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# Does Cooperation Pay? The Role of Social Capital among Household Plot Farmers in Ukraine

Axel Wolz, Jana Fritzsich, Gertrud Buchenrieder, Andriy Nedoborovskyy\*

## Abstract:

**Social capital matters, not the least in determining individual welfare. It is argued that it functions similar to traditional production factors. However, there are not many empirical analyses about this issue at the farm-household level in general and in post-communist countries in particular. Whether or not social capital affects farm income is tested using micro-data from 255 household plot farmers in Ukraine. The data reflect 23 social capital indicators. These are merged in four separate index variables. The index variables reflect the theoretical dimensions of social capital, namely form, i.e. structural and cognitive, and relationship, i.e. bonding and bridging. By adopting multiple regression analysis, it can be shown that social capital in the form of bridging is indeed a significant factor for determining the level of agricultural income. However, the findings also underline the multidimensional side of social capital. Both bonding and cognitive social capital show no immediate impact on agricultural income among household plot farmers in Ukraine.**

**Keywords:** empirical survey, household farming, agricultural income, social capital, Ukraine

**JEL:** O13, P32, Q12, Z13

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## 1. Introduction

In general, the transition of the agricultural sector from a centrally planned to a market economy has not been as successful as originally anticipated in most countries of Central and Eastern Europe (CEE) and the Commonwealth of Independent States (CIS). A number of reasons have been given, which can be summarised as follows (ROZELLE and SWINNEN 2004; BEZEMER 2002): underdeveloped rural financial systems and complicated modes of farm restructuring led to limited access to loans owing to a lack of profitability, collateral problems, risks and uncertainty. Similarly, the farm sector was characterised by a weak human capital structure, fragmented land ownership, rapid changes in agricultural policies and an incomplete legal framework (for a summary of the impediments and achievements of transformation in the agri-food sector see BUCHENRIEDER et al. 2009). In this respect, the risk-averse behaviour of economic agents like farmers was seen as quite rational.

As an additional reason, it has been argued that the poor and disappointing results of the transformation process

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	Corporate farms	Peasant farms	Household plots
Number of units	17,700	43,000	~ 5,500,000
Share of agricultural land (%) <sup>a)</sup>	58.7	8.2	33.1
Average size (hectares)	1384.0	80.0	2.5
Share of gross agricultural output (%) <sup>b)</sup>	35.8	3.9	60.3

**Source:** LERMAN et al. 2007, pp. 1-2, 21, 29

**Note:** a) Total area: 42 million hectares

b) At 2000 prices

**Table 1:** Distribution of total farm number, size and production in Ukraine (2004)

have been due to a low level of social capital (e.g. PALDAM and SVENDSEN 2000).

Over the last few years, the number of studies of the role of social capital in CEE and CIS has increased. For example, a very comprehensive overview of research on social capital in CEE has been presented by MIHAYLOVA (2004). However, while the number of studies about the impact of social capital on rural development is rising, there are just a few focusing on the agricultural sector. Researchers are just starting to look in more detail into the concept of social capital and its relevance for agricultural development. Among others, CHLOUPKOVA and BJORNKOV (2002), HUDECKOVA and LOSTAK (2003) and WOLZ et al. (2006a) analysed data from the Czech Republic; FORGACS (2008) from Hungary, WOLZ et al. (2006b) from Poland, LERMAN and MIRZAKHANIAN (2001) and KASARIJAN (2010) from Armenia. All these studies confirm that social capital in one form or the other is significant in increasing agricultural income.

Up to the break-up of the Soviet Union and its independence, agricultural production in Ukraine was characterised by state (*sovkhos*) and collective farms (*kolkhoz*). The subsequent reform process has been lengthy and in many ways a difficult process. The first round of reform in 1992-93 initiated privatisation of land through the distribution of paper shares to the rural population and mandated the transformation of former state and collective farms into shareholder structures. The second round of reforms started in late 1999 when corporate farms were obliged to convert their paper shares into fully titled land plots. Hence, nearly seven million rural residents became owners of physical land plots (LERMAN et al. 2007). Following these two rounds of reform the agricultural sector a dual land tenure structure emerged. On the one hand, about 17,700 large-scale corporate farms cultivate, on average, about 1,400 ha per farm, and on the other hand, about 5.5 million (more subsistence oriented) household farmers cultivate, on average, about 2.5 ha per household (Table 1). In-between there is a relatively small group of about 43,000

peasant farmers. Subsequently, it can be stated safely that agricultural production is still dominated by so-called household plot farmers. They provide about 60 percent of the total gross agricultural output. Business-oriented farms play a minor role.

