

Territorial embedding of agri-food companies in the inner periphery. A comparative case study of two neighbouring Hungarian districts

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In the last thirty years, while the public debates about rurality have centered on economic decline and unemployment, these areas are still described as the primary space for the agri-food value creation. From a socio-economic perspective, this kind of specialization should not be seen as a negative trend.

This study analyses the impact of agri-food firms on their regions and subjective perception of peripherality. Drawing on field research and the functional characteristics of the agri-food value chains (AFVC), I identify four categories of firms: seed suppliers, (arable) crop producers, animal breeders, food or beverage processors. These categories contain dual or multi-profile input suppliers, agri-food producers, wholesalers, and multinational branch plants. To assess territorial embeddedness, the study evaluates five key dimensions (Environmental-Infrastructural, Scientific-Educational, Institutional, Social, and Economic) through methodological triangulation: (1) Academic literature and locally authored scholarly monographs; (2) Annual financial reports of the firms; (3) Semi-structured interviews. The geographical scope of this study is the Mezőtúr and Szarvas districts. Although they belong to different counties (Jász-Nagykun-Szolnok and Békés), these regions are linked by Körös River in the heart of the Great Hungarian Plain.

According to the results so far, the investigated regions show two distinct behaviours. Firms in the Mezőtúr district have become highly dependent on global input suppliers and large food/beverage corporations. In contrast, the Szarvas district has more diverse actors within the AFVCs, although these actors currently operate in parallel rather than cooperating with each other.

Keywords: peripherality, agri-food value chains, territorial embeddedness, spatial fixity

JEL: Q13, R11, R58, L66, O18

Introduction

In the last thirty years, while the public debates about *rurality* have centered on *economic decline* and *unemployment*, these areas are still described as the primary space for the agri-food value creation (Nagy et al, 2015). From a socio-economic perspective, this kind of specialization *should not be seen as a negative trend*. Agri-food firms also depend on climatic and soil conditions (EEA, 2019) and rely on local production systems – from agricultural inputs and feed resources to food processing (Levidow, 2015; Tedesco et al., 2017). Despite its importance, the impact of such territorial embeddedness remains an under-researched area.

The study based on secondary and primary sources, which it combines through *methodological triangulation*: (1) *Academic literature* and locally authored scholarly *monographs* to provide both a theoretical framework and a deep understanding of the regional context. (2) Annual *financial reports* of the firms to track their economic performance and local investments. (3) *Semi-structured interviews* conducted with middle and top managers and/or CEOs of the firms, as well as the mayors, secondary school principals/teachers of the involved settlements.

The article is structured into five parts. (1) First, I give a *short description of the conceptual framework*, to clarify the *special role of territorial embeddedness* within agri-food value chains (AFVC) – in the Global Value Chains (GVC) / Global Production Networks (GPN) perspective. (2) The second part focuses on the *relationship between the territorial embeddedness and peripherality* – highlighting the multidimensional nature of both concepts within AFVCs. (3) In the third part, I locate the chosen districts in the Hungarian regional development hierarchy and give a *brief overview of their agro-economic key arguments*. (4) The fourth part describes *methodology*, with particular emphasis on the necessity and methods of conducting interviews. (5) At the fifth part contains the *comparative analysis of districts* according to the key aspects of territorial embeddedness: Environmental-Infrastructural, Scientific-Educational, Institutional, Social, and Economic dimensions.

Territorial embeddedness from agri-food perspective

Prominent researchers in the field of Global Value Chains (GVC) / Global Production Networks (GPN) emphasize that *a company's success depends not only on corporate decisions or market conditions*, but also on the regulatory, economic, and cultural environments provided by the regions where it operates (Yeung and Coe, 2015; Dawley et al., 2019). Researchers in latter framework, they focus on the role of non-corporate actors and the spatial characteristics of production (MacKinnon, 2012). In a geographical context, this territorial embeddedness can manifest at multiple scales – local, national, macroregional, global levels (Molnár, 2021).

The first version of the GPN based on the asymmetrical cooperations between regional institutions and corporate actors, led to uneven regional development (Coe et al., 2004). In contrast, the version known as ‘GPN 2.0’ follows a more dynamic, yet corporate-focused approach (Neilson et al., 2018). ‘GPN 2.0’ analyses firm-specific coordination and collaboration strategies that contribute to the forming, managing, and sustaining these networks. It defines the geographic scope of these networks within subnational regions and industrial clusters. The term “GPN” accurately reflects the fact that the companies involved—and the units within them—often have complex relationships with one another (Kano et al., 2020), yet researchers in this field focus exclusively on cases with positive connotations from a regional development perspective (Coe – Yeung, 2019).

Neilson et al. (2018) demonstrated through the Indonesian cocoa bean–chocolate value chain, that the *GPN 2.0 theory does not applicable to all sectors – particularly agricultural producers*. Most cocoa bean farmers – due to their small-scale nature, minimized landholdings, and unique relationship with semi-processors – can hardly be comparable with firms. Compared to other participants in the value chain (see Figure 1.), they are in a highly dependent position, makes them to the weakest link in the Agri-Food Value Chains (Neilson et al, 2018). Mainly within the Global South, Barrientos et al (2011) characterize the agricultural production as small-scale-dominant, labor-intensive types of work.

The wide range of the *Agri-Food Value Chains’ (AFVCs) participants* is characterized by *enormous diversity*, making very difficult to provide a comprehensive, general description of it (Figure 1). While input-suppliers are characterized by high R&D intensity, there are huge technological/structural differences among producers/manufacturers. As a result, their ability to earn income leads inequitably along the value chain, and even within value-chain segments. (KPMG, 2013).

