

# The Relationship between Social Capital and the Market Integration of Farms – Examples from Central and Eastern Europe


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## Abstract

The economic situation of farms is determined by a number of factors, which have been widely described in the literature. One factor is market integration, which shapes the farmer's position in the food supply chain. The involvement of farmers in the integration may be related to their social capital, although this hypothesis has not been fully verified. Thus, the aim of the article is to assess the relationship between the level of social capital and the market integration of farms in selected Central and Eastern European (CEE) countries. The analysis includes Poland, Romania, Lithuania, Serbia and Moldova, and the sample consists of a total of 3160 farms. Data were collected personally by the authors through face-to-face interviews with farm managers. Based on these data, the authors' market integration index was calculated and the level of social capital of farms was determined. A comparative analysis of average market integration indices for farms with different degrees of social capital was then carried out separately for each country. The Mann-Whitney U-test and the Kruskal-Wallis test were used to determine the significance of differences. The findings reveal that the highest value of the market integration was recorded for those farmers who were most strongly 'socialised', i.e. who participated in long-life education, took part in social events and were members of various organisations. A very important implication of this is that by strengthening social capital, farms aim



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to strengthen integration into the market, which can consequently lead to improved economic performance.

Therefore, mitigating regional disparities and increasing the average level of agricultural performance in CEE countries should include measures to increase social capital on farms, i.e. providing workshops, training, and exhibitions, as well as supporting agricultural producer organizations, promoting rural housewives' circles, and organising social events, among others. Such activities can be financed both from the second pillar of the common agricultural policy and from local government budgets. The contribution of the research focuses on the rarely undertaken subject matter of the relationship between social capital and market integration in farms. The added value consists of 1) a comparative analysis of five CEE countries and 2) an estimation of the authors' indicators of social capital and market integration of farms, which could be used in the future for similar research.

**Keywords:** market integration, social capital, agriculture, farms, Central and Eastern European countries

**JEL:** Q12, Q13, R11, R12

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## Introduction

Social capital plays a key role in agriculture and rural development (Rivera et al. 2018), especially when there is a lack of other forms of capital, like machinery or money (Michalewska-Pawlak 2010). The positive effect of social capital on building a farm's market orientation has been rarely tested empirically, although there are numerous indications that such a relationship exists. According to recent research, social capital plays an important role in various agricultural and non-agricultural value chains (e.g. Jones et al. 2008; Guinjoan, Badia, and Tulla 2016; Knickel and Maréchal 2018; Trigkas, Partalidou, and Lazaridou 2021). Some articles focus directly on social capital in agriculture and rural development in Central and Eastern Europe (CEE). For example, the level of social capital in Polish agriculture and rural areas was analysed by Gajowiak (2013), Szychalski (2013), and Jarosz-Angowska, Angowski, and Kijek (2015). In Romania, social capital was examined from the perspective of cooperatives and associations of livestock farmers (Georgescu 2016). Some studies are also devoted to social capital in Lithuanian agriculture and rural areas (e.g. Drożdż, Vitunskienė, and Novickytė 2021).

However, to the best of our knowledge, there are few surveys devoted simultaneously to social capital and market integration from the perspective of farmers from Central and Eastern Europe (CEE). Thus, the article aims to assess the relationship between the level of social capital and market integration of farms in selected Central and Eastern European countries. The analysis includes Poland, Romania, Lithuania, Serbia and Moldova, and the sample comprises 3160 farms. The farm data were collected in 2020.

Given the history of the development of the economic and social sciences, the concept of social capital is relatively new, introduced in 1916 by Lyda J. Hanifan with reference to rural educational centres (Fukuyama 2003). Hanifan defined social capital as a set of intangible community values, including goodwill, sympathy and social intercourse between members of the local community and their families, which together form a social unit. In our research, we will focus on an individual's social capital, which is understood as an individual's network of social connections that may contribute to the economic benefits obtained by that individual. To determine

the level of social capital and the degree of market integration in the surveyed farms, we constructed our own indices. Therefore, the added value of the research focuses on: 1) the rarely undertaken subject matter of the relationship between social capital and market integration in farms, 2) the spatial scope of the research (CEE countries), and 3) estimating our indicators of social capital and market integration of farms.

In the first part of the article, we focus on various studies on the topic of social capital and market integration in agriculture. Next we show our methodology and data set. In the next section, we identify the links between social capital and market integration in CEE farms. The article concludes with a discussion and conclusion.

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## The concept of social capital

Many analyses indicate that cooperation between farmers is too weak and develops too slowly (Perepeczko 2006). An important reason for this may lie in poorly formed social capital, understood as trust, cooperation skills and social relations (Kwilinski, Lyulyov, and Pimonenko 2023). Some of the first significant research on social capital was conducted by Bourdieu (1986), Coleman (1988) and Putnam (2001). The results of the analysis of numerous reports related to human capital indicate that this factor significantly improves a country's economic performance (Knack and Keefer 1997), the results of local communities (Ostrom 2000), and organizational and unit performance (Nahapiet and Ghoshal 1998; Lazega and Burt 1995; Kwilinski et al. 2019; Kuzior and Kwilinski 2022). Additional elements that determine the quality of social capital are the norms encoded at the local community level, which influence the behaviour of members of this community (Putnam 2011).