The main reason for the strong role of household plot farms seems to be the necessity of securing the family's food consumption.<sup>1</sup> Moreover, surplus production forms an important source of income and helps to improve standard of living. While LERMAN et al. (2007) described these farms as semi-commercial, one could also call them semi-subsistence farms. Obviously, household plot farmers do not form a homogeneous group. Some seem to be more economically successful than others. In general, a varying adoption of production factors, i.e. land, labour and capital is identified in economics as being of influence. Additional factors might be the level of human capital, particularly age and educational level. However, it has been observed that similar endowments of production factors do not necessarily lead to similar economic results (see e.g. SLANGEN et al. 2004; LEE et al. 2005). Therefore, we argue that there is an additional, so far under-rated factor of production, which significantly affects agricultural income among household plot farmers in Ukraine. We will test this hypothesis in making use of farm survey data from 255 household plot farmers in Ukraine, and which had been gathered in autumn 2006. With this paper we intend to contribute to the clarification of the concept of social capital in agricultural development.

Our contribution is structured as follows: in the beginning we discuss the concept of social capital, its dimensions and definition. The major part of the study

<sup>1</sup> DAVIDOVA et al. (2010) convincingly showed for several countries in CEE (Bulgaria, Hungary, Poland, Romania, and Slovenia) that non-marketed farm production (in other words subsistence income) lifts semi-subsistence farmers above the national poverty line. They found that, on the one hand, subsistence income is substantial, amounting to 58.5 percent of household income, and that subsistence income, on the other hand, is more important for households that are below the poverty line. Especially in Bulgaria and Poland, subsistence income shifts a large share of the farming population from poor to non-poor.

will be made up by an analysis of the empirical farm survey data investigating whether social capital has an influence on their material welfare. A short concluding section follows.

## 2. Concept of Social Capital

The concept of social capital, although adopted rather recently in social and economic sciences, has become very popular. In broad terms, it can be defined as networks, norms and trust which facilitate information sharing, collective decision-making and collective action. Its usefulness has been derived from the observation that social networks are vital in managing one's daily life. These networks, however, are not naturally given. Investments in the institutionalisation of group relations are necessary. The group relation might then be usable as a source for other benefits (PORTES 1998). But researchers disagree, among other things, whether it should be attributed to the individual (e.g. BOURDIEU 1983) or considered group property (e.g. COLEMAN 1988; PUTNAM 1993) aggravating commonly accepted theory building. Another problem of the concept is the understanding that social capital cannot be measured directly by a few indicators, but requires multiple proxies. Hence, despite the immense amount of topical research, there is no common consensus about its meaning. In their review article, DURLAUF and FAFCHAMPS (2005, p. 1642) complain that "the success of social capital as a federating concept may result from the fact that no social science has managed to impose a definition of the term that captures what different researchers mean by it within a discipline, let alone across fields". Therefore, there has been a lot of criticism about its explanatory power in analysis, particularly among economists (e.g. MANSKI 2000). However, during the last years and following other sciences, economists increasingly recognise that people act within social and cultural contexts. These contexts affect how resources are allocated to competing ends. There has been an expanding scholarly literature describing how social capital increases an individual's ability and willingness to cooperate, improves monitoring and enforcement of contracts, and reduces free-riding and information asymmetry lowering transaction costs (FIDRMUC and GËRXHANI 2008). In short, social capital matters for economic growth (ISHAM et al. 2002; BUCHENRIEDER and DUFHUES 2006) and "questions surrounding social capital are hardly trivial for

economists" anymore (GOETZ and RUPASINGHA 2006, p. 1304).