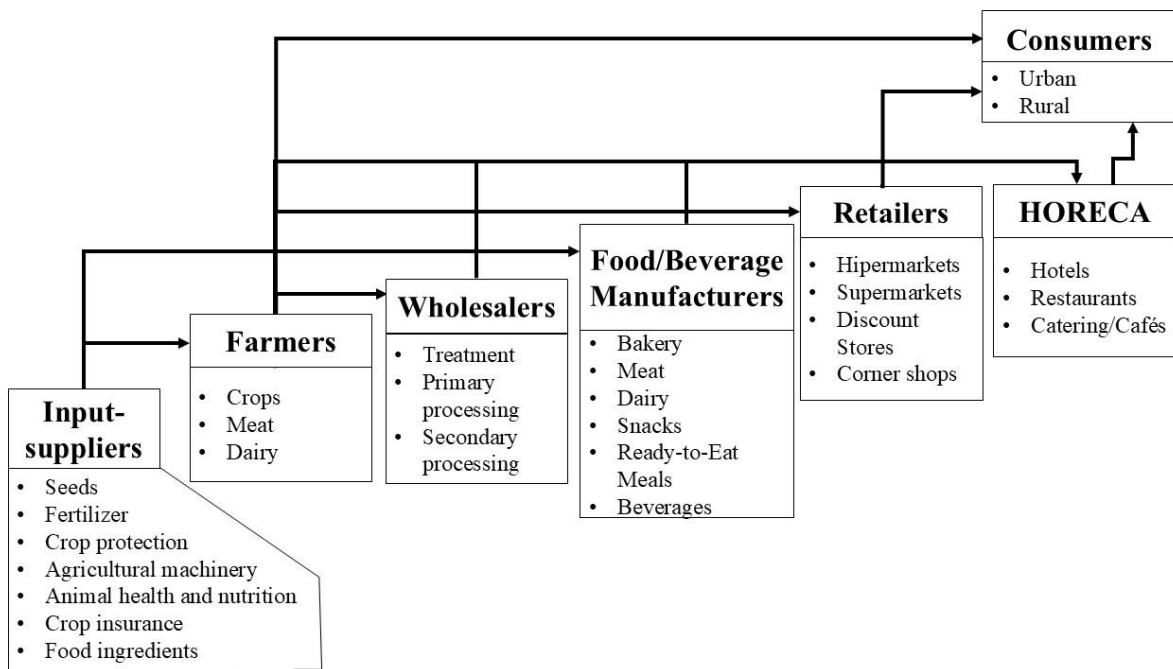


Figure 1: Schematic overview of the agri-food value chain

Source: Compiled by the author based on Humphrey – Memedovic (2006) and KPMG (2013)

Scholarship has widely borrowed the concept of embeddedness from regional studies to economic sociology, in order to mapping impact of transnational companies on local economic development (Józsa, 2017; Nagy et al, 2026) or describing (re)localisation dynamics of agri-food systems (Barिताux et al, 2016; Rock et al, 2026). Embeddedness have different meanings and implications, in this paper I will overview the relevant approaches, that led me to the territorial embeddedness:

- *Social embeddedness* describes how social ties can influence and shape economic relations – and forward (Polanyi, 1944, Granovetter, 2000, both cited in Barिताux et al, 2016);
- *Ecological embeddedness*, this concept describes the status of economy in a bio-physical environment (Memon and Kirk, 2009, cited in Barिताux et al, 2016). This approach reflects, that ecologies not as a passive entity but as a key agent in agro-food systems (Morris and Kirwan, 2011, cited in Barिताux et al, 2016);
- Rock et al (2026) refers “*regional*” *embeddedness* as the framework to ‘describe the quality of relationships between regional actors, innovation processes, and the regional circumstances and conditions’, that ‘has a dynamic, evolving character’ (Rock et al, 2026). This approach includes regional institutions that represent the state in the local environment (Rock et al, 2026).

- Józsa (2017a) refers *corporate embeddedness* as “one kind of a local level answer to the challenges of globalisation to exploit the different kinds of ‘relatedness’ “. She acknowledges that a corporation cannot operate separately from the local environment.

Territorial embeddedness and peripherality

Barrientos et al (2011) and Baritiaux et al (2016) highlights *the importance of the socio-economic context*: Any analysis needs to factor the local social, institutional and economic conditions, that would differ between Global North and South (Baritiaux et al, 2016), Low- and High-Income countries (Christiaensen et al, 2021). Unlike many industrial GVCs characterized by high mobility (Nagy et al, 2026), AFVCs is defined by a unique spatial fixity due to localized natural resources and biological processes (Baritiaux et al, 2016). I argue, this inherent geographic dependency makes territorial embeddedness a structural necessity rather than a strategic choice.

Lillemets et al. (2025), relying on the CORINE and GEOSTAT databases, found that 84 percent of the European population lived within nearly 1 kilometre of the nearest agricultural land. For this reason, Lillemets et al. (2025) argues, that the *Common Agricultural Policy not only as a matter of farming but also as a matter of the living environment*: farmers directly impact dust and noise pollution, chemical use, and water quality; on the other hand, they give identity to the landscape.

One of the most important findings of Lillemets and Viira’s (2026) study is that *small towns serve as much more direct, daily economic drivers of agriculture*. Within these settlements (unlike in cities), labour intensity and farm density peak in the immediate vicinity. From Lillemets and Viira’s (2026) viewpoint, periphery does not merely refer to distance from the center, but rather to a multidimensional (social, economic, institutional) condition. Such areas are primarily defined by traditional production systems based on family labour, those without the necessary technology and expertise, lag their competitor firms. Since production (and subsidies) are concentrated near cities, agricultural subsidies structurally fail to reach the marginalized peripheries, which need them most (Lillemets and Viira, 2026).

Nagy et al. (2016) reaches a partly similar conclusion: Those firms described as “connectors” – which can join global flows of their sector – contribute to local employment, and support organizational learning locally by mediating business models and competitive skills

as well as ‘labour culture’, but the changing regulations and the logic of development programmes strongly polarized local enterprises, local workers’ wages are far below the European average and cannot help everyone to improve their skills within these areas (Nagy et al, 2016).