Social capital can be perceived both in positive and negative senses. According to some researchers, a higher level of social capital allows for a greater ability to plan, while a lower level means that new activities can be implemented only when individual benefits are perceived. It was also observed that higher levels of social capital encourage activities that develop this capital (Cecchi and Basile 2007).

Most research on social capital highlights its variability depending on the complexity of social structures. For example, more complex societies cope better with problems such as poverty, and it has been confirmed that rural households cope much better in such societies. However, the complexity of society itself is not a sufficient factor to alleviate social problems; factors that simultaneously build social capital are necessary (Scuderi et al. 2023). Research conducted in Austria revealed significant differences in informal social capital between urban and rural areas. Residents of rural areas have more social contact with people performing blue-collar work. Furthermore, in rural societies, regular interactions with at least three family members per week positively influence well-being through the enhancement of social capital (Glatz and Bodi-Fernandez 2020).

A significant number of studies mention trust, defined as belief in the proper conduct of others, as a crucial variable (Trigkas, Partalidou, and Lazaridou 2021). Findings regarding human capital in rural and urban areas are mixed. Many studies suggest that social capital in rural areas

has a higher value because people in these areas trust each other more, maintain friendships, interact frequently with each other, show voluntary commitment and sometimes there are also strong family ties (Jones et al. 2008). It is assumed that trust is the basis for building a network of connections, and it is also related to participation in social life, involvement in volunteering and social interactions, as well as a sense of security and tolerance. In the above-mentioned studies, selected social groups were surveyed using a six-point Likert scale. One variable often used to express the level of social capital is membership in voluntary associations. However, there are reports in the literature indicating that this indicator of social capital is overestimated. The main reason for this observation is the diverse nature of voluntary associations (Skorbiansky and Camp 2021).

One prominent form of social capital is its binding aspects, characterised by frequent relationships that foster a higher level of trust and support, leading to the development of network structures (Putnam 2001; Adler and Kwon 2002). Another aspect of social capital is its ability to create bridges, which helps establish connections with people outside one's immediate group (Piwek and Joinson 2016).

Research conducted in central Romania has shown that there are numerous connections between financial, social, human and development capital. This indicates that to have a beneficial impact on the development of regions, it is necessary to have a multi-directional impact on all indicated capitals, otherwise, we risk falling into an environmental trap. In particular, prioritising the development of social, human and financial capital are crucial due to their strong potential to influence other capitals (Mikulcak et al. 2015).

The importance of social capital in rural areas has also been highlighted in European Union programs aimed at countries of the former socialist bloc (Kloczko-Gajewska 2015). The review of research on social capital shows that variables often used as indicators of social capital include the number of social organizations and the level of residents' involvement in the activities of these organizations (Wojewódzka-Wiewiórska 2015).

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## Market integration in agriculture and the role of social capital

Economic integration is the process of merging economies that results from the desire of the entities that form them to improve their efficiency. Many aspects support the integration of farmers, including producers joining together to increase their bargaining power, enabling them to secure higher prices for their products while reducing prices for production inputs. They may also have easier access to external sources of financing (Bieniek-Majka 2019).

Horizontal integration creates opportunities for joint investment in equipment that supports production and distribution. The effectiveness of horizontal integration depends on its level. Thus, better organization among producers is essential for reducing transaction costs and competing more effectively in the market. On the agricultural side, voluntary participation in unions often results from farmers' informed decisions (Stępień et al. 2022).

When selling agricultural products, producers can use the intermediation of agents, dealers, and wholesalers; they can also sell products on stock exchanges and at auction. However, this strategy means that much of the economic surplus that arises in food supply chains is captured by intermediaries. To reduce these losses, farmers can participate in vertical integration by increasing their influence in shaping transactions in marketing channels. Vertical integration facilitates easier regulation of market balance (demand-supply) and contributes to the formation of a stable, specialised resource base. By strengthening their relationships with buyers, farmers can reduce production risks by ensuring reliable product collection and potentially increasing the sale prices of their products. From the farmer's perspective, vertical integration can be achieved through several strategies:

- Entering into a contract (contractual integration), i.e. signing contracts with customers and setting out the terms and conditions of transactions.
- Acquiring ownership (capital integration) and starting food processing, ending with food retailing.
- Participation in legal forms of collective activity, e.g. cooperatives and associations (Wyrzykowska 2004).

Stępień et al. (2022) underlined that creating a coordinated production and sales system can be seen as an effort to improve the economic performance and maintenance of farms. This coordinated system includes establishing durable, long-term relationships with contractors, shortening the supply chain, developing integrated forms of distribution and enhancing both vertical and horizontal integration. The development of connections between agricultural producers and the market is determined by many factors. Stępień et al. note that the scale of production and the agricultural area of the farm are key variables. Building coordinated forms of activity is particularly important for small-scale family farms. In contrast, large specialized units benefit from economies of scale, allowing them to achieve lower production costs and higher product prices without needing permanent market connections.

