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Food miles on the shelves: the share of local food products in the Hungarian retail sector

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Abstract

Share of national food products in retail is a frequent subject of policy debates. Local food is often associated with national security, sustainability, and support of local economy, contributing to value-added production, employment, rural development, and preservation of local food culture. Despite its importance, relevant academic literature about the proportion of national food in retail is basically non-existent. This paper presents a unique study that fills this gap and gives an account of the proportion of the main national food products in the Hungarian retail sector. The study presents a comprehensive picture of the food supply situation of the 10 largest retail chains in Hungary in the second half of 2020 for 16 key product categories (representing 67% of total food sales in value in the country), based on the experience of research that covered the physical examination of nearly 40 thousand individual food products. The study found that 70.85% of the analysed food products were supplied by domestic companies. Proportion of national products was higher for fresh food (meat, milk, perishable meat and milk products, eggs, fruits, and vegetables) and honey, while imports were dominant in higher value-added categories. Domestic chains had 15.37% points more local products in stock than international ones. The exact results can be used for benchmarking between companies and sectors, indicating comparative advantages and disadvantages, and provide solid basis for economic development plans.

Keywords: Local food, Market share, Retail, Place of origin, Food economy, Food security

Introduction

The proportion of domestic food products in the retail supply is often a key issue in national agricultural and food economics policy debates (Solarz et al. 2023), mainly but not exclusively in the new member states of the EU. Domestic food production and consumption is imagined as one of the most important pillars of national sovereignty and perceived as a critical factor in food security (Manning and Baines 2004; Porkka et al. 2013; Otero et al. 2013; Burnett and Murphy 2014; Luo and Tanaka 2021). The more market power is concentrated in the hands of a few retailing companies, the more dependent local suppliers become. The pressure on the supply chain is intensifying, which often leads to the collapse of traditional marketing opportunities of smaller-scale

local companies. The most important benefit of domestic food products for Hungarian consumers is the potential to contribute to the support of local enterprises and employees by purchasing locally sourced products (Szegedyné et al. 2016). This is a strategic question, considering that domestic food production is valued for its outstanding economic multiplication effect and its contribution to employment and rural development (Ozimek and Żakowska-Biemans 2011; Bigliardi and Galati 2013; Zouaghi and Sánchez 2016; Johansen et al. 2019; Popp et al. 2019). Recently, local food production and consumption have been identified as a sustainability question, as well (Weber and Matthews 2008; Coley et al. 2009; Van Passel 2013; Tompa et al. 2020). Cultural dimensions are also attached to domestic food and play an important role in national and regional cultural identities (Almerico 2014; Ichijo and Ranta 2016).

Although the share of domestic food products in the national food supply, both by value and quantity, seems to be an interesting topic from several perspectives, field studies in this area are extremely scarce. Mostly derivative statistical analyses based on production, export, and import data can be found, which allow us only to draw indirect conclusions (Eičaitė and Mikeliūnaitė 2017). Very few field studies are mainly related to food retail assortment analysis, focusing on category management (Broniarczyk et al. 1998; Esbjerg et al. 2004) or on the share of retailer brands (Davies 1998; Chimhundu et al. 2011) general food supply of a given country. A credible assessment of the share of domestic food in the retail supply, especially at the national level, requires a resource-intensive field study (Kasza et al. 2015), which can be an explanation for its scarcity in the relevant literature. Additionally, the limited availability of literature in this research may also be attributed to the contentious nature of the issue since the notion of local food has emerged as a debated subject of global discourse within political, professional, and academic spheres during the last 2 decades (DuPuis and Goodman 2005). During that period, there was significant debate around the notion of 'local' since it posed limitations to the idea of 'global-local' (DuPuis and Goodman 2005). In addition, local or domestic products represent an essential part of the concept of Alternative Food Networks (AFNs) and Short Food Supply Chains (SFSCs) as alternative food systems that may support the sustainability, food security, and rural development (Chiffolleau and Dourian 2020; Michel-Villarreal et al. 2019). At the same time, several consumers and experts disagree with putting much focus on AFNs and SFSCs due to concerns about the elevated vulnerability of food security when a nation or region relies only on a solitary or a few (and especially small scale-) food provider (Chiffolleau and Dourian 2020; Michel-Villarreal et al. 2019). Reinforcing AFNs and SFSCs, on the other hand, was found to be critical for their substantial role in strengthening a country's food supply in crisis scenarios like the COVID-19 outbreak and the Russia-Ukraine conflict (Keller et al. 2022; Lang and McKee 2022). In addition, the AFNs and SFSCs have long been recognized as emerging economic models that take social norms into consideration and also have the potential to sustain rural livelihoods and facilitate rural development by supporting local farmers and small-scale processors (Chiffolleau and Dourian 2020; Michel-Villarreal et al. 2019). Given the robust foundation of the AFNs and SFSCs in promoting rural development and their demonstrated efficacy in addressing critical issues, it is important to undertake comprehensive investigations pertaining to AFNs and SFSCs, in which the market presence of domestic food products represents great significance.