So close, yet so far – Mezőtúr and Szarvas Districts

If we accept the old, euphemistic assertion that *arable land is the most valuable resource of the Hungarian Great Plain* (Novák – Pálfalvi, 2008), it is worth looking at some supranational agricultural data within the 59 districts of the Észak-Alföld and Dél-Alföld (North Great Hungarian Plain and South Great Hungarian Plain. Although access to data under NUTS-3 geographical level is highly limited, I have taken by Bennett's maximum standardization the following data: *the number of relevant agricultural firms (employing at least 20 people)*; the number of farmers, arable land per farmer, livestock units per farmer, *standard production value per farmer*; *the number of high schools and its training programs involved in agri-food vocational training*, *the number of crop integrator companies’ sites* and their site functions, as well as *the number of dual vocational training partners*.

Table 1.: Top 15 districts from North Great Hungarian Plain, and South Great Hungarian Plain Regions by Bennett's maximum standardization (chosen districts are highlighted)

10 sub-indicators	5 sub-indicators
Kecskemét (66,01%)	Kecskemét (79,10%)
Baja (54,12%)	Debrecen (69,79%)
Nyíregyháza (51,99%)	Szeged (69,31%)
Szeged (51,49%)	Baja (68,19%)
Szolnok (48,75%)	Szolnok (61,61%)
Debrecen (48,42%)	Békéscsaba (56,45%)
Békéscsaba (47,28%)	Nyíregyháza (56,42%)
Hajdúszoboszló (43,64%)	Hódmezővásárhely (52,82%)
Hódmezővásárhely (42,94%)	Hajdúszoboszló (51,56%)
Gyomaendrőd (42,32%)	Szarvas (51,26%)
Orosháza (40,18%)	Orosház (46,50%)
Balmazújváros (37,88%)	Kalocsa (46,27%)
Szarvas (36,19%)	Püspökladány (45,45%)
Püspökladány (35,31%)	Szentes (44,70%)
Mezőtúr (33,65%)	Mezőtúr (43,00%)

Source: Calculated by the author based on Hungarian Central Statistical Office (2020), Agricultural Census (2020), Informatic System of Vocational Training (by hungarian Institute of Agricultural Economics, 2023), Own data collected based on records from the hungarian Seed Association and online agricultural forums (2025), Own data collected based on the National Chamber of Agriculture’s registry of training facilities (2025)

As shown in Table 1, the Top 15 out of the 59 districts were primarily those *containing county seats* (Békéscsaba, Debrecen, Kecskemét, Nyíregyháza, Szeged, Szolnok) or those *characterized by strong agricultural traditions* (Baja, Hajdúszoboszló, Hódmezővásárhely). By Bennett's maximum standardization, Szarvas district differs by the relatively high number of relevant agricultural firms and the number of crop integrator companies' sites. Mezőtúr district's appearance in this list is based on the high number of standard production value per farmer and the number of crop integrator companies' sites. None of them have high schools involved in agri-food vocational training. This kind of *agroeconomic characteristics* makes it interesting for further research.

The other reason for the chosen districts is their *inner peripheral position*. The Hungarian-related ESPON report (2020) highlights the relevance of the inner peripheries: This kind of non-urban places have *lower accessibility to services of general interest and/or lower connectivity to core areas of population, economic activities and jobs*. Mainly combined poor socio-economic perspectives (shrinking population, stagnating economy, lack of access to centres and/or services), these areas can be found along the River Danube, south from Budapest, the middle section of River Tisza, or around inner border between counties (ESPON, 2020). Mezőtúr and Szarvas districts exactly fit in this definition.

Following LAU-2-based typology of Péntes – Demeter (2021), the capitals of these districts can be described as higher development decile, than the villages included (except Békésszentandrás), or its surroundings in the edge of Jász-Nagykun-Szolnok and Békés counties. Mezőtúr and Szarvas districts belong to different counties (Jász-Nagykun-Szolnok and Békés), those linked by Körös River (see Figure 2).

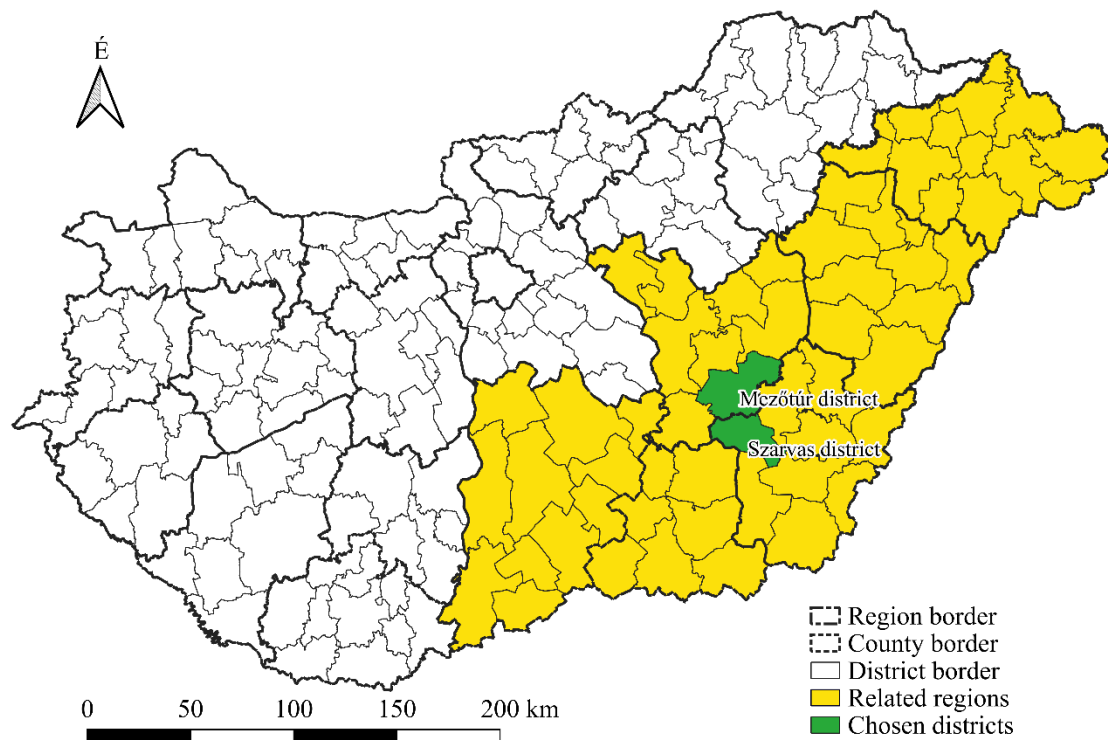


Figure 2.: Position of the selected districts within the Hungarian administrative system, at the LAU-1 level

