enterprise diversification only, but not when both forms of diversification existed in combination in the same household. For Poland a significant and positive effect of agricultural education was observed for households with diversified enterprises, when a strict definition of diversification was taken. The positive effect may be an indicator that any form of education has a positive effect when moving outside a 'known' sphere of activity. Previous studies have also had contradictory results. Benjamin (1994) and Mishra and Goodwin (1997) observed a significant negative effect of agricultural education. In contrast, Woldehanna et al. (2000) found no significant effect of agricultural education on off-farm employment.

The use of agricultural extension and advice had an insignificant effect in all three countries.

Unearned income had an insignificant effect in Hungary, but a significant and negative effect for all diversifying Czech households and for Polish households that diversified into both enterprise creation and off-farm employment. This is consistent with the findings of previous research (Sumner, 1982; Thompson, 1985; Woldehanna

et al., 2000). This is probably because unearned income reduces the variability of total income and, therefore, decreases income risk. An interesting point to note in light of this is that Hungary has directed most of its agricultural intervention towards market price support. Poland has directed most of its transfers to farmers towards their agricultural pension scheme (*KRUS*), while the Czech Republic has split up the funds between credit and market support. The difference in effect of unearned income may be due to a lower income risk for agricultural producers in Hungary compared to the other two countries; thus, unearned income plays a less important role in reducing income variability.

The semi-structured interviews indicated that income variability was an important factor in making a decision to diversify. Generally, variability was attributed to the lack of contract enforcement by downstream companies particularly concerning prices. This suggests that the full implementation of the EU price support policies that could reduce income variability would also reduce the motivation to diversify.

The **degree of specialisation within agriculture** was measured as the proportion of farm area under grains. A lower proportion of area under grains indicates a certain level of diversification in agricultural production and, therefore, a desire to diversify risk, suggesting a higher risk aversion. The degree of specialisation within agriculture had a significantly negative effect for all three countries, however, there were country variations depending on the forms of diversification. For Hungary the negative effect was significant for off-farm enterprises only, for the Czech Republic for diversified enterprises alone and in combination with off-farm employment, while for Poland the effect was for off-farm employment, both alone and in combination with diversified enterprises. It is understandable that off-farm employment might be a preferable method of diversifying risk due to the provision of a less variable income in

comparison to a diversified enterprise. In the case of the Czech Republic, where a negative correlation was found between the proportion of farm area under grains and diversified enterprises rather than off-farm employment (which is different from the other countries), this could be due to the main forms of agricultural support being market intervention and credit subsidies. Credit subsidies make starting a diversified enterprise more feasible as a means to diversify risk. This is corroborated by a greater frequency of diversified enterprises in the Czech Republic than either Poland or Hungary.

The **availability of public transport** did not show a significant effect in the Czech Republic. In Hungary the frequency of public transport was insignificant, but the distance had negative and significant effect on diversifiers with non-agricultural enterprises, and with enterprises and off-farm employment in combination. It therefore appears that distance to public transport is more important than its frequency in Hungary. This could be because the mean distance to public transport was much greater for the Hungarian sample of farms than either that of the Czech Republic or Poland. So the distance could limit its use, making frequency irrelevant. For Poland, frequency was more significant than distance. This could be because frequency limits the accessibility of the enterprise to clients, thereby compounding remoteness.

The variation observed in transport effects may be related to the number of households with private cars, and therefore, the number not reliant on public transport. In the Hungarian sample 85% of households had a private car compared to 65% in Poland. Unfortunately such data were not available for the Czech sample.

Outcome of the diversification process: job creation

Enterprise diversification has been promoted as a strategy for increasing rural employment and incomes, and for this reason is analysed in more detail. Diversified

enterprises created by farm households do not appear to be a major source of new jobs. In the Czech Republic the diversified enterprises associated with individual farms accounted for less than 20 full-time equivalent jobs (assuming 2 part-time jobs equals 1 full-time position), in Poland for less than 13, and in Hungary for 48. In cases where family members did not take up the jobs, nearly all employees were recruited locally. The development of businesses on land or buildings leased or sold by a farm appeared to be more important for job creation than diversified enterprises established by farmers. For example, business development created 60 full-time jobs in the Czech Republic. In all countries, households which diversified and created new jobs tended to have younger heads of household, higher education, better public transport, and lower unearned income when compared to all enterprise diversifiers.

The expectations for the future were somewhat pessimistic; most respondents aimed at maintaining their operations at the current level. The prospects for employment seemed better in the Czech Republic where for the next three years the expectations for increases in employment were by 104 persons on a total of 55 farms.

Overall, it appears that the pattern of enterprise diversification in the region follows findings on non-agricultural small rural businesses in the EU; the majority display a stable pattern of employment and only a tiny minority grow rapidly. The contribution of enterprise diversification to new job generation in rural areas is currently modest and there is little evidence that this will change in the future.