While comprehensive assortment analyses are scarce, it can be observed that the effects of particular assortment characteristics on consumer purchasing behaviour have been widely studied for a longer period of time (Broniarczyk et al. 1998; Szakály et al. 2016; Lombart et al. 2018). In particular, the consumer response and reactions to the limited availability of food and stock-out situations in the food supply have been scientifically analysed (Zinn and Liu 2001; Verhoef and Sloot 2006; Dadzie and Winston 2007; Byun and Sternquist 2012).

Within the marketing-related academic literature, there is a rich discussion of consumer preferences for certain geographical origins in the food market (Lobb and Mazocchi 2007; Grunert and Achmann 2016). Consumers' preference for domestic products has been identified as "consumer ethnocentrism" (Shimp and Sharma 1987), but it is also known as "locavorism" (Kim and Huang 2021), and extensively studied over the last decades (Orth and Firbasova 2003; Zeugner-Roth et al. 2015; Szakály et al. 2016; Birch et al. 2018; Fernández-Ferrín et al. 2018, 2020; Bryła 2019). Local food is gaining increasing popularity among consumers due to its association with sustainable consumption (El Bilali et al. 2019; Kumar et al. 2021). In the light of the most recent findings, country of origin is an important driver in consumer decisions (Trinh et al. 2019), and its influence on the relationship between ethnocentrism and willingness to buy is still significant (Hoang et al. 2022), in spite of the new trends in retailing and services, such as in-store advertising, mobile applications, and social media platform use (Souiden et al. 2019). Besides positive quality and moral value perceptions, ethnocentrism may also be rooted in consumers' perceptions of risk (Angulo and Gil 2007; You and Ju 2017). In practice, there are political trade-offs between addressing food security, sustainability, and food safety (Walls et al. 2019).

The literature review indicates that the proportion of domestic food in the general food supply is an important question for policy-makers and also for category managers in the retail sector. This issue receives growing attention in both scientific literature and public debates. However, according to the scientific literature overview, published statistical data on the proportion of domestic food products in retail supply are not available in online databases. This study intends to fill this gap in regard to a middle-sized Central-European country, Hungary, by providing methodological indications, collecting research experience, and sharing the findings of an extensive investigation. This paper presents an independent data set for the Hungarian food supply based on the origin of products, which is expected to serve as a benchmark for retail experts but also to become an important indicator for policymakers of the status of the integration of the domestic food industry in the local food supply chain.

Materials and methods

Methodological considerations for data collection

To determine the actual situation regarding the share of local food items in Hungary, this study focuses on general, leading, and large-scale physical marketplaces: retail stores that focus on food and beverage products (hypermarkets, supermarkets, discount supermarkets, as well as cash and carry). Furthermore, different approaches for assessing the share of domestic food products in the national food supply as defined by food items are investigated throughout the study planning stage. Self-reporting was considered as

an option due to the fact that in several studies it delivered acceptable results; however, studies also reported significant levels of bias (Parnell 2011; Rahdari et al. 2020). The self-reporting of retailers as a method was abandoned after the initial testing due to the low response rate experienced, the incoherency of the reported data, and the lack of tools for verification. The introduction of computer-assisted data collection was also analysed, either to check the retailers' databases of inventory records or to trace the food products sold at cash registers. Both methods were rejected at an early stage due to the incoherent product markings (bar codes, tax codes), which do not necessarily indicate the place of origin. Moreover, cash registers would allow only the quantification of the products sold instead of tracking the food assortment on the shelves. Physical examination of the actual assortment on the shelves was also an option; however, relevant references from other countries were not found in the academic—nor in the grey—literature. This methodology is relatively labour-intensive and lacks the ability to provide a dynamic picture of the food supply. At the same time, it provides a strong option for validation (photo documentation), and there have been previous experiences that demonstrated proof-of-concept (Kasza et al. 2011, 2015). After the consideration of the alternatives (Table 1), the physical inspection of the food assortment was selected as the research methodology.