Source: Edited by author

Methodology

To assess territorial embeddedness and the subjective perception of peripherality, (inspired by Viktória Józsa's, 2017b methodology) the research evaluates the following *criteria within five key dimensions*:

- *Environmental-Infrastructural*: Adaptation to natural constraints (drought, soil conditions, epidemics) and the impact of road infrastructure and logistical bottlenecks.
- *Scientific-Educational*: Presence and justification of dual training, internships, and educational partnerships.
- *Institutional*: Quality of cooperation with municipal governments, related firms and educational actors.
- *Social*: Firm-led social initiatives, support for local NGOs, schools, and sports clubs.
- *Economic*: Business linkages (local/domestic/international) and market scope.

I examine the sampled area through *methodological triangulation*: (1) *Academic literature* and locally authored scholarly *monographs* to provide both a theoretical framework and a deep understanding of the regional context. (2) *Annual financial reports* of the firms to track their economic performance and local investments. (3) *Semi-structured interviews*

conducted with middle and top managers of the firms, as well as the mayors and secondary school principals or teachers of the involved settlements.

The choice of qualitative methods was driven by practical necessity. One major difficulty in quantitative research is that Hungarian business demography statistics classify enterprises according to their registered headquarters. This makes it hard to identify firms that are active in our study area but registered elsewhere. Also, for companies with branch plants in these regions, the annual reports do not break down income figures by site. Furthermore, these reports often provide very little detail on how EU funds were used or how local developments are progressing; in several cases, such information was entirely absent, which made a systematic quantitative comparison impossible.

Using these sources together helps to bridge the information gaps and overcome the data limits of each individual method. It also allows this ongoing research to explore factors that are hard to measure, such as how local actors navigate and perceive their position within peripheral spatial structures. The initial firms were selected based on their net sales and number of employees, as these are the primary indicators of their regional weight. However, as the research progressed, a snowball sampling method was also applied; this allowed me to include additional relevant firms that were identified through fieldwork.

During the research, the semi-structured interviews provided the greatest added value. Firstly, these focused on identifying corporate and local/inter-corporational relationships and spatial patterns (whether within or beyond districts). Secondly, through these interviews I could explore the embeddedness of AFVC-actors along the dimensions listed above.

The interviews have been made between August 2025 and April 2026. Most of the cases, these interviewees made in-person. Where they consented, I made audio recordings in addition to taking real-time notes. Using a combination of these two, I created a written transcript using the Transcribe feature in Microsoft Word. I coded the resulting text files using MAXQDA (version 26.2.1). After exporting it to Microsoft Excel, I analysed by myself the coded data.

Based on the available literature and the preliminary statistical analysis, I have differentiated among the settlements within the districts. Consequently, under Mezőtúr district, I focused on the towns of Mezőtúr and Túrkeve, and under Szarvas district, primarily focused on the town of Szarvas and the village of Békésszentandrás. (Due to the ‘headquarters effect’ observed in the Szarvas district, the included two firms from the village of Csabacsúd, and one firm from the village of Örménykút.) The sectoral distribution of the interviewees is not

representative (see Table 2.), given the uneven regional presence of agri-food value chains (for more on this, see the *Economy* subsection of the next chapter). The interviewed firms can be classified into four value chain segments: input suppliers (primarily seed production), agricultural producers – arable crops, agricultural producers – animal breeding, and food or beverage manufacturers (craft beer production, beef-based mozzarella production, turkey processing, and rice cultivating and/or processing).

Table 2.: Number of interviews within investigated districts

	Majors	Education / Research / Consultant participants	Related firms			
			Input supply	Agricultural producers – Arable crops	Agricultural producers – Animal breeding	Food or Beverage Manufacturers
Mezőtúr district	2	3	3	2	2	1
Szarvas disctrict	2	1	3	2	1	5

Source: Edited by the author

Comparative case study

Environmental-Infrastructural

These districts according to the WRB soil classification are *dominated by the mixture of Gleysols and Vertisols* soil types, that's covered by *heaviest silty clay and clay layers*. Those soil's genetics – mainly Salt-affected and Meadow soils – are formed by Körös and Hortobágy-Berettyó Rivers (Pásztor et al, 2018). This type of soils is *difficult-to-cultivate*, that's why irrigation and specialized tilling technology a structural necessity for agricultural producers.

‘This part of Békés County, surrounded by the Körös River, is sort of like a Bermuda Triangle – rain just doesn't seem to want to come here. Last year [in 2025] there was 300—I don't know, maybe 360–380 millimetres of rainfall, and the same this year. With this amount of rain that fell here in some places (more than, say, 40-50 centimetres at most), the soil is thoroughly saturated from it.’ /Managing Director of an Agricultural producer firm, Békésszentandrás/

‘The biggest and most troublesome impact, of course, was the drought in 2022, when there was very little [rainfall], so the corn didn't grow very well, and now, in 2025, we're facing another drought.’ /Financial Manager of Agricultural production firm, Túrkeve/

These agricultural firms are rather *hard-hit by climate change* than extraordinary economic crises: Although the lack of rainfall is not uncommon in these settlements, the *droughts of 2022 and 2025 caused significant yield losses* even in irrigated areas. This has triggered a shift in arable farming structure: Despite the desire to change the crop pattern, persistent droughts prevent the inclusion of any crops other than cereals (primarily wheat), industrial crops (such as sunflowers and rapeseed), and livestock feed crops (like regular corn) in production. In 2022, a dairy cattle firm in Mezőtúr had to reduce its cattle population by half, because it was unable to sufficiently feed them with its own crop capacity – due to the drought.