Therefore, the major challenge has been to develop a 'lean and mean conceptualisation' when applying the concept (WOOLCOCK 2002) or to follow a 'narrow focus' (DURLAUF and FAFCHAMPS 2005). One promising option is to focus on its sources. Like capital in general, social capital represents a stock of assets that yields a flow of benefits, like e.g. income streams. We follow this approach by referring to SPORLEDER and WU (2007, p. 3) who define social capital as "the sum of the actual and potential resources embedded within or available through a network of relationships that is possessed by an individual or a firm". To improve the operationalisation of social capital, GROOTAERT and VAN BASTELAER (2002) propose to focus on its dimensions. Basically, three major dimensions can be distinguished: They are (1) its scope (or unit of observation), (2) its forms (or manifestations) and (3) its type of relationship through which social capital affects development:

- With respect to *scope*, the micro, meso and macro levels of analysis can be distinguished. At the micro level individuals and households are the focus of analysis, at the meso level relations among groups rather than individuals, while at the macro level the most institutionalised relationships and structures, such as e.g. the rule of law, are analysed.
- With respect to *forms* two types can be distinguished: structural and cognitive. Structural social capital facilitates information sharing and collective action through established roles and social networks supplemented by rules, procedures and precedents. It is relatively objective and observable. Cognitive social capital refers to shared norms, values, trust, attitudes and beliefs. It is more subjective and intangible. It is a matter of how people think and feel. The former type facilitates a stream of benefits, in particular in lowering transaction costs, having already established patterns of interaction that make productive outcomes from cooperation more predictable and beneficial. The latter type predisposes people toward cooperative behaviour, in part because once they are widely shared they make cooperation more likely (UPHOFF 1999).
- With respect to *relationship*, again two major types can be distinguished. One type refers to intra-group relationships, i.e. relationships of 'bonding' that strengthen links between people and facilitate intra-group interaction and collective action. It brings

people who already know each other even closer together. The other type refers to inter-group relationships, i.e. relationships of 'bridging' that strengthen linkages between people, groups and organisations from different backgrounds, both at horizontal and vertical levels. It brings together people or groups who previously did not know each other. PUTNAM (2000) argues that both types of links bring benefits, but in different ways. Bonding social capital is good for promoting special reciprocity and mobilising solidarity. It is essential to enable individuals to 'get by', although it might also have negative effects. Bridging networks are better for linkage to external assets and for information diffusion. More scattered and wide-ranging bridging levels are needed to 'get ahead'.

Intuitively, all dimensions are essential for improving a person's well-being. In our analysis, we will adopt a 'narrow focus' and concentrate on the micro level, i.e. individuals of farm households. The two other dimensions, i.e. the structural and cognitive side, as well as bonding and bridging ties, are considered in as far as they are helpful in better interpreting the micro results. In this way we aim to pursue two objectives; on the one side, most facets of social capital will be covered; on the other, the number of relevant indicators to be analysed is supposed to be limited as much as possible.

### 3. Methodology

In this contribution, we want to analyse whether and in which way social capital impacts socio-economic

development in transition economies. The central hypothesis is that, besides the classical production factors, social capital can be identified as a significant factor influencing the level of farm income. We test this hypothesis by analysing primary data from a farm household survey in Ukraine that was carried out with the support of the Agricultural University in Zhytomyr in autumn 2006. The survey area is located in the Zhytomyr Region. A random sample of 255 household plot farmers was interviewed in the years 2000, 2002 and 2004 with regard to their farm management activities. In the fourth round of surveys in 2006 a questionnaire module concerning social capital was added. Thus, the data of 2006 are analysed here.

The questionnaire module on social capital covers the whole range of social capital issues at the household level with respect to its form, i.e. structural and cognitive, and its type of relationship, i.e. bonding and bridging. In total, eleven independent variables could be identified which are hypothesised to have an influence on the agricultural income of the household plot farmers (as the dependent variable). Four of them represent social capital and are derived from 23 indicators. The other seven variables represent other production factors. The data analysis starts with descriptive statistics to give an overview of the sample. Multiple regression analysis is then applied to test whether the four social capital variables have a significant impact on the annual agricultural income. All calculations were done with the software package SPSS.

Variable	Unit	N	Min	Max	Median
<i>Independent variables:</i>					
Labour input: total annual working time	Hours	255	730	12,159	3,600
Total arable land	Hectare	255	0.06	13.42	0.42
Number of cattle, incl. milking cows	Heads	255	0	5	2
Number of pigs and sows	Heads	255	0	11	1
Production structure <sup>1)</sup>	%	255	5	80	21
Age of household head	Years	255	20	78	48
Educational level of household head <sup>2)</sup>	Scale	255	0	5	2
Bonding cognitive social capital <sup>3)</sup>	Scale	255	0.29	1.00	0.76
Bridging cognitive social capital <sup>3)</sup>	Scale	255	0.00	0.71	0.24
Bonding structural social capital <sup>3)</sup>	Scale	247	0.09	1.00	0.73
Bridging structural social capital <sup>3)</sup>	Scale	255	0.33	1.00	0.67
<i>Dependent variable:</i>					
Gross agricultural value added	1,000 UAH	255	-1,959	44,988	8,093