In regard to the data collection methodology, it must be emphasized that the labour intensity of the physical inspection of the assortment hinders the replicability of the study. However, photo evidence was collected for both the individual products and the overview of the shelves. This evidence supported data recording as well as validation. It is expected that in the upcoming years, manual data collection could be increasingly replaced by an enhanced version of cash register data (possibly based on a more complete and standardized QR code system that contains reliable reference to the country of

Table 1 Comparison of research methodology options

Method	Advantages	Disadvantages
Self-reporting by retail companies	Cost-effective It can provide an analysis of a period, not just a snapshot	Pilot study revealed a sporadic response from retailers, and the data quality was low Data resolution is likely low to middle level (no individual articles) No method for the validation of data Incoherent comprehension and data structure
Tracking of sales with cash register data	Cost-effective after an initial technical implementation phase It would provide high resolution of data Able to provide a constant data flow instead of a snapshot Computer-based method for validation is possible (even interlinkages with other databases are possible, such as tax reports, accounting, and supply analytics)	Bar codes (and the product information behind them) are often not related to the place of origin, and linkages are difficult to make Only able to report on sales and not on the physical assortment Substantial development in the data structure would be needed with an (international) collaboration of retailers and suppliers, which is unrealistic at present
Physical inspection of the assortment	Method for validation (photo documentation) Provides high-resolution data Proof-of-concept (previous experience)	Labour-intensive Needs trained staff Provides a snapshot instead of the analysis of a period or a constant data flow

origin) or by a machine learning-assisted visual data collection system that automatically records assortment data from photographs that overview complete shelf sections in the stores.

Before the data collection, a workshop was organized with the National Food Chain Safety Office, the representatives of food producers, processors, and retailers. The purpose of this meeting was to discuss the aim of the study, the data collection method, the selected retail chains, the selection procedure for retail units, and the selected product categories. While the selection of the retail chains was fixed (the top ten retailers based on their last disclosed revenues, as explained in the next section), according to the expectations of the Ministry of Agriculture. The product categories were discussed in detail. The number of units per retailer to be visited was defined based on the available human capacities for data collection and the aspect of geographical representation, while the differences between the revenue of the selected retail chains were not considered. The actual units to be visited were not disclosed before the visits and were only known to the research leader.

The following sections provide further explanations for each inclusion criterion.

Selection of retail companies

In 2020, Hungary had a total of 157,267 of all business sectors, including food, beverages, textiles, furnishings, etc., with about 37,392 of them being food-specific establishments like supermarkets and hypermarkets (HCSO 2023a). The Hungarian retail sector that focuses on the food industry is fragmented, dominated by 10 large food retailer companies (7 international and 3 national retail chains) (European Supermarket Magazine 2023; Statista 2020).

Table 2 covers the top ten retailers in Hungary, together with information on their categorization, format, classification, total revenue, and market share. The selected retail

Table 2 List of food retailers selected for the investigation

Retail chain's name	Retail classification	Retail format	Total annual revenue in millions € (2020)	Store number (2020)	Market share in Hungary (2020)
Aldi	International	Discounts	977.7	226	5.85%
Auchan	International	Hypermarkets	1157.1	24	6.93%
CBA	National	Supermarkets, hypermarkets	1484.4	1987	8.88%
Coop	National	Supermarkets	1791.1	4063	10.72%
Lidl	International	Discounts	2281.7	186	13.51%
Metro	International	Cash and carry stores	–	13	–
Penny Market	International	Discounts	1021.4	226	6.11%
Reál	National	Supermarkets	1172.2	1189	7.01%
Spar	International	Supermarkets, hypermarkets	2023.6	588	12.11%
Tesco	International	Supermarkets, hypermarkets	2042.9	201	12.09%
Total			13,952.1	8703	83.21%

Source: Researchers' calculation (Trade Magazin 2021; Leković and Katai 2016; HCSO 2020b; Metro 2023)

chains account for a total of 8703 units in Hungary, located in 348 settlements. There is a difference in food assortment amongst the various retail chains; however, the selection is fairly similar within the same chain. This is especially relevant for the main discount chains, such as Aldi and Lidl, but central provisions are also significant in the case of the others, including the domestic chains, such as CBA, Coop, and Reál. Definition of the market share of a specific supermarket, hypermarket, or other is always challenging as the information is typically confidential and not made available to the public (Anant et al. 2020; Ben 2020), but the study was able to cover the top national and international retail stores in Hungary (Blake et al. 2010; European Supermarket Magazine 2023) with high total revenue (European Supermarket Magazine 2023; Trade Magazin 2021) to represent the entire food retail in Hungary. The overall share of these 10 retailers accounts for 83.21% of the total retail sales in Hungary, having a total revenue of approximately 13,952.1 million euros. Because of the scarcity of data, Metro is not included in the computation of market share but is estimated by the authors to account for another 2–3% of the total retail revenues. In summary, the 10 large retail chains included in the study represent more than 85% of the Hungarian market; thus, the main observations of this paper can be generalized in respect of the country.