According to the related interviews, the *cultivation of arable vegetables* (sweet corn, green peas) *degreasing*, the shift to sugar beets near to impossible in these areas. Despite science-based experiments involving chickpeas and sorghum (that mostly influenced by local settled seed-supplier companies), they have not become alternatives to the arable crops mentioned above.

‘What’s good for us is that about half of our land is irrigable, meaning it’s covered by a linear irrigation system. Obviously, it shouldn’t be used to replace rain, like happened in 2025 or 2024. Rather, it should serve as a supplement for when irrigation is needed at certain intervals [...]. So, unfortunately, we had to irrigate continuously there to get a harvest, but the corn that was left to dry out practically yielded almost nothing. [...] I’d say there are differences among crops – one year this one is better, another year another one – but [...] it seems like we must forget corn or we don’t know what will happen.’ /Office Manager of Agricultural production firm, Túrkeve /

As the two flagship crops within examined districts, *sunflowers are increasingly replacing (hybrid) corn*. Particularly but not exclusively, this change also affected by the Russian-Ukrainian war: These countries were ones of the main export destination for the seed production companies like Syngenta or smaller ones – because of the lack of self-sufficiency in case of corn.

Logistically, agricultural producers rely on their partners' transport capacities, while more value-added food/beverage processing firms (like craft beer and cattle-based mozzarella cheese) maintain their own fleets to *mitigate the relative distance* from the M4 (directly roadway connection from Budapest to Oradea) and use direct effects of M44 (roadway between Békéscsaba and Kecskemét – county seats of Békés and Bács-Kiskun – towards to) main roads (Figure 3.) to reach their markets and/or business partners in the Budapest metropolitan area. Rail freight capacity appeared only one case of the firm interviews, as a relevant opportunity.

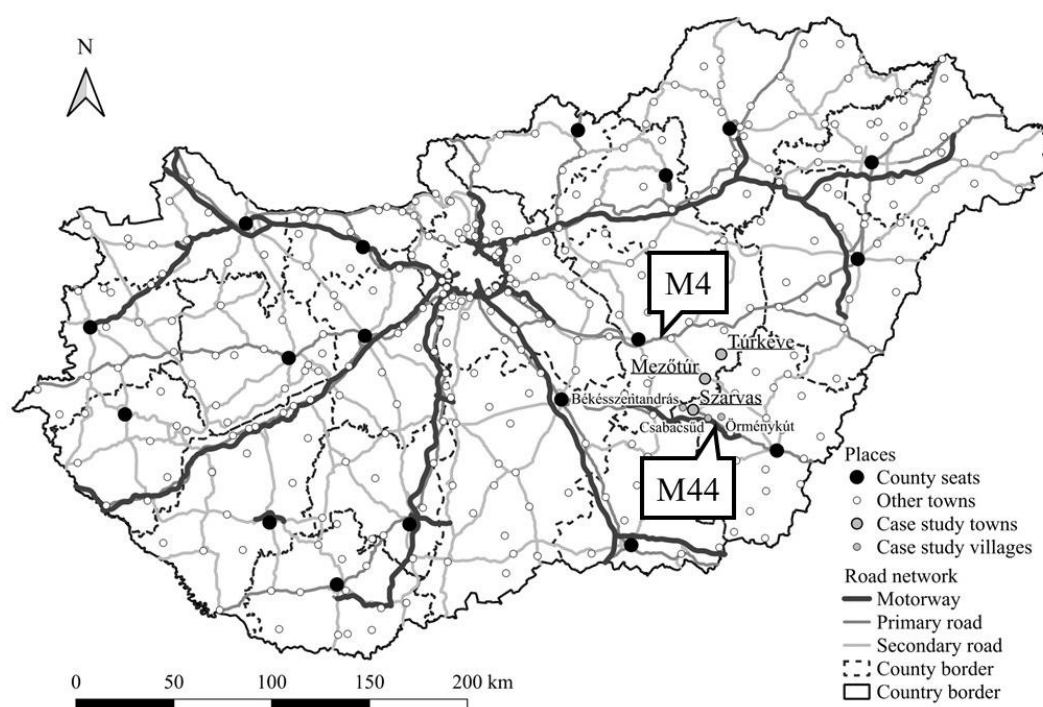


Figure 3: Geographical position of the case-study towns and villages within Hungarian Road network (Status at the end of 2021)

Source: Edited by the author based on Molnár et al. (2022)

Scientific-Educational

The local *higher educational environment* both Mezötúr and Szarvas *became unsure* for agri-food related courses. The *autonomy* of the former colleges in Mezötúr and Szarvas was *permanently depended on larger universities* like Agricultural University of Debrecen (successor institution: University of Debrecen Faculty of Agricultural and Food Sciences and Environmental Management), Hungarian University of Agriculture and Life Sciences (HUALS) and its predecessors. In the 2000's, the colleges in Mezötúr, Szarvas and Békéscsaba collaborated in a joint college so called Sámuel Tessedik College, but Mezötúr's withdrawal in

2005 and the restructuring of higher education in the region led to the dissolution in the end of the decade (Hernyák et al, 2013; AgrárUnió, 2020).

In three cases, formerly or currently CEOs of the interviewed firms participated in the educational programs of the relevant agricultural colleges as honorary lecturers, primarily in specialized education programs for seed engineering specialists in Szarvas. Two of them argue, that the attitude of students is under their expectations, that's why one of them discontinued this cooperation.

The *agricultural machinery profile* was reorganized into an environmental agricultural engineering program at the time of the 1990's political transition in Mezőtúr's college. After Millennium, this educational profile completely disappeared in 2010 (Herbály, 2013). The teacher who was formerly participated in the educating of agricultural mechanical engineering argues, the *end of secondary vocational training of agricultural machinery* (in 2018) happened by multiple reasons: The leadership of Reformed High School of Mezőtúr *neglected the development* of the tools used in the training; the *rival high schools* of Karcag (Jász-Nagykun-Szolnok county) and Jánoshalma (Bács-Kiskun county) had stronger corporate partnerships; and the local agri-food actors from farmers to firms have not pay attention to keep this course alive.