Smaller actors often struggle to participate adequately in the distribution of the added value created along the food supply chain. The economic surplus they obtain during transactions is not optimally allocated in input-output flows, as a significant portion 'leaks' to other market participants, including intermediaries, processors, wholesalers, retailers and, finally, consumers (Bardos, Ferto, and Szabo 2003). This situation results from structural imperfections within the agribusiness sector, where competition exists between generally small-scale agricultural producers and oligopolistic structures on the consumer side. This dynamic should encourage producers to integrate, especially in Central and Eastern Europe, where small-scale producers form the basis of the agrarian structure. Unfortunately, the current level of market organisation and institutional solutions remain insufficient, and mental barriers – such as the fear of losing ownership and freedom – are ingrained in the minds of farmers (Guth, Bieniek-Majka, and Maican 2019).

In this context, it is necessary to harness the potential of the social capital that resides in rural communities. Social capital can foster agriculture and rural development (Midgley 2013) by improving individuals' capacities to organise themselves (Portes and Landolt 2000). Van der Ploeg

and Marsden (2008), Karlsson and Stough (2012) and Phillips (2015) highlighted the importance of social capital in integrated agriculture and rural development strategies. For instance, bonding social capital – derived from family and friends – can significantly influence the adoption of new technologies in the network. Van der Ploeg and Marsden (2008) and von Münchhausen and Knickel (2010) conceptualised social capital as one of the key building blocks of what they called the ‘rural web’. They argued that these building blocks need to come together to respond to the challenges faced by rural economies to improve the sustainability of rural livelihoods and their prosperity (Rivera et al. 2018). Given this context, it is not surprising that social capital plays an important role in agricultural market integration and integrated rural development strategies (Phillips 2015; De los Ríos, Rivera, and García 2016).

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## Data and methods

### Spatial scope and data set

The research covers Central and Eastern Europe, where a common feature is the high share of family farms with small areas of farmland and a low scale of production (the Czech Republic and Slovakia are exceptions in the region). These countries followed a similar path of systemic transformation from a centrally managed to a free market economy. This shift resulted in the privatization of agricultural land in the 1990s, moving socialized ownership to private ownership. The end result was a dual structure of agriculture, where a large group of semi-subsistence agribusinesses operates alongside a small number of high-subsistence agribusinesses (Stępień and Maican 2020). The latter group face the problem of income disparity, primarily due to their unequal treatment in food supply chain flows (Czyżewski and Stępień 2018). Our research highlights the potential for enhancing economic performance through greater market integration.

Among the countries surveyed, Romania has the highest number of farms, accounting for more than 30% of all farms in the EU (Eurostat 2023). Despite this, it has the smallest agricultural area and economic strength, as measured by standard output (SO; see Table 1). Poland ranks second in terms of farm numbers but boasts the highest economic strength. Lithuania is distinguished by having the largest land area of the surveyed countries. In all cases, the proportion of small farms – defined as those with less than 10 hectares of agricultural area – is relatively high, ranging from 65% in Moldova to 96% in Romania. On average, the share across the EU is 75% and is influenced by countries such as Greece, Portugal, Hungary, Bulgaria, Croatia, and Poland. The share of farms with low economic strength – below 8000 SO – is also high, ranging from 64% in Poland to 94% in Romania. The fragmented agrarian structure, which is common to these countries, results in weak market power for agricultural holdings.

Table 1. Basic characteristics of farms in the analysed countries

Specification*	Poland	Romania	Lithuania	Serbia	Moldova
Total number of farms (thousands)	1,301.5	2,887.1	132.1	569.3	369.7
Including smaller than 10 hectares of agricultural area (%)	74%	96%	70%	88%	65%
Average farm size (hectares of agricultural area)	11.3	4.4	22.1	6.1	6.8
Average economic size (SO** in thousands of euros)	20.6	4.2	17.4	9.1	N/A
Share of farms smaller than 8 SO	64%	94%	75%	86%	N/A

\* Data for: Poland, Romania and Lithuania for 2020, Serbia and Moldova for 2018.

\*\* SO – the standard output of an agricultural product (crop or livestock) is the average monetary value of the agricultural output at farm-gate prices, in euros per hectare or per head of livestock. Each product has a regional SO coefficient, calculated as a five-year average value over a specified reference period. The total SO for a farm is determined by summing the SO per hectare of crops and per head of livestock, providing a measure of its overall economic size, expressed in euros.

Source: authors' elaboration based on Eurostat 2024 (Poland, Romania, Lithuania); National Bureau of Statistics of the Republic of Moldova 2024; Statistical Office of the Republic of Serbia 2024.

Survey data collected in 2020 from the following groups were used for the study: 710 farms in Poland, 1,000 in Lithuania, 900 in Romania, and 550 farms each in Serbia and Moldova (Stępień 2024). The sample size was determined by the project and the budget allocated for that period. A combination of purposive and random sampling methods was used. In the first stage, farms that met the study criteria were selected from a database of several thousand farms cooperating with agricultural advisory centres/agencies. Subsequently, a random group was selected. The selection criteria included the following parameters:

- agricultural area up to 20 hectares;
- SO up to €25,000.