Source: Own calculation with data from IAMO Ukraine farm survey in 2006 referring to year 2005

Notes: <sup>1)</sup> Share of crop production in total gross agricultural value added <sup>2)</sup> 0: not completed primary school, 1: primary school, 2: secondary school, 3: vocational training, 4: B.Sc., 5: M.Sc. <sup>3)</sup> Index ranging from 0.0 to 1.0.

**Table 2: Descriptive statistics for the variables in the model**

### 3.1. Descriptive Statistics

The eleven independent variables were condensed to six categories (i.e. labour, land, capital, production structure, human capital and social capital). These variables were used in the quantitative analysis below. Gross agricultural value, which was added in 2005 as an indicator for agricultural income, represents the dependent variable. It was calculated as total value of agricultural production minus variable production costs. On average, it stood at about 8,093 UAH (1 EUR = 7.24 UAH; OANDA 2008) in 2005. The variables in the model are described in Table 2.

*Labour.* The labour input is measured as the sum of the total working time of all household members. The total median labour input comes out to about 3,600 hours per farm.

*Land.* This indicator covers the total size of arable land operated by the farm, including land for annual crops, fruits and vegetables. The median farm size is 0.42 ha. Compared to the national average, our sample is focused on smaller household plot farms.

*Capital.* Unfortunately, respondents were not in a position to come up with reliable estimates of the value of their buildings, tools and livestock. Therefore, two proxy indicators were asked as almost all household plot farmers keep animals; first the number of cattle including cows and, second, the number of pigs including sows. The respective median numbers stand at 2 and 1 heads.

*Production structure.* In our model, we apply production structure as an additional independent variable, which can be understood as a rough proxy of the farming system. It reflects the most important farm activities and determines agricultural income to a large extent. In general, it is used as an approach for analysing the decisions of agricultural producers and their linkages to other stakeholders (DOPPLER 2000). In our analysis this variable presents the share of crop production in total agricultural production. On average, about 21 percent of the gross value added is made up by the value of crops. LERMAN et al. (2007) report a more even balance of crop and livestock production among household plot farmers in Ukraine. This relative small share of crop production in our sample might reflect the fact that the average farm size is relatively small.

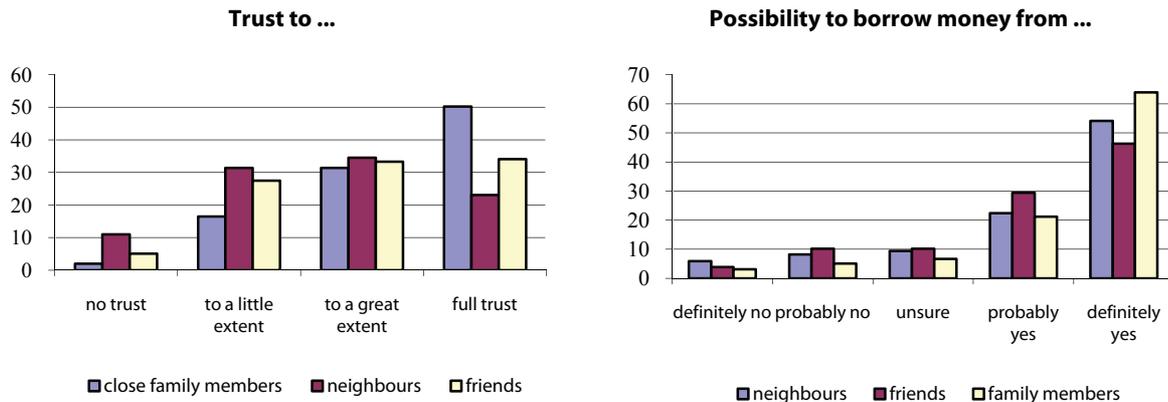
*Human capital.* Two variables reflect the human capital of the household plot farmers. First, the age of the household head was recorded. With an average age of 48 years, the figure is rather low. Therefore, household plot

farmers cannot be equated with retired persons. In addition, the sample was asked about the educational level of the household heads. This variable is measured on a scale ranging from zero (not completed primary school) up to five (completed M.Sc.). The median value comes up to two (completed secondary school).