In the case of agricultural higher education in Szarvas, predecessor of Hungarian University of Agriculture and Life Sciences (HUALS) had planned to discontinue the program in the town by 2020 (AgrárUnió, 2020), but the new leadership suspended the process as part of the restructuring of agricultural education. (See more details in the following subsection.)

Despite efforts to *establish dual training opportunities* (both high school and university level), the specific seasonality of agriculture – with intense work in summer and minimal activity in winter – remains a structural barrier within interviewed firms. Consequently, this type of educational cooperation is mostly *limited to office-based roles* (HR, Finance, Management). Professional internships remain *ad hoc cooperations* – mainly with higher educational actors like University of Debrecen, Hungarian University of Agriculture and Life Sciences and University of Szeged – with low student interest. Larger firms have adapted by developing internal, in-house training protocols for specialized specific requirements (such as rice field guards or semi-skilled workers in the food industry).

Consequently, the *investigated firms cannot solve its employment problems through educational cooperations*. Some specific cases, the Békésszentandrás craft-beer brewery and

Syngenta's Mezőtúr site were able to benefit from staff reductions or closure at competing companies, but these were temporary occurrences. Companies involved in livestock farming and turkey processing hire foreign workers through recruitment agencies to fill blue-collar positions (primarily animal caretaker and factory butcher positions), which they have been unable to find suitable Hungarian workers for years.

Institutional

In the Hungarian context, local governments and schools have lost much of their decision-making competence due to a *strong centralization* (about its historical and political context see Temesi, 2017; Dobos et al, 2025). Regardless of these national processes between schools and corporations the *local governments usually appear as a mediator*, who participates indirectly in these actors' decisions (Molnár et al, 2022).

Most of the cases, the local governments of the studied settlements contributed to the more efficient operation of firms by *tightening local building regulations, renovating off-road roads to the fields, and organizing local business forums*. With a few exceptions (for example conflicts regarding local road connections to facilities), both mayors and firm interviewees reported their relationships positively.

'[...] Besides that, if anything happen – for example, the recent snowfall [on in January 2026] – we've also helped clearing the roads with our own equipment. Well, we depend on each other; we understand that.' /Managing Director of an Agricultural producer firm, Békésszentandrás/

There were some cases, when the *local governments tried to help the educational actors* to reorganise agri-related education:

1. In 2020, the former principal of the high school in Túrkeve initiated a plan to adapt the agricultural engineering program. Since the school already offered an automotive machinery course, establishing the necessary facilities would not cause a problem. The current principal argues that the initiative failed at the government level. Officially, this was due to the requirements for obtaining a license to operate slow-moving vehicles; unofficially, the Ministry of Agriculture (responsible for agricultural vocational training) and the Ministry of Innovation and Technology (responsible for vocational training) did not intend to create competition for the newly established Agricultural Vocational Training Centers.

Despite the current mayor's argue (that he was only advised in his official social media site the establishment), and the principal's argue (that the main reason of establishing was the importance of human resources in this field), the interviewed firms' opinion from Túrkeve and Mezőtúr never have been asked for the movement.

2. Since 2010, the local government in Mezőtúr participated to reorganise the former high education. During the 2010's, some Concept was made for establishing a new agricultural teaching facility, owned by religious-affiliated university. Although several local firms included the conception-making process (some Mezőtúr-settled company argued during the interviews) but by unknown reasons, this initiative failed. Since November of 2025, some rumours have come that János Neumann University and the local government of Mezőtúr started to discussion about adapting new higher education vocational training in the former college building. During the field research, none of the asked firm interviewees heard any further information about this movement.
3. In the end of 2025, an open discussion was held between the leader of HUALS and Mayor of Szarvas about the future of the agricultural high education in Szarvas [W]. By this cooperation, (1) the local government provides one-time scholarship – one hundred thousand hungarian forints, approximately 285 euros – for every freshmen, who starts its studies in Szarvas from study year 2025/2026; (2) the local government and the university commonly provides regular scholarship for agricultural high educational students within Szarvas – sixty thousand hungarian forints, approximately 171 euros per month, details not yet available; (3) university is launching an agricultural engineering course at its Szarvas campus, although the program did not begin in the town last study year due to a lack of applicants; and (4) university is builds a new educational centre and conference room near the two research institute (Research Center for Irrigation and Water Management and Research Center for Fisheries and Aquaculture) to the Anna Liget – this area originally owned by the local government, but they are giving over that to the university.

Social

The social responsibility practices of the investigated firms show mixed results. According to the firm interviews, I identify *three types of corporate behaviours*:

1. “Ignorant”: This type of firms does not do anything more than fulfilling taxpaying obligations. Do not search directly the connection to the local communities, social responsibility strictly limited to the own coworkers.

‘Yes, well, we’re basically in contact with the local government, since this is a small town – at one time there were about 500, 550, or 600 people living here, but now I don’t think there are even 300 left. [...] As for the local government, there hasn’t been any kind of investment over the past 35 years. They’re basically living off the money paid in by these [local] companies.’ /Owner- Managing Director of Cattle-based Mozzarella manufacturer firm, Örménykút/

2. “Passive engagement”: If this type of firm sponsors any local event, they do it anonymously. They want to stay in the background, that’s why their social responsibility movements get subjective shape. (For example, they support local sport clubs through only corporate income tax and/or if the CEO’s relatives play in there.) Some CEOs deny any prize for its professional work, because feel like they do not want to seem selfish. Their social responsibility movements particularly limited to the own coworkers in form of common teambuilder trips, end year gala dinners and/or individual sport contest participation support (equipment, dress by the firm, travel support, etc.).

‘We support many movements that I wouldn’t give my name to. Not because there’s anything to be ashamed of, but just because I don’t like seeing it there.’ /Retiring Managing Director of Rice trader firm, Szarvas/

3. “Active engagement”: This type of firms does not only provide financial support for local events but also take part in its preparation as co-organiser and/or participant in group contests. They support the maintenance of off-road roads in the outskirts and drainage ditches, which are essential for both their own operations and the local community. They support local sport clubs through corporate income tax, buying sport equipment, or shaving the grass in the football field. Their social responsibility movements the most spectacular within the three types.