The land size threshold was determined through brainstorming sessions with experts participating in the study. It is acknowledged that various sources suggest different thresholds for small farms, often five hectares (Davidova 2014; Galluzo 2015; Lowder, Scoet, and Raney 2016). However, this approach may be more applicable to African or Asian countries; in Europe, even in CEE countries, it potentially excludes larger farms that still operate on a small scale. The 20-hectare threshold was used by Gruchelski and Niemczyk (2016). Furthermore, adopting an economic size criterion makes it possible to exclude farms with a relatively small area but intensive production (e.g. industrial pig or poultry farming) while including slightly larger farms engaged in extensive production (e.g. cereal farms). Additionally, the €25,000 SO threshold aligns with the EU classification in the Farm Accountancy Data Network system (FADN 2018).

These two criteria of small (minor) farms are most often met by family farms, which is a very heterogeneous group. Family farms are characterised not only by land ownership and agricultural activities but also by employing family members as their labour force. Eurostat defines family farms as those where 50% or more of the regular agricultural labour force is provided by family members (Eurostat 2023). We therefore adopted this additional criterion in our research, allowing us

to exclude managers who, although formally defined as farmers (e.g. they belong to the agricultural social security system), work outside agriculture in practice.

After collecting the data and eliminating erroneous or incomplete answers and outlier observations, we retained a total of 3,575 holdings for further analysis: 672 from Poland, 838 from Romania, 998 from Lithuania, 523 from Serbia and 544 from Moldova (data available at <https://doi.org/10.18150/RFEHAO>).

**Table 2.** Basic characteristics of the farms

Specification	Poland	Romania	Lithuania	Serbia	Moldova
Production (€ per year)	12,100 (5,050)*	8,650 (6,025)	7,501 (4,440)	6,570 (3,637)	7,690 (5,057)
Total area (hectares of agricultural area)	11.1 (5.3)	7.6 (5.4)	10.4 (5.9)	6.2 (2.4)	6.3 (3.0)
Labour input (FWU**/farm)	1.61 (0.70)	1.46 (0.67)	1.10 (0.62)	1.65 (0.84)	1.54 (0.87)

\*Number in brackets – standard deviation.

\*\*FWU – Family Work Unit is the unit of measurement representing the work supplied by family members on each farm. One FWU is equivalent to the work of one person, full-time, for one year (e.g. 2120 hours in Poland).

Source: authors' elaboration based on survey data collected in 2020.

Table 2 shows the basic statistics for the farms surveyed. The average production values range from just over €6500 in Serbia to just over €12,000 in Poland. Agricultural land area varies from more than 6 hectares of agricultural area in Serbia and Moldova to 11 ha in Poland. These results differ from the data for total agricultural holdings presented in Table 1, which encompasses the whole population; in contrast, the survey population is restricted by specific criteria. Additionally, the differences between individual values (maximum and minimum) are smaller in our survey sample, suggesting that the group is relatively homogeneous and justifies a comparative analysis. However, the data vary significantly within each country, as evidenced by the high standard deviation values relative to the mean.

## Methods

The research was conducted in several stages. The first stage involves survey interviews with farms, focusing on four areas: economic and production issues, environmental issues, socio-demographic factors, and the relationship of farms to the market. Prior to the survey proper, a pilot study was conducted on a select group of farms from each country to eliminate errors and clarify questions the respondents did not understand. The actual survey was carried out by staff from the agricultural advisory centres after receiving detailed instructions on how to conduct the questionnaire. The data were collected through face-to-face interviews, with both the interviewers and farm managers participating personally. The completed forms were handed over to the researchers, who cleaned and coded the data.

In the second stage, we developed a market integration index. This synthetic index incorporates the following elements:



1. The ratio of sold production to total farm agricultural production: A higher value indicates stronger market integration, thus increasing the index value.
  2. The distribution channels for agricultural products: farmers selected from three possible options:
    - A. Directly to the customer (e.g. from the farm, at the market, or at festivals).
    - B. Using one intermediary channel (e.g. retail shop or restaurant).
    - C. Using multiple intermediaries (e.g. selling to a collection point or processing plant).  
The assumption is that fewer intermediaries correlate with greater market integration and a higher index value.
  3. The subjective evaluation of the farm’s market position (bargaining power): Farmers rated their bargaining power in sale transactions on a Likert scale from 1 (very weak) to 5 (very strong). A higher score reflects a stronger market position and increases the index value.
  4. Subjective evaluation of the farm’s market position in purchase transactions: Similar to point 3, this assesses farmers’ perceptions of their market position when purchasing means of production.
  5. Type of sales contracts: Farmers indicated their contract type from three options:
    - A. No formal contract (ad hoc).
    - B. Short-term contracts (financial year).
    - C. Long-term or renewed contracts: it is assumed that longer-lasting contracts indicate stronger market integration and thus increase the index.
  6. Type of contract for input purchases: This follows the same structure as point 5.
- Each element was scored from 0 to 1, resulting in a total score ranging from 0 to 6. The index was then scaled from 0 to 1. The elements of the synthetic index are shown in Table 3.