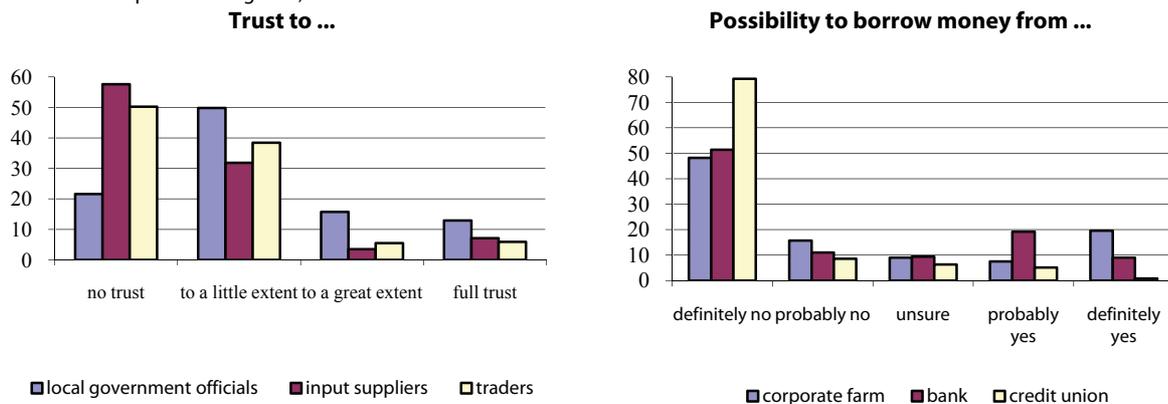
*Social capital.* In total, the questionnaire covered 38 different aspects of social capital. Out of these, 23 indicators could be applied for further analysis. Interestingly, almost no household plot farmer is a member of a formal self-help organisation, e.g. service cooperatives or lobbying organisations. Therefore, the respective indicators had to be dropped from further analysis. One option generally applied when analysing a large set of variables is the creation of a single numerical index (e.g. see for social capital analyses: NARAYAN and PRITCHETT 1999; KRISHNA and UPHOFF 2002). The problem with this approach is that it requires strong and somewhat arbitrary assumptions about the weights for each indicator in the aggregation. In addition, this method assumes that a single numerical index is sufficient to represent social capital. However, various studies have shown that social capital is not a homogeneous entity (WINTERS et al. 2002).

Therefore, in line with the theoretical discussion about the heterogeneity and various dimensions of social capital we deduced four index variables out of the 23 indicators. In our analysis, each indicator has equal weight in the respective index variable. The four index variables were calculated by adding the figures for the single indicators belonging to that respective index and dividing the sum by the highest possible sum of answers. This procedure results in values between zero and one. Zero stands for no social capital at all with respect to that index variable, while a higher value implies greater social capital. The four index variables look as follows:

(1) The index *bonding cognitive social capital* comprises six core indicators: The first three summarise trust to close family members, neighbours and friends, respectively. A four-stage scale of answers was given: no trust, to a little extent, to a great extent and full trust. In addition, the respondents were asked whether they thought that they could borrow money (i.e., about one week's spending) from neighbours, friends and/or family members living outside of the household. We asked about their assessment and not whether it really happened before. The answers were rated along a five-stage scale: definitely no, probably no, unsure, probably yes and definitely yes. With respect to trust, respondents



**Source:** Own calculation with data from IAMO Ukraine farm survey in 2006  
**Figure 1:** Distribution of the six indicators that form the variable bonding cognitive social capital (percent of households in the respective categories)