‘[...] and generally, whenever any kind of event is held (I especially like sports-related events) – whether it’s a run or a bike race, or, the Károly Kaán Environmental

Awareness Competition, which the town [Mezőtúr] hosts – we can usually contribute and provide support with our products.’ /CEO of Agricultural producer and service provider, Mezőtúr/

Between the investigated districts, the above written type of corporate behaviours highly *depends on the origin* of CEOs / Top managers. In the Mezőtúr district, half of the interviewed firm representatives (four of eight) was born and/or raised in this district, they take care the future of these settlements, that’s why most of them could describe to the “Active”, and only two firms would be described as “Passive”.

In case of Szarvas, some of the asked interviewees or its parents (five of eleven) was not born and raised in this district. Most of them were born in Bács-Kiskun (one case from Baja and one case from Mohács towns), Jász-Nagykun-Szolnok (one case from Karcag, one case from Törökszentmiklós towns) or Békés counties (one case from Mezőberény town), studied the former college in Szarvas, after that settled in Szarvas or its surrounding settlements. They made its existence in Szarvas town (or Békésszentandrás village), established a company (six of them in the 1990’s) and took actions to take over the firm to its children. *Because of the different socio-ecological environments, these CEOs / Top managers more critical with the local government and citizens.* These non-Szarvas originated firms mostly fits on the “Passive” or “Ignorant” type.

Both ‘active’ and ‘passive’ firms have demonstrated a commitment *to supporting their employees and farmer partners:*

‘Year after year, our farming partners have faced challenges that were not necessarily seen in previous years – not even over the past 10 years. [...] Something unpleasant always happened, and our approach is this: If it’s good for the farmer, then it’s likely good for us too. If it’s not good for the farmer, then we cry and laugh together. [...] So at times like this, people turn a bit into psychologists and keep your partner’s spirits up, reminding them that’s just a temporary difficulty.’ /Deputy Chief Strategy Officer of Input-supplier firm, Mezőtúr subsidiary/

‘My approach is that I prefer to support my own employees. The older ones here can tell you that we’ve gone on trips abroad more than once. There are employees who have never been abroad, either before or since. We went with their children. [...] We spent a week in Croatia—we split into two groups: first half the plant, then the other half the following week—and visited Venice, Vienna, and Schönbrunn Palace. [...] So I’d rather spend whatever money I could on

things like that, rather than give it to just any organization to have them spend it however they wanted.’ /Retiring Managing Director of Rice trader firm, Szarvas/

Independent of this classification, there are some *unique social initiatives*:

- A craft beer firm’s CEO argues that they organise charity auctions, and the income of that gives another school from Békés county to civil organizations for permanent ill children (so called ‘Brave Camp’).
- The retiring CEO of agricultural seed producer company from Békésszentandrás since 1980’s teaching as honorary lecturer in specialized education programs for seed engineering specialists in Szarvas. Until his leadership, this company organised by itself conferences about triticales or peas.
- Two firms that related to rice cultivation and processing, not only provides its products through wholesalers, but they also sell it through its web shops. In this web shops they write blogposts about Rice-based food recipes, health-conscious food choices and they transfer its knowledge food development. One of them does educational lectures for students and intends to make a demonstration garden to educate directly arable crop farming.
- One of the agricultural firms from Mezőtúr patronised a folklore singer choir, that funded since 1972. This group organised by the retired workers from the predecessor socialist agricultural cooperative, the average age of the members was above 70. Every CEOs of this firm always supported the singer group with audience room, helped to travel by the firm’s bus, and organised a celebration for the 50th anniversary. Unfortunately, following the choir leader's permanent illness, the choir disbanded in 2025.

Economic

According to their different characteristic during the 1990's Political Regime Change, the investigated districts went to *different upgrading (and downgrading) trajectories*.

In Mezőtúr, the few, but large agricultural cooperatives were reorganized into new cooperatives and then limited liability companies or incorporations (all of them family-owned), those *completely closed or reduced their animal breeding capacities* to more profitable (pork or dairy cattle) kinds, with *primarily focused on large-scale crop and seed production* (Nagy, 1996; Nagypál, 1996; Bodorik, 2019). One of these incorporations reorganised its rice cultivation capabilities and built-up rice- and organic crops- based food processing plants. Food processing nowadays outsourced to its subsidiary, that at the time of the interview started to drop out new rice-based chips to health food stores and grocery stores – through its resellers.

In Túrkeve, there was only one agricultural cooperation in the 1990's, that fragmented to inner corporation units. From these 13 limited liability companies, only three agricultural producer and one feed-mixing facility remained (Bacsikai, 2001; Szendrei, 2012). According to the inherited and maintained 'farming borders', they *work closely together* to provide agricultural services to local small-scale farmers, negotiate common input and output supplier partners. The interviewed two company representatives argues that they have close connection with each other, the headquarters located at the same office building in the heart of the town centre, so they can discuss directly.

As a *side effect of the concentration*, the multinational, R&D-related, more value-added *input-suppliers* like agricultural machinery, seed production (Corteva Agriscience, Syngenta) or complex service providers (KITE) *settled its facilities, production subcentres and/or logistic centres* – to being near to the farmers and agricultural firms. These multinational plants' role grows out of the investigated districts. These serve both international (primarily focusing on Central and Eastern Europe) and domestic markets.

After 1990's Political Regime Change, the previous three agricultural cooperatives (one of them was college-owned for educational purposes) *in Szarvas fragmented to small-/middle-sized agri-food firms*, except for two largest companies that were established / settled at the end of 1980's: One is Gallicoop, the largest hungarian turkey processing plant (formed from an Israeli-Hungarian joint venture), and the other is a branch plant of the U.S.-owned Pioneer Hi-Bred – currently Corteva Agriscience (Gyulavári, 2017). According to the interviews, some firms reorganised from bankrupted Italian-Hungarian joint ventures, that was interested in value

added activities (seed production and cattle-based mozzarella manufacturing). Only one interviewed firm established in the 2000's, from a former researcher's rice retailing partnership. Nowadays, Szarvas district exhibits a more diverse economic structure with varied scale of agri-food value chains. By professional and/or emotional connection to preferred activities like R&D-based seed production (legumes seeds such as alfalfa, vetch, and chickpeas or industrial crops like sunflowers, hybrid corn, sugar beets), rice cultivating and dairy cattle.