Table 3. Elements of the synthetic farm market integration index

Elements of the farm market integration index
1. Ratio of sold production to total farm production
2. Distribution channels for agricultural products
3. Subjective assessment of a farm's market position in sales transactions
4. Subjective assessment of a farm's market position in purchase transactions
5. Durability of sales contracts
6. Durability of purchase transactions

Source: authors' elaboration.

In the third stage, the level of social capital of farms was determined. According to Bourdieu and Wacquant (1992), ‘Socialisation in this context is considered as having a permanent network of more or less institutionalised forms of acquaintance, mutual contact with people or group membership’. Three variables from the questionnaire were used for this assessment:

1. Farm managers' participation in training and lifelong education: This variable assesses the person's affiliation with specific groups encountered during these training sessions, courses, and lifelong education programs.
2. Farm managers' participation in cultural events: This includes attendance at cinemas, theatres, museums, concerts, festivals, and other similar activities. Here, 'participation' is defined as systematic participation rather than occasional attendance.
3. Farm manager's participation in professional organisations: This encompasses involvement in associations, clubs, interest groups, charities and other similar entities.

For each 'yes' response, the farmer received 1 point, resulting in a total score ranging from 0 to 3. The relationship between the level of a farm's social capital and the market integration index was then assessed. The results were presented separately for each element of social capital, as well as for the overall socialisation potential.

Next, to test the significance of differences between the mean market integration indices and each element of social capital in farms from each country, the Mann-Whitney U test was used. The qualitative predictors were the indexes for each element of social capital (0 for non-participation or 1 for participation); the dependent variables were the indicators of farm market integration. The Mann-Whitney test is the non-parametric equivalent of the Student's t-test for independent samples and was chosen because the data distribution did not meet the criterion of fitting a normal distribution, as confirmed by the Shapiro-Wilk test. This test is also appropriate when the quantitative variable is ordinal. The Mann-Whitney U test also does not require the assumption of equality of the groups being compared or homogeneity of variances within groups (Simsek 2023). The study met the assumptions for applying this test, namely:

- The dependent variable was measured on at least an ordinal scale (market integration index).
- Observations in the analysed groups were independent of each other, meaning that a person who belonged to one group could not belong to another compared group.
- The size of the compared groups was 2 (0 or 1, as shown in Table 4).

Finally, to test the significance of differences between the mean market integration indices at different levels of socialisation in each country, the Kruskal-Wallis test was used. This test is non-parametric and is applied to compare at least three groups regarding a quantitative variable, i.e., the indicators of farm market integration in this study (Simsek 2023). Because the Kruskal-Wallis test does not indicate which aggregations differ from each other, multidimensional post-hoc tests with Bonferroni correction were used to assess the significance of the differences in the dependent variable vector between groups of farms that differed in social capital levels (0, 1, 2, or 3 criteria for the social capital index) (Denkowska 2007). The calculations were performed using SPSS software.

**Table 4.** Numbers of farms that met the criteria to determine their level of social capital in each country (0 – did not participate, 1 – participated)

Criterion of level of social capital	Poland		Romania		Lithuania		Serbia		Moldova	
	0	1	0	1	0	1	0	1	0	1
1 – farm manager's participation in training, courses, lifelong education...	359	313	830	169	653	185	475	47	260	284
2 – farm manager's participation in cultural events...	484	188	221	778	279	559	173	350	175	369
3 – farm manager's participation in professional organisations...	616	56	522	477	614	224	344	179	191	353

Source: authors' elaboration based on survey data collected in 2020.

As Table 4 shows, farms in Moldova had the highest level of social capital (i.e. the share of 'yes' answers for all three criteria) at 62%, followed by Romania (48%), Lithuania (39%), and Serbia (37%). Farms in Poland had the lowest level, at only 28%.

## Results and discussion

The countries surveyed have an average level of market integration, with a weighted average of 0.50 (on a scale from 0 to 1) based on the number of interviews conducted in each country. Poland achieved the highest score at 0.66, followed by Romania, Moldova and Serbia. Lithuania recorded the lowest index at 0.40. Poland's first place can be attributed to a fairly efficient contracting mechanism, a growing interest of farmers and processors in various forms of cooperation, and support for integration within the rural development policy (Guzdek and Petryk 2016; Nasalski 2019; Chorób 2022). Market integration brings tangible economic benefits to agricultural producers due to higher selling prices of agricultural products and increased income (Stępień and Polcyn 2021).

In contrast, agricultural integration in Lithuania has developed intermittently over recent decades due to farmers' reluctance to cooperate. This leads to weak bargaining power in both input and output markets (Drożdż, Vitunskienė, and Novickytė 2021). Additionally, low levels of agricultural financing have been pointed out as a concern (fi-compass 2020).

The level of social capital across the surveyed countries is assessed as low, with a weighted average of 1.25 (on a scale from 0 to 3). This time, Poland scored the lowest at 0.82, while Moldova scored the highest at 1.85. In Poland, only slightly more than 8% of farms reported that their managers were members of various organisations. At the other extreme was Moldova, with 64%. Moldova and Poland achieved the highest share of holdings for the attribute 'long-life learning participation' (51.6% and 46.6%, respectively), while Serbia had the lowest participation rate (only 9.2%). For the attribute 'social events', all countries, except Poland, scored relatively high, with scores above 65% (Lithuania even reaching 78%). The full results for the integration and social capital index are presented in Table 5.