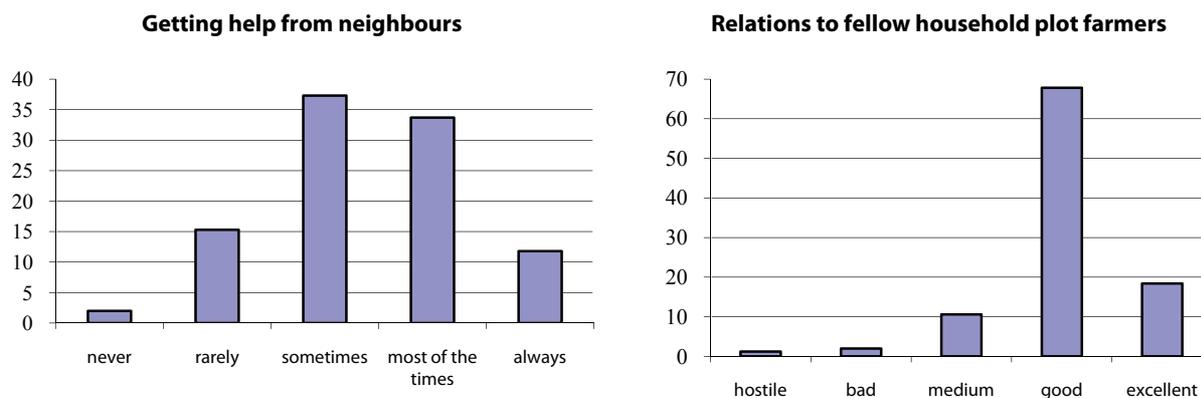
**Source:** Own calculation with data from IAMO Ukraine farm survey in 2006  
**Figure 2:** Distribution of the six indicators that form the variable bridging cognitive social capital (percent of households in the respective categories)

trust mostly their fellow family members and with a certain gap, their friends. Trust in neighbours is not very strong. More than ten percent of the respondents do not trust their neighbours at all. The majority of respondents were quite confident that they could borrow money in case of need from close family members, but also from neighbours and friends (Figure 1).

(2) The index *bridging cognitive social capital* comprises again six core indicators. The first three refer to trusting in local government officials, input suppliers and traders (buyers of agricultural products), respectively. In addition, farmers were asked about their opinions on whether they could get a loan (i.e. again the amount of about one week's spending) from a corporate farm nearby, a bank and/or a credit union. Again, the answers reflected their opinions. The respective answer categories are the same as for bonding cognitive social capital. The findings show that the respondents had almost no trust at all in input suppliers and traders. Trust in government officials is a bit higher, but there is also not a great deal of

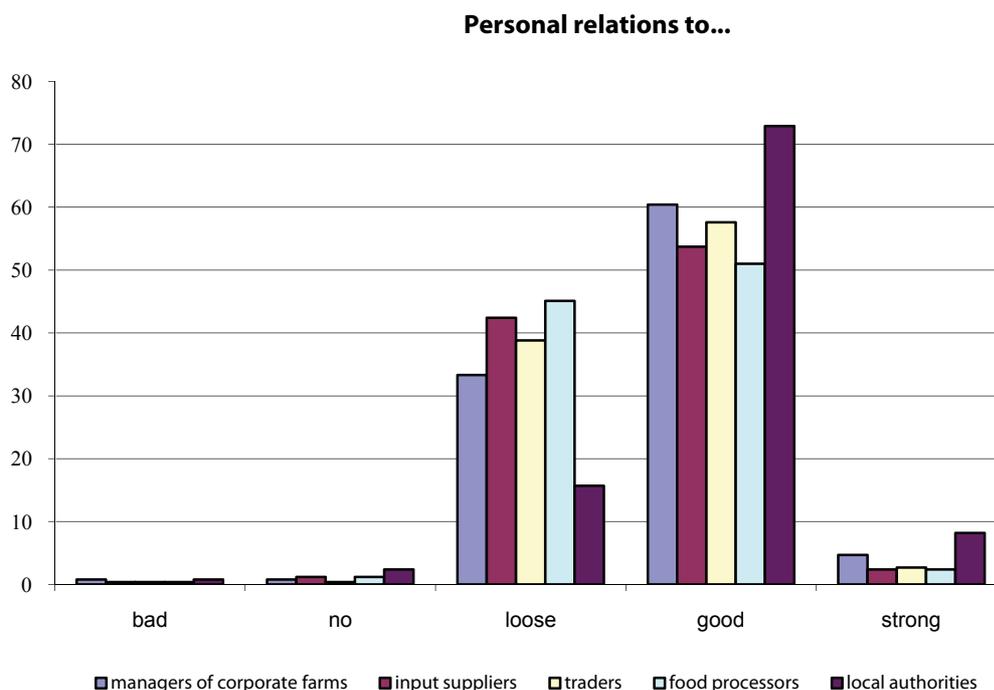
confidence in them (Figure 2). The option of getting even a small loan from a formal source was seen as rather slim. Just about a quarter of the respondents assessed that they would get a loan from the local corporate farm or a local bank (Figure 2).