Selection of retail units

Six units per chain were selected (60 stores in total), such that they were located in equal proportions in the three statistically large regions (the Central Hungary region, the Great Plain and Northern region, and the Transdanubia region). For each chain, the format with the largest supply in the retail chain was selected. For instance, Tesco and Spar run both hypermarkets and supermarkets in Hungary, so the units belonging to the hypermarket size category were selected for examination.

The time of the on-site inspections was not announced in advance, nor were the actual retail units chosen for investigation. However, transparency and accountability were key issues during the data collection. At the time of arrival at the site, the shop manager was notified; the researchers identified themselves, presented their letter of authorization, and explained the procedure. Therefore, the data collection was not concealed and could be verified by the staff of the retail chain on the spot and by the photos taken during the process (explained further in the next section). The stores included in the survey are listed in Table 3.

Selected product categories

The selection of the food categories was based on a round table discussion with the representative organizations of the Hungarian food retail sector, the food processing sector, the Hungarian Chamber of Agriculture, the Institute of Agricultural Economics, and the Hungarian University of Agriculture and Life Sciences (this university provides expertise for the Codex Alimentarius Hungaricus working groups) on July 27, 2020. 16 categories were chosen, in which Hungary has an adequate level of self-sufficiency based on its natural resources, production capacities, and traditions.

Table 3 Sites included in the investigation

Nr	Date	Retailer	City	Address
1	11 08 2020	Tesco	Budapest	1087 Budapest, Kerepesi u. 9–11
2	12 08 2020	Auchan	Székesfehérvár	8000 Székesfehérvár, Holland fasor 2
3	12 08 2020	Penny	Budapest	1085 Budapest, Hős utca 9
4	14 08 2020	Lidl	Budapest	1087 Budapest, Hungária krt. 26
5	14 08 2020	Aldi	Debrecen	4031 Debrecen, Vincellér u. 5
6	17 08 2020	Interspar	Budapest	1117 Budapest, Október 23. u (Allee)
7	19 08 2020	Tesco	Debrecen	4031 Debrecen, Kishegyesi út 1–11
8	24 08 2020	Coop	Jászberény	5100 Jászberény, Szabadság tér 4
9	27 08 2020	Lidl	Kiskunfélegyháza	6100 Kiskunfélegyháza, Majsai út 5
10	27 08 2020	Reál	Budapest	1097 Budapest, Könyves Kálmán krt. 12–14
11	28 08 2020	Reál	Kiskunfélegyháza	6100 Kiskunfélegyháza, liget utca 1
12	28 08 2020	Aldi	Budapest	1132 Budapest, Váci út 14
13	28 08 2020	Metro	Debrecen	4032 Debrecen, Balmazújvárosi út 3
13	29 08 2020	Metro	Debrecen	4032 Debrecen, Balmazújvárosi út 3
14	31 08 2020	CBA	Kecskemét	6000 Kecskemét, Korona u. 2
15	31 08 2020	Coop	Kecskemét	6000 Kecskemét, Dobó István körút 1
16	31 08 2020	Lidl	Vác	2600 Vác, Naszály u. 20
17	31 08 2020	Aldi	Székesfehérvár	8000 Székesfehérvár, Holland fasor 1
18	01 09 2020	Auchan	Kecskemét	6000 Kecskemét, Dunaföldvári u. 2
19	01 09 2020	CBA	Budapest	1134 Budapest, Lehel tér
20	02 09 2020	Penny	Aszód	2170 Aszód, Kossuth Lajos u. 45–49
21	02 09 2020	Auchan	Budapest	1033 Budapest, Szentendrei út 115
21	03 09 2020	Auchan	Budapest	1033 Budapest, Szentendrei út 115
22	03 09 2020	Tesco	Cegléd	2700 Cegléd, Malomtó szél 30
23	07 09 2020	Spar	Eger	3300 Eger, Sas u. 1
24	08 09 2020	Metro	Szombathely	9700 Szombathely, 11-es Huszár út 210
25	09 09 2020	Lidl	Szombathely	9700 Szombathely, Verseny u. 30
26	09 09 2020	Penny	Győr	9023 Győr, Tihanyi Árpád út 89
27	10 09 2020	Penny	Salgótarján	3100 Salgótarján, Bem u. 7
28	10 09 2020	Interspar	Tatabánya	2800 Tatabánya, Győri út 25
29	14 09 2020	CBA	Érd	2030 Érd, Kálvin tér 1
30	15 09 2020	Tesco	Zalaegerszeg	8900 Zalaegerszeg, Sport u. 1
31	15 09 2020	Aldi	Zalaegerszeg	8900 Zalaegerszeg, Balatoni út 13
32	16 09 2020	Interspar	Zalaegerszeg	8900 Zalaegerszeg, Ola u. 1
33	16 09 2020	CBA	Keszthely	8360 Keszthely, Kossuth Lajos u. 82
34	16 09 2020	Spar	Gödöllő	2300 Gödöllő, Kossuth L. u 46–48
35	16 09 2020	Coop	Gödöllő	2300 Gödöllő, Fő tér 1
36	18 09 2020	Aldi	Budaörs	2040 Budaörs, Kandó Kálmán u. 2
37	21 09 2020	Lidl	Tatabánya	2800 Tatabánya, Győri út 31
38	23 09 2020	Reál	Siófok	8600 Siófok, Bajcsy Zs. u. 87
39	24 09 2020	Penny	Veszprém	8200 Veszprém, Aulich Lajos u. 1
40	24 09 2020	Reál	Veszprém	8200 Veszprém, Aulich Lajos u. 2/1
41	25 09 2020	Auchan	Győr	9024 Győr, Vasvári Pál utca 1/A, Győr Pláza
42	25 09 2020	Coop	Győr	9022 Győr, Pálffy u. 2,
43	02 10 2020	Interspar	Szolnok	5000 Szolnok, Mátyás király út 29
44	05 10 2020	Penny	Szolnok	5000 Szolnok, Boltköz
45	05 10 2020	Lidl	Hatvan	3000 Hatvan, Hósmagyar u. 19
46	07 10 2020	Tesco	Esztergom	2500 Esztergom, Mátyás király u. 30
47	08 10 2020	Metro	Budapest	1097 Budapest, Gyáli út 35–37