Table 5. Results for the index of market integration and social capital in the countries studied

Specification	Poland	Romania	Lithuania	Serbia	Moldova
Index of market integration; (0;1) range	0.66	0.52	0.40	0.47	0.48
Social capital index; (0;3) range	0.82	1.15	1.42	1.10	1.85
<b>The share of farms for a given element of social capital (%):</b>					
–long-life learning	46.6	22.1	16.9	9.2	51.6
–social events	28.0	66.7	77.9	66.9	67.1
–membership in organisations	8.3	26.7	47.7	34.2	64.2

Source: authors' calculations based on survey data collected in 2020.

Figure 1 presents the average values of the integration index for selected responses to the questions on social capital. It is evident that, in all cases, farms' market integration is higher when the manager responded 'yes' to questions about participation in long-life education, participation at social events and membership in various types of organisations. The only exception is the 'long-life education' variant for Romania, where the index level remained the same (0.52) regardless of whether the answer was 'yes' or 'no'. The biggest difference in index value between 'yes' and 'no' responses was observed for the 'membership' category, with an average of 0.09. For the 'social events' category, it was 0.06, and for 'education', it was 0.03.

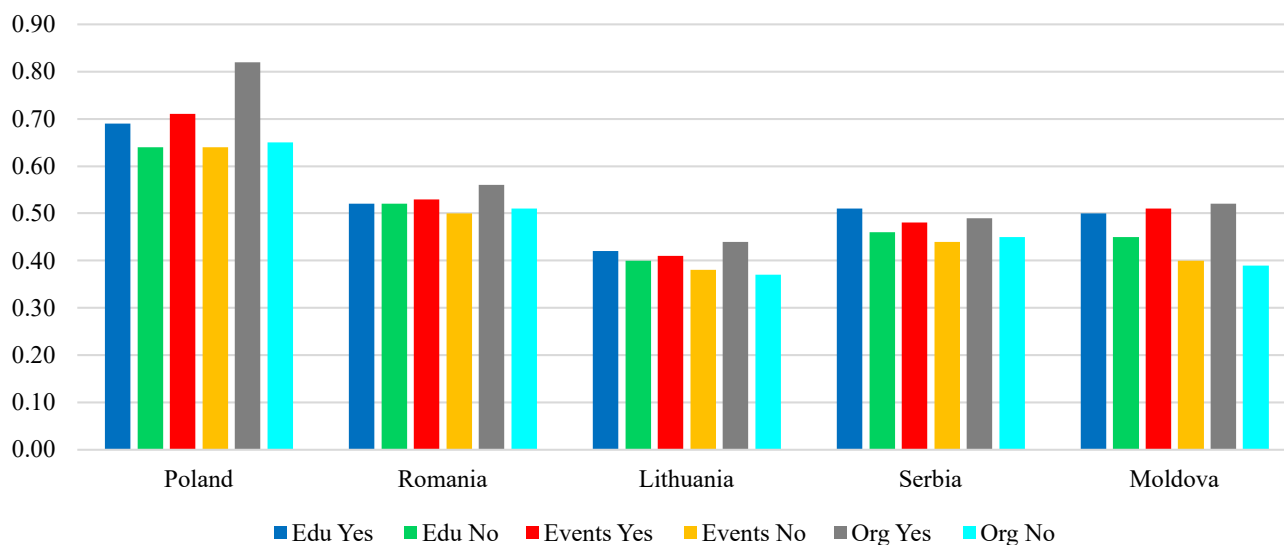


Figure 1. Average values of farms' integration index for selected social capital answers

Source: authors' elaboration based on survey data collected in 2020.

Next, the significance of differences between the mean market integration indexes and each element of social capital was estimated (Table 6).

**Table 6.** Statistical significance of differences in the mean market integration index for selected social capital answers (between 'yes' or 'no' answers)

Criterion of social capital	Poland	Romania	Lithuania	Serbia	Moldova
	p-value				
1 – farm manager's participation in training, courses, lifelong education...	<b>&lt;0.001</b>	0.236	<b>0.017</b>	<b>0.009</b>	<b>&lt;0.001</b>
2 – farm manager's participation in cultural events...	<b>&lt;0.001</b>	0.303	0.138	<b>&lt;0.001</b>	<b>&lt;0.001</b>
3 – farm manager's participation in professional organisations...	<b>&lt;0.001</b>	<b>&lt;0.001</b>	<b>&lt;0.001</b>	<b>0.013</b>	<b>&lt;0.001</b>

\* Mann-Whitney U-test p-level – differences are significant at  $p < 0.05$ . Bold p-values indicate statistically significant differences.

Source: authors' calculations based on survey data.