(3) The index *bonding structural social capital* is made up of five core indicators. First, farmers were asked about the option of getting help from neighbours. Five answer categories were possible: never, rarely, sometimes, most of the time and always. More than a third responded that they were getting help sometimes and most of the time, respectively (Figure 3). A second question asked farmers about their relations to fellow household plot farmers in their respective villages. Again, five answer categories were given: hostile, bad, medium, good and excellent. There seems to be strong common threads among household plot farmers. More than two thirds of the respondents described their relations as good, another 20 percent as excellent (Figure 3). The final three questions relate to cooperation with neighbours,



**Source:** Own calculation with data from IAMO Ukraine farm survey in 2006

**Figure 3:** Distribution of the two indicators that are part of the variable bonding structural social capital (percent of households in the respective categories)



**Source:** Own calculation with data from IAMO Ukraine farm survey in 2006

**Figure 4:** Distribution of the five indicators that form the variable bridging structural social capital (percent of households in the

voluntary work for the community and the attendance of village festivals during the previous year. All these three questions had a binary answer category. Respondents could reply either yes or no. The level of togetherness is quite high, amounting to more than 80 percent for all three categories.

(4) Finally, the index *bridging structural social capital* combines six core indicators. The first five indicators concern the personal assessment of their relations, as an indicator of informal networks, to managers of the corporate farm nearby, input suppliers, traders (buyers of

agricultural products), food processors and local authorities, respectively. A five-stage scale of answer categories was given: no, bad, loose, good and strong relations. The respondents assessed their personal relations as good (more than half for each group), particularly to local authorities and managers of corporate farms (Figure 4). This reflects a certain dichotomy: while household plot farmers do not trust input suppliers, traders and government officials as stated above, they generally assess their personal relations as good. In addition, respondents were asked whether they

Variable (i)	Model with all variables		Model with significant variables only*	
	b(i)**	Level of significance***	b(i)**	Level of significance***
Labour	-0.021	0.548		
Land	0.210	0.000	0.204	0.000
Number of cattle	0.593	0.000	0.590	0.000
Number of pigs	0.462	0.000	0.451	0.000
Production structure	0.082	0.025	0.079	0.029
Age of household head	0.021	0.542		
Educational level of household head	-0.048	0.161		
Bonding cognitive social capital	-0.019	0.606		
Bridging cognitive social capital	0.005	0.900		
Bonding structural social capital	0.014	0.693		
Bridging structural social capital	0.075	0.053	0.070	0.030
Constant		0.120		0.012
<b>Corrected R<sup>2</sup></b>	<b>0.739</b>		<b>0.742</b>	

**Source:** Own calculation with data from IAMO Ukraine farm survey in 2006 (N = 255)

**Note:** \* When a model includes irrelevant variables then the estimators for the coefficients are unbiased but inefficient (MADDALA 1992). Therefore, the original model was stepwise backwards reduced till it only included significant variables. \*\* Standardised coefficients, \*\*\*A significance level lower than 0.1 indicates a significant effect of the variable on gross agricultural value added.

**Table 3:** Results of multiple regression analysis

or another household member are members of a political party. A binary answer category was given, i.e. either yes or no. About a quarter of all households comprised at least one member who had joined a political party.

### 3.2. Multiple Regression Analysis

In order to test our hypothesis that social capital enhances the level of gross agricultural value added we calculated the following multiple regression model (equation 1). The regression coefficients are calculated by the ordinary least squares method and tested for significance.

$$(1) \text{GAVA} = \text{const} + \sum_{i=1}^{11} b(i) * \text{variable}(i)$$

GAVA : gross agricultural value added

Const : regression's constant

b(i) : coefficient for the i<sup>th</sup> variable, i=1..11

variable(i) : value for the i<sup>th</sup> variable, i=1..11

The variance inflation factors (VIF) were smaller than 2.0 and the pairwise correlations were smaller than 0.8 for all variables, indicating that there is no multicollinearity between the variables in the models (HÜBLER 1989). Among the total number of observations (N = 255) there were eight with missing values. These had been replaced by the median value of that respective variable. Table 3

summarises the results of the multiple regression analysis showing the variable coefficients and their significance level. On the left-hand side, the influence of all eleven variables is reproduced, while on the right-hand side, only the significant explanatory variables are shown. Six out of the eleven variables were not significant in the first model. Just the variables 'land', 'number of cattle', 'number of pigs', 'production structure' and 'bridging structural social capital' were significant. On the other side, the variables labour, the two human capital variables and the other three social capital variables were not significant. At this stage, our hypothesis was confirmed by the analysis, as one facet of social capital was significant.