Table 3 (continued)

Nr	Date	Retailer	City	Address
48	08 10 2020	Coop	Budapest	1091 Budapest, Mihálkovic utca 3
49	09 10 2020	Auchan	Budaörs	2040 Budaörs, Sport u. 2–4
50	12 10 2020	Reál	Gödöllő	2100 Gödöllő, Szabadság út 181
51	14 10 2020	Metro	Pécs	7634 Pécs, Makay István út 6
52	15 10 2020	Coop	Pécs	7626 Pécs, Király u. 76
53	15 10 2020	CBA	Szekszárd	7100 Szekszárd, Wesselényi u. 18
54	20 10 2020	Reál	Jászberény	5100 Jászberény, Gyöngyösi út 31
55	20 10 2020	Metro	Szeged	6728 Szeged, Budapesti út 1
56	20 10 2020	CBA	Szeged	6728 Szeged, Back Bernát utca 7
57	21 10 2020	Tesco	Szeged	6724 Szeged, Rókusi krt. 42–64
58	21 10 2020	Aldi	Szeged	6724 Szeged, Kossuth Lajos sgrt. 119
59	28 10 2020	Metro	Budaörs	2040 Budaörs, Keleti u. 3
60	28 10 2020	Auchan	Miskolc	3516 Miskolc, Pesti út 9

Product categories included in the survey:

1. Packaged fresh pork
2. Packaged fresh chicken meat
3. Meat products 1: hams
4. Meat products 2: salamis, dry sausages
5. Meat products 3: Parizer (Bologna sausage), wiener and frankfurter sausages
6. Milk: fresh milk, ESL milk, UHT milk
7. Dairy products 1: yoghurts (including fruit flavoured types)
8. Dairy products 2: cottage cheese, kefir, sour cream
9. Dairy products 3: cheeses (extra hard, hard, semi-hard, and soft cheeses)
10. Dairy products 4: butter
11. Eggs (chicken egg)
12. Honey
13. Seasonal fruits, vegetables (apples, grapes, peach, apricot, nectarines, tomatoes, green peppers, carrots, cucumbers, onions, potatoes, garlic)
14. Fruit jams (apricots, plums, strawberries, cherries, raspberries)
15. Dry pasta
16. Canned food: cherry compote, sweet corn

The selected product categories represented 67% of total sales in value in the Hungarian food retail sector in 2019, according to the Hungarian Central Statistical Office (HCSO 2020a).