Regardless of the social capital criterion (1, 2 or 3), farms in Poland, Serbia and Moldova exhibited statistically significant differences in the market integration index between answers 'yes' and 'no'. No such differences were observed for the second criterion in Lithuania and for the first and second criteria in Romania (see Table 6). For all countries, a statistically significant difference was observed for criterion 3 (participating (or not) in various types of organisations). It can, therefore, be concluded that this factor is of key importance for integrating farms with the market.

Figure 2 presents the average market integration index values for the different levels of 'total socialisation' of the farm manager. The highest value of the integration index was recorded for farmers who were most strongly 'socialised', i.e. those who participated in long-life education, took part in social events and were members of various organisations (this is number 3 in the figure). This was observed for all analysed countries. Conversely, farmers who were the least 'socialised', i.e. those who were not participants in any of the above (number 0), achieved, on average, the lowest market integration index values. The difference is most evident in Poland, where the gap between levels 3 and 0 was 0.23, and the smallest difference was observed in Romania, at 0.07.

The next step was to determine whether the differences observed in Figure 2 were statistically significant. The results of these calculations are presented in Table 7. The table shows that, in Poland and Moldova, the differences are statistically significant for all comparison groups. As socialisation increases for each successive level (from 0 to 3), the level of market integration of farms significantly rises. In Lithuania, the differences are statistically significant for four out of the six pairs, while in Serbia, they are significant for three. Notably, Romania is the only country where no significant differences were found among any of the comparison groups.

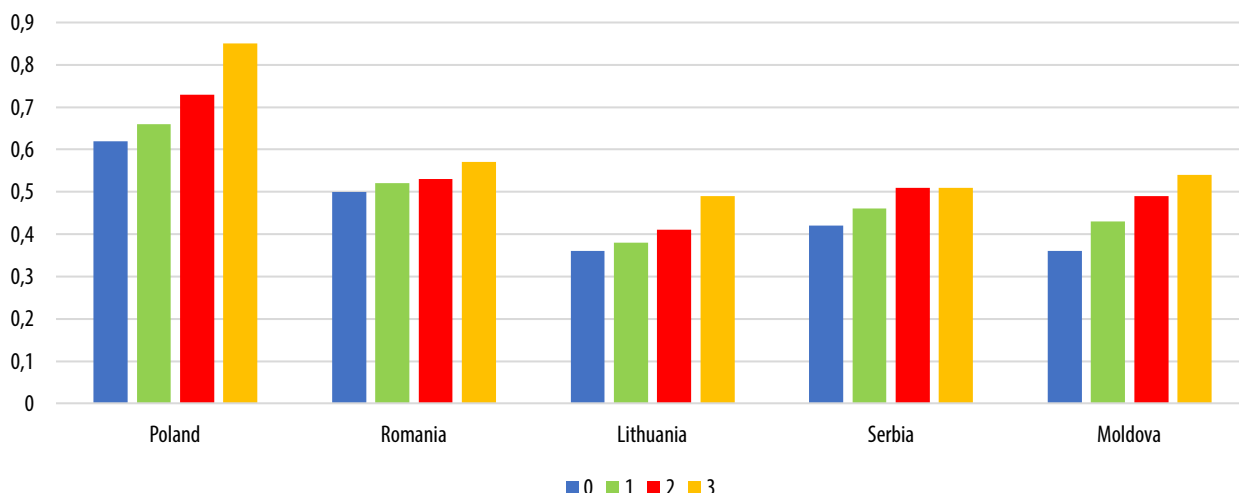


Figure 2. Average values of the integration index for the level of farms' social capital

\* 0 means that the manager chose 'No' for the three questions about social capital, and 3 – 'Yes' was given three times.

Source: authors' elaboration based on survey data.

Table 7. Statistical significance of the differences between the market integration index for the various levels of socialisation (from 0 to 3)

Differences between various social capital groups	Poland	Romania	Lithuania	Serbia	Moldova
	p-value (Bonferroni method)				
Difference between 0 and 1	<b>.010</b>	1.000	.979	<b>.025</b>	<b>.024</b>
Difference between 0 and 2	<b>.000</b>	1.000	<b>.033</b>	<b>.000</b>	<b>.000</b>
Difference between 0 and 3	<b>.000</b>	.163	<b>.000</b>	.074	<b>.000</b>
Difference between 1 and 2	<b>.000</b>	1.000	.275	<b>.021</b>	<b>.000</b>
Difference between 1 and 3	<b>.000</b>	.055	<b>.000</b>	1.000	<b>.000</b>
Difference between 2 and 3	<b>.017</b>	.278	<b>.000</b>	1.000	<b>.000</b>

\* Differences are significant at  $p < 0.05$ ; bold p-values indicate statistically significant differences.

Source: authors' calculations based on survey data.

Generally, our findings confirm that higher social capital within farms contributes to greater market integration, a trend observed across CEE countries, with Romania being an exception. This finding aligns with Jones et al. (2008), Knickel and Maréchal (2018), Guinjoan, Badia, and Tulla (2016), and Trigkas, Partalidou, and Lazaridou (2021), all of whom noted that social capital plays an important role in various agricultural and non-agricultural value chains. The creation of such chains cannot take place without market integration of the farm. Our analysis is also supported by Farkas (2021), who revealed that rural communities with strong social capital can use their endogenous resources to improve their economic performance. They also have an advantage over communities with weak social capital. The use of these endogenous resources may translate into higher market integration of farms (Smędzik-Ambroży and Sapa 2022). Given the relatively low levels of social capital found among the farms under study, particularly in Poland, Lithuania and Romania, it is important to emphasise the need to increase social engagement among these entities, which should translate into enhanced market integration and an improved economic situation.