In the following, the model was reduced in a stepwise modus to a model comprising significant variables only, i.e. the calculation started with the full model which was backwards reduced such that non-significant variables were excluded step by step from the model. According to AGRESTI (2002) this is the most preferable procedure of statisticians. A variable was treated as non-significant if its level of significance was higher than 0.1. Finally, only significant variables were left in the model. Both models are highly significant and explain more than 70 percent of the observed variability in gross agricultural value added.

In the final model, five variables remain, which have a significant impact (at the 5 percent-level) on gross agricultural value added. They are 'land', the two proxy

variables for capital, i.e. 'number of cattle', 'number of pigs', 'production structure' and 'bridging structural social capital'. The coefficients of all five variables are positive, indicating that an increasing endowment with land, capital and bridging structural social capital increases gross agricultural value added among household plot farmers in Ukraine. The absolute values of the coefficients demonstrate that capital and land have the strongest effect on agricultural income followed by the production structure and social capital. This result is concordant with neoclassical economic theory. In addition, our hypothesis is confirmed that social capital in the form of its bridging structural type has a significant positive impact on agricultural income. This supports the thesis that links connecting people from different backgrounds are important to "get ahead". In the Ukrainian background these are mostly informal links as membership in formal organisations among these farmers is negligible.

However, all the other types of social capital do not show any significant impact. In this respect, we suggest that various facets of social capital do not run in the same direction but might even oppose each other. We conclude that bonding and cognitive social capital do not promote agricultural income. In fact, the coefficient of bonding cognitive social capital is negative, although not significant, implying that strong ties among close kin might even hamper economic development as suggested, among others, by SABATINI (2008) making use of data on Italy. In addition, we were surprised that two production factors, i.e. labour and human capital, did not show any significant impact on agricultural income. We suggest that farm size is the constraining factor for Ukrainian household plot farmers. Because the farms are very small, an additional unit of labour input or higher education do not have an income effect. This situation is also described in the development literature in the context of hidden unemployment. In addition, higher educated household members might be more engaged in non-farm activities.

#### 4. Conclusions

Household plot farmers are the dominant group among agricultural producers in Ukraine, yet they do not form a homogenous group. Some households are economically more successful than others. Varying access to classical production factors (land, labour, capital and human capital) does not seem to account solely for this variation. Therefore, it is hypothesised that social capital

also contributes to the difference. However, there are hardly any studies on the impact of social capital on agricultural sector development and adjustment in Ukraine. In analysing empirical data from a survey among 255 household plot farmers in 2006, the aim was to fill this gap. Gross agricultural value added as an indicator for agricultural income is taken as a dependent variable. It is regressed against the classical production factors as well as a bundle of four social capital index variables. These indices represent various dimensions of social capital, i.e. with respect to its forms: structural and cognitive, and with respect to its relationships: bonding and bridging.

The econometric analysis revealed five significant variables: land, number of cattle and the number of pigs (both indicators for capital), production structure and bridging structural social capital. The other production factors were not significant. With respect to our hypothesis, the findings show that social capital in its bridging structural form, in addition to the classical production factors, has a significant impact. Hence, our hypothesis has been supported. In the Ukrainian context these are mostly informal links.

However, the other three index variables reflecting social capital were not significant. The various indices do not seem to run in the same direction. We conclude that both bonding and cognitive social capital do not promote agricultural income among household plot farmers in Ukraine. Actually, strong ties with close kin might even hamper economic development. The results indicate that social capital is not homogenous and only certain dimensions of it are valuable in promoting economic development. In this respect, our findings confirm the multidimensional and context-dependent nature of social capital (SABATINI 2008). One initial recommendation can be drawn: Household plot farmers can improve their agricultural income if they build up and strengthen links and networks with people from different backgrounds. In this respect, they might need active support from outside. This, however, does not mean that development of social capital is a panacea for the economic ills among household plot farmers in Ukraine. However, it can be identified as one factor which has a significant influence on their material well-being. 

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