In Békésszentandrás, most of interviewed prominent actors had deeper industrial (based upon Persian carpet making traditions) than agri-food identity. Craft-beer manufacturing firm has no socialist roots (reorganised by a similar profile firm in 2013), the co-owner mentions themselves as a flagship of Békésszentandrás, despite the dominant role of tourism in the village. Except craft-beer, only few small-scale agri-food firms represents the sector.

For local firms within these districts, *networking is driven by financial security and interpersonal trust rather than the mere local presence of output-suppliers*. This leads to the construction of parallel supply networks, where global integrators – such as seed producer Syngenta and Corteva, machinery company Axiál, feed-mix maker Cargill, food oil maker and trader Bunge, and canned vegetable manufacturer Bonduelle – act as the primary partners, *often overshadowing local sourcing opportunities* (see Figure 4). For example, despite the presence of mozzarella and long-aging cheese facilities, the interviewed two dairy cattle companies in both districts have been collaborating with dairy processors from other counties (Arabian-owned Köröstej Ltd. with plant in Köröstetétlen – Pest County; or French Lactalis Group owned Kuntej Ltd. with branch plant in Tiszafüred – Jász-Nagykun-Szolnok county) for years.

One of the interesting features of *frequently firm connections*, that certain *input-suppliers* (such as Corteva Agriscience), and players in the *crop processing industry* (such as Bunge and Cargill), play a *dual role* in the investigated districts: They serve as valuable buyers for crop producers, as important suppliers of plant-based feed (in the form of sunflower meal or silage corn) for animal breeders. Global suppliers like seed productions and large-scale food producers have *tight connections with HR recruitment firms*, although exact companies were named only in the Mezőtúr district. (Figure 4.). The geographical scope of these connections located within North and South Great Hungarian Plain and never goes over them.

	Agricultural machinery	Input-suppliers	Food or beverage producers	Wholesalers and Retailers	Others
Mezőtúr district		 	  		 
Both of them		 	  		
Szarvas district		 	 	    	

Figure 4.: Frequently corporation connections. Edited by the author.

Conclusion

This study took a multi-level overview about agri-food firms within Mezőtúr and Szarvas districts. Although these districts have different agro-economic characteristics, firm and product portfolio, their *opportunities for further development are limited by their relatively poor transportation linkages and lack of agri-food (blue-collar) employees.*

This latter tendency is not unique disadvantage. Christiaensen et al (2021) argues that the domestic agricultural employment is on the decline even in developing countries, – that is only partially explained by labour migration. In their viewpoint, both low- and high-income countries must respond to this situation – within their own constraints. Unfortunately, Christiaensen et al (2021) neglected the middle-income countries in their theoretical analysis, which is far more complex than can be assessed as a mixture of the two ends of this spectrum.

According to conclusions of Christiaensen et al (2021) and the related experiences of my field research, I make the following proposals:

First, *making value chain development more inclusive (iVCD)*, to not lose the domestic employees and current production capacities. Seeing the tight connections between farmers and agricultural firms in Mezőtúr district, or agricultural and input-supplier firms in Szarvas district, we must not underestimate the competences of the local farmers, like a bit technocrat ‘bioeconomic’ approach does it (Levidow, 2015). Though iVCD, this framework helps ‘to raise smallholder incomes and benefit the poor and women is greater for non-staples. iVCD also creates jobs off the farm, in the chains and beyond (through consumption linkages)’ (Christiaensen et al, 2021). In my opinion, some parts of this construction already exist within two interviewed rice-related firms. They collaborate in food R&D, both of them participate educating consumers via their website and/or educational lectures and demonstrating garden. With this attitude, more tight collaboration between these and other rice-related firms, more direct financial incentives, and adapting good practices of localised food systems (see more Baritau et al, 2016) could this region unique from other districts within East Hungary.

Second, *finding balance between domestic agri-food blue-collar employees and guest workers*. Nowadays, farmers and related firms face the lack of domestic agricultural employees, the limitations of the educational cooperations, that is why they must ‘take steps to retain an aging, mostly immigrant, workforce while pursuing available options to contract new workers from abroad’ (Christiaensen et al, 2021). Four firms (involved in animal breeding, meat industry or seed producing) have been employing guest workers for years. Representatives of these firms

claim that these workers are not taking job opportunities away from existing domestic workers, but rather filling positions for which local labour misses for years. (This statement corresponds relatively well with Hungarian rural firm experiences of Nagy et al., 2015.)

Third, *pay attention for losers of the digitalisation*. Christiaensen et al (2021) acknowledge that digitalization transition cannot be implemented equally even in high-income countries. ‘As new technologies become available for relatively easy-to-mechanize crops and routine tasks, the farm workforce will move out of those crops and tasks into ones that have not yet been mechanized and are non-routine (e.g., farm tourism)’ (Christiaensen et al, 2021). Due to the high level of commitment to arable crop/seed production, the districts examined will be heavily affected in the future. Therefore, it is necessary to find solutions to re-employing the elder workers, who are less familiar with digitalization. Within the related firms, they have several old workers, whom they want to honour with part-time employing until retire or prizing in the working anniversary.

However, sooner or later the current employees become older, and if they do not adapt now to technologically advanced AFVCs, it will lead to economic stagnation and (ultimately) to shutdowns. It is unpredictable, how realistic this threat is within Mezőtúr and Szarvas districts, but it is certainly important for the local firms to take this scenario as well.

It would be a pity, if these companies were to disappear in the future. Based on interviews, the researched firms have a *significant influence on the settlements* where they are headquartered or have facilities (mainly in the cases of Szarvas and Túrkeve, where they are ‘identity-forming’), which *goes beyond their tax-paying or sustainability obligations*. Although this paper focused on prominent firms and institutional actors, further research is needed to understand public opinion and confirm the earlier finding.

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