## Conclusion

Agricultural income is a fundamental metric for assessing the financial performance of farms, the standard of living and social well-being. Economic outcomes are influenced by the volume of production sold and the prices received during transactions. Since these prices depend on the farmer's position in the supply chain, it follows that market integration positively determines the economic position of agricultural producers. It is particularly important for CEE countries, where small-scale farming and fragmented agrarian structures predominate.

This paper estimated indicators of social capital and market integration among farms in selected CEE countries based on data collected through face-to-face interviews with farm managers. In line with the main objective of the study, we examined the relationship between social capital levels and market integration among farms in these countries. The results showed that farmers who were strongly 'socialised', i.e. who participated in long-life education, took part in social events and were members of various organisations, exhibited the highest levels of market integration.

The identification of this relationship represents a significant contribution to the field and the most important added value of the research. The universal nature of our conclusions is underscored by the inclusion of data from five countries in the region. It can be concluded that empowering farms solely through agricultural production is insufficient to build market orientation; rather, social participation is crucial for increasing market integration.

Thus, farmers should actively engage in lifelong learning, participate in social events, and join organisations and associations. Additionally, a supportive institutional environment must be created to encourage farmers to strengthen their social activities. This could include programmes to support interest groups, social clubs, sports organisations and other clubs, and joint training initiatives or courses organised by local authorities or business entities. Furthermore, it is essential to widely promote best practices and the economic benefits of social participation through local media.

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## Relacje kapitału społecznego i integracji rynkowej gospodarstw rolnych – przykład krajów Europy Środkowo-Wschodniej

Sytuacja ekonomiczna gospodarstw rolnych determinowana jest przez wiele czynników, szeroko opisywanych w literaturze przedmiotu. Jednym z takich czynników jest integracja rynkowa, kształtująca pozycję rolnika w łańcuchu dostaw żywności. Zaangażowanie rolników w procesy integracyjne może być związane z ich kapitałem społecznym, choć hipoteza ta nie została w pełni zweryfikowana. Celem artykułu jest zatem ocena relacji pomiędzy poziomem kapitału społecznego a integracją rynkową gospodarstw rolnych w wybranych krajach Europy Środkowo-Wschodniej. Analiza obejmuje Polskę, Rumunię, Litwę, Serbię i Mołdawię, a próba składa się łącznie z 3160 gospodarstw rolnych. Dane zostały zebrane za pomocą wywiadów bezpośrednich, w których osobiście uczestniczyli ankietnicy i kierownicy gospodarstw. Na podstawie tych danych obliczono autorski wskaźnik integracji rynkowej i określono poziom kapitału społecznego gospodarstw rolnych. Następnie przeprowadzono analizę porównawczą średnich wskaźników integracji rynkowej dla gospodarstw o różnym stopniu kapitału społecznego oddzielnie dla każdego kraju. Do zbadania istotności różnic wykorzystano test U Manna-Whitneya oraz test Kruskala-Wallisa. Zgodnie z wynikami badań można stwierdzić, że najwyższą wartość wskaźnika integracji rynkowej odnotowano dla tych rolników, którzy byli najsilniej „uspołecznieni”, tj. uczestniczyli w kształceniu ustawicznym, brali udział w wydarzeniach społecznych i byli członkami różnych organizacji. Można zatem stwierdzić, że wzmacniając kapitał społeczny, gospodarstwa rolne dążą do zwiększenia integracji z rynkiem, co w konsekwencji może prowadzić do poprawy wyników ekonomicznych. Dlatego łagodzenie dysproporcji regionalnych i zwiększanie średniego poziomu wydajności rolniczej w krajach Europy Środkowo-Wschodniej powinno obejmować działania mające na celu zwiększenie kapitału społecznego w gospodarstwach rolnych, m.in. poprzez organizowanie warsztatów, szkoleń, wystaw, wspieranie organizacji producentów rolnych, promowanie kół gospodyń wiejskich, organizowanie imprez towarzyskich itp. Takie działania mogą być finansowane zarówno z drugiego filaru wspólnej polityki rolnej, jak i z budżetu samorządów lokalnych. Wkład przedstawionych w artykule badań koncentruje się na rzadko podejmowanej tematyce badania relacji między kapitałem społecznym a integracją rynkową w gospodarstwach rolnych. Wartość dodana składa się z analizy porównawczej pięciu krajów Europy Środkowo-Wschodniej oraz oszacowania autorskich wskaźników dotyczących kapitału społecznego i integracji rynkowej gospodarstw rolnych, które mogłyby być wykorzystane w przyszłości do podobnych badań.

**Słowa kluczowe:** integracja rynkowa, kapitał społeczny, gospodarstwa rolne, kraje Europy Środkowej i Wschodniej