Product categories that could not be supplied by Hungarian producers, such as marine products and exotic fruits, were excluded from the selection process. Some relevant categories, such as alcoholic and non-alcoholic beverages, fish, beef, and confectionery, were not included due to budget limitations but were shortlisted for future investigations.

Method of the on-site investigation

The authors of the study were not able to identify earlier methodological descriptions in the international academic literature; therefore, the investigation procedure had to be set up within the project. Experience from earlier Hungarian studies (Kasza et al. 2011) and (Kasza et al. 2015) was utilized, and the final methodology was discussed in detail with the stakeholders before adoption. Reaching a sound agreement in regard to the methodology was an explicit aim as a prerequisite for the general acceptability of the research results.

The on-site survey covered pre-packaged products that are easily accessible to consumers (excluding fruits and vegetables, which are often sold as bulk products). The investigations were carried out by staff with product knowledge and relevant professional qualifications (BSc and above). The 16 product categories were located in the shops, and high-resolution photographs were taken of the shelves that contained them. All products included in the 16 selected categories were removed individually from the shelf for investigation in each retail unit, and a close-up photographic documentation was conducted. The data on the products were recorded immediately after the on-site investigation with the support of the photos. Recorded data included the name and brand of the product, all available information on the manufacturer and/or trader, the place of origin, the package type and unit size, and the EU registration number of the processing plant in the case of animal products (oval stamp).

During the data input, each food item was classified as domestic or imported. The basis for establishing the Hungarian origin was the data on the packaging of the received products, marked as the place of origin or production. In the case of a product of animal origin, in the absence of the indication of the former information, the origin of the product was determined by the data on the oval stamp. In the case of non-prepackaged fruits and vegetables, the information on the price tag or box was taken into account when determining the origin.

Data collection lasted from 11 August 2020 to 28 October 2020. Data from a total of 39,964 products were recorded. The photo documentation and field notes have been archived for 5 years.

Analysis of the data

Descriptive analytics was conducted to assess the share of local food products in the Hungarian retail sector using Microsoft Excel software to determine the average proportion and the respective proportions for the international and domestic retail chains. The present research also used the Mann–Whitney U test to examine the statistical significance of variations in the proportions of domestic products supplied by international and domestic retailers in Hungary. Additionally, the Kruskal–Wallis test was used in this study to examine the statistical significance of differences in the shares of each product category among different retailers. Some other statistical analytic methods, such as ANOVA, MANOVA, MANCOVA, crosstabs, and cluster analysis were also tested, but we discovered that the nonparametric tests (Kruskal–Wallis and Mann–Whitney U tests) provided the best results. The workflow of the study is shown in Fig. 1.