These results suggest that diversified enterprises are not a major source of new jobs but, where they are created, they do contribute to local employment. In the Czech Republic, business development by non-farmers has created more jobs than diversified enterprises established by farmers, bringing into question whether diversified enterprises are the most effective drivers of rural development. However,

qualitative research indicated that the farm could provide an important lever in enterprise creation since, should the enterprise fail, the farm can play the role of a safety net as a provider of food, thereby lessening the risk to which an entrepreneur is exposed.

6. Conclusions

The empirical evidence presented in this paper on the three acceding countries indicates that there is no neat pattern of gradual disengagement from agriculture either in Poland, with its tradition of peasant farming, or Hungary and the Czech Republic, where due to the land reform process and wider economic restructuring a substantial number of new independent farmers emerged in the 1990s. Overall less than 10% of farm households have pursued enterprise diversification and diversified enterprises are more prevalent in the Czech Republic than Hungary or Poland. There is very little evidence of household farms generating significant numbers of new employment opportunities in these non-agricultural enterprises.

Results from the multinomial logit models indicate that diversification (both enterprise and/or off-farm employment) is linked to the level of general education and availability of public transport. The latter infrastructural issues are poorly addressed in the current EU led initiatives for rural development in the acceding countries, which focus principally on farm based initiatives. The degree to which provision of first pillar support on accession (conventional agricultural market and income support) will clash with second pillar measures (rural development, enterprise diversification) has not been addressed. From this study it appears that policies that increase agricultural price support will lower the propensity to diversify and *vice versa*. The nature of the agricultural policy afforded to the applicant states on membership will thus impact on

patterns of diversification. Such agricultural policies may be in conflict with the objectives of SAPARD.

Finally, encouraging enterprise diversification by farmers is in itself unlikely to generate significant new jobs and solve the problem of high rural unemployment in the CEECs. This leads to the question as to whether farmers can be the drivers of structural change in rural areas. At present there is little evidence that farmers will serve as drivers and there is a need to reassess the contribution of farms to wider rural development objectives. SAPARD is a 'farm-centric' rural development programme and this targeting appears misplaced. Rather in pursuing a policy of new rural enterprise and employment generation in the CEECs, the main challenge may be to unlock farm assets (land and buildings) for use by other non-farm actors. This calls for a different set of policy interventions for CEECs that are more typical for support to small and medium size enterprises than to CAP.

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Table 1: Multinomial Regression Results for Household Diversification

	Czech Republic			Hungary			Poland		
	Divers. enterprise only	Off-farm employ only	Divers. enterprise & off-farm employ	Divers. enterprise only	Off-farm employ only	Divers. enterprise & off-farm employ	Divers. enterprise only	Off-farm employ only	Divers. enterprise & off-farm employ
Constant							-5.11*** (1.204)	-1.62** (0.664)	-1.71 (1.078)
General education	0.130** (0.059)	0.190*** (0.051)	0.168*** (0.052)	0.127 (0.170)	0.691*** (0.169)	0.385*** (0.148)	0.361*** (0.104)	0.396*** (0.069)	0.338*** (0.102)
Agri. education	0.291 (0.263)	0.0263 (0.244)	0.155 (0.242)	-0.615* (0.359)	-0.563* (0.324)	-0.189 (0.284)	0.261 (0.218)	-0.123 (0.146)	0.09001 (0.226)
Use of agri. advice / extension	-0.248 (0.607)	-1.23*** (0.502)	-0.688 (0.543)	0.02003 (0.718)	-1.807** (0.765)	-0.118 (0.724)	0.499 (0.645)	-0.9* (0.472)	-0.06325 (0.675)
Unearned income	-0.015** (0.007)	-0.02*** (0.006)	-0.02*** (0.06)	-0.375 (0.906)	-0.776 (0.911)	-0.188 (0.737)	-0.00 (0.045)	-0.07*** (0.027)	-0.10** (0.48)
% of farm area under crops	-1.989** (0.843)	-0.413 (0.649)	-1.643** (0.708)	-0.09209 (0.439)	-1.543* (1.018)	-0.574 (0.894)	-1.507 (1.304)	-2.19*** (0.726)	-3.96*** (1.152)
Frequency of public transport	-0.029 (0.048)	-0.036 (0.038)	0.033 (0.035)	0.0413 (0.046)	-0.04591 (0.48)	-0.0275 (0.51)	0.049*** (0.018)	0.079*** (0.10)	0.059*** (0.017)
Distance to public transport	-0.556 (0.549)	0.007 (0.067)	-0.763 (0.484)	-0.327 (0.402)	-0.78*** (0.261)	-1.294** (0.593)	0.246 (0.477)	-1.31*** (0.417)	-2.072** (0.983)

Czech Republic: No. observations = 164, χ^2 =65.347, Prob. value χ^2 = 0.000, Pseudo R^2 =.0.35
Hungary: No. observations = 86, χ^2 =59.396, Prob. value of χ^2 = 0.000, Pseudo R^2 =0.532
Poland: No. observations = 340, χ^2 =165.526, Prob. value of χ^2 = 0.000, Pseudo R^2 =.0.437
***, ** and * indicate 0.01, 0.05 and 0.10 level of significance respectively.