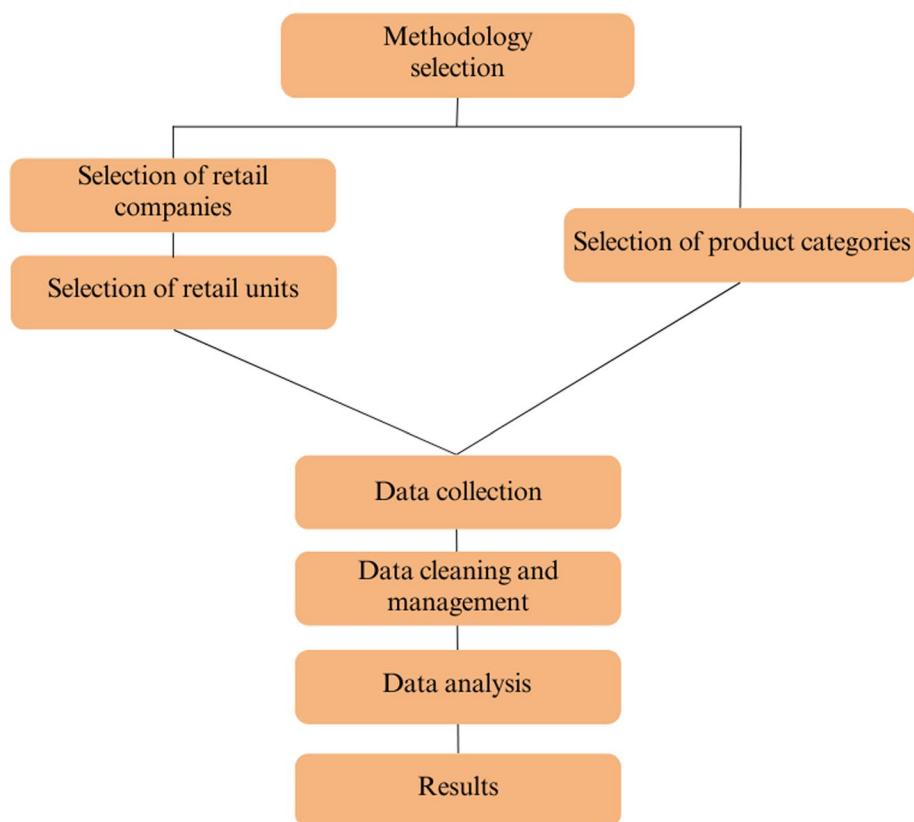


Fig. 1 A flow diagram of the methodology's working phases

Results and discussion

An investigation of local food items' proportion in Hungary's (national and international) retail assortment

The analysis found that 70.53% of the products in 16 product categories in the examined retail units were classified as domestic. The supply ratio of Hungarian products differed significantly in the case of international and domestic chains (in the case of international chains: 66.79%, in the case of domestic chains: 79.26%) (Table 4).

It is easy to notice that apart from honey, mostly fresh products can be found at the top of the list: chicken and pork, seasonal fruits and vegetables, eggs and milk. Hungary is a leading honey producer in the EU (European Commission 2021), and Hungarian beekeepers communicate actively about their role in agriculture and rural development, which might have contributed to this notable result. In the fresh product categories, more than 75% of the products were supplied by domestic companies.

It should be noted that the Hungarian retail units analysed did not keep prepackaged fresh meat in stock. They usually sell it as a non-prepackaged good, served to the consumer on request (in this case, a product label is not attached to the package). In some other cases, the Hungarian retail units contract an independent butcher, which operates a small shop in the rented area of the retail unit, with sales separated from the marketing of the retail chains.

Table 4 Proportion of domestic food products in the assortment of retailers

Product category	All retailers (%)	International retail companies (%)	Domestic retail companies	Difference between domestic and international retailers
Honey	97.18	95.98	100.00%	4.02%
Milk: fresh milk, ESL milk, UHT milk	95.61	94.86	97.35%	2.49%
Packaged fresh chicken meat	93.85	93.85	–	–
Eggs (chicken egg)	93.37	92.28	95.93%	3.65%
Dairy products 2: cottage cheese, kefir, sour cream	89.39	87.41	94.02%	6.61%
Meat products 3: Parizer (Bologna sausage), wiener and frankfurter sausages	83.49	78.51	95.11%	16.59%
Packaged fresh pork meat	81.84	81.84	–	–
Seasonal fruits, vegetables (apples, grapes, peach, apricot, nectarines, tomatoes, green peppers, carrots, cucumbers, onions, potatoes, garlic)	76.98	73.97	84.01%	10.04%
Canned food: cherry compote, sweet corn	73.96	67.99	87.88%	19.89%
Meat products 2: salamis, dry sausages	73.60	71.84	77.70%	5.85%
Dry pasta	64.53	56.02	84.40%	28.38%
Fruit jams	54.76	47.06	72.72%	25.66%
Dairy products 4: butter	50.76	41.06	73.40%	32.33%
Dairy products 3: cheeses (extra hard, hard, semi-hard and soft cheeses)	46.68	39.86	62.59%	22.73%
Meat products 1: hams	38.26	27.41	63.60%	36.19%
Dairy products 1: yoghurts (including fruit flavoured types)	19.41	18.75	20.94%	2.19%
Mean	70.85	66.79	79.26%	15.47%

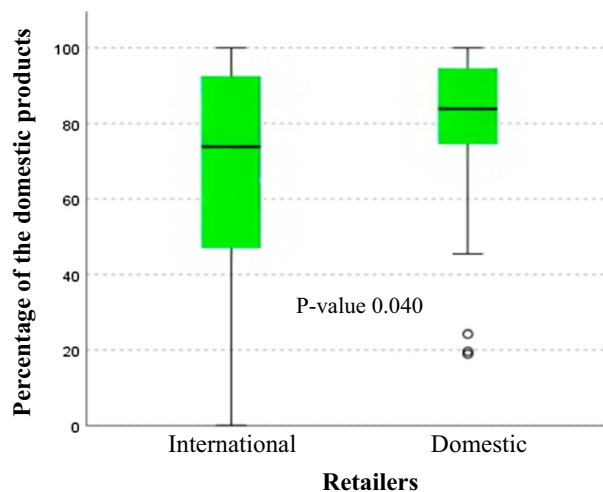


Fig. 2 Distribution of domestically produced food items between local and international retailers in Hungary (using Mann–Whitney U test)

The authors were not able to identify similar research reports from other countries to be used as a reference for the evaluation of the current findings. This highlights the originality and uniqueness of the research results. Earlier studies, however, were conducted in Hungary, which can be used for comparison (Kasza et al. 2011, 2015).

Hungarian retailers demonstrate a significantly higher proportion of domestic products compared to international retailers (Fig. 2). The difference in the proportion of domestic commodities between international and domestic retail may be attributed not only to the differences in their purchasing mechanisms but also to retailer preference issues in selling domestic products (Wicaksana and Utama 2018). Wicaksana and Utama (2018) recommend that governmental regulations should require retailers to stock up to 80% of their traded items from domestic suppliers. Others call attention to the fact that raising the ratio of domestic products is not enough; it is important to use marketing strategies that focus on local products in order to enhance consumer consciousness about the significance of domestic goods within a sustainable food system (Chiffolea and Dourian 2020), rural development (Rossi et al. 2019), and local economic growth (European Commission 2022, 2023; European Parliament Council 2022). Consumers play a significant role in this context, as they possess the ability and potential to exert influence on upstream practices through their buying power (Hatanaka 2020). Consequently, they have the opportunity to instigate transformations along the supply chain and could assist in enhancing sustainability within the realms of food and agriculture; this phenomenon, whereby consumers wield this potential, is often referred to as food citizenship (Hatanaka 2020). Rossi et al. (2019) also said that a more diversified and dynamic configuration of relations is required to produce a robust and sustainable agrifood system.

Comparison of the share of domestic food products in Hungarian retail firms

The retail sector in Hungary is now seeing a significant expansion in 2022, as seen by monthly sales increases (Hungarian Central Statistical Office HCSO 2023b). The anticipated expansion of the retail sector is projected to facilitate the promotion and sale of domestic products inside the local market (Wicaksana and Utama 2018). However, it is important to note that, in reality, not all retailers exhibit a willingness to support local product promotion (Wicaksana and Utama 2018), mostly owing to variations in their purchasing policies.

Although Table 3 shows that Hungarians have a 70.85% proportion of domestic products in all retails in Hungary, it is found that there are significant differences in the proportions among retailers for almost all the products, with the exception of butter, eggs, as well as seasonal fruits and vegetables (Table 5). Table 5's computation differs from Tables 4 and 6 in that it analyses the products within each category depending on the product's type (domestic and international) among selected retailers.

The 70.53% proportion of domestic products in the retailers' supply represents a decline of about 8% from the survey conducted 6 years earlier (Table 6) (Kasza et al. 2015). The proportion of Hungarian products decreased on average by 5.58% points in the case of domestic chains and by 8.57% points in the case of international chains, compared to 2014 values. The same study found a decrease in 9 of the 10 commercial chains compared to the results of previous surveys. Only Aldi was able to increase the supply of Hungarian products slightly by 0.85% points compared to its status 6 years ago. Penny

Table 5 The significant differential in the proportion of domestic products within the retail industry

Product category	One-sample Kolmogorov–Smirnov (K–S) test (<i>p</i> value)	Kruskal–Wallis test (<i>p</i> value)
Packaged fresh pork	0.000***	< 0.001***
Packaged fresh chicken meat	< 0.001***	< 0.001***
Meat products 1: hams	< 0.001***	< 0.001***
Meat products 2: salamis, dry sausages	0.000***	< 0.001***
Meat products 3: parizer (Bologna sausage), wiener and frankfurter sausages	0.000***	< 0.001***
Milk: fresh milk, ESL milk, UHT milk	0.000***	0.001***
Dairy products 1: yoghurts (including fruit flavoured types)	0.000***	< 0.001***
Dairy products 2: cottage cheese, kefir, sour cream	0.000***	0.007***
Dairy products 3: cheeses (extra hard, hard, semi-hard and soft cheeses)	0.000***	< 0.001***
Dairy products 4: butter	< 0.001***	0.069
Eggs (chicken egg)	< 0.001***	0.011
Honey	< 0.001***	0.010**
Seasonal fruits, vegetables (apples, grapes, peach, apricot, nectarines, tomatoes, green peppers, carrots, cucumbers, onions, potatoes, garlic)	0.000***	0.050
Fruit jams (apricots, plums, strawberries, sour cherry, and raspberry)	< 0.001***	< 0.001***
Dry pasta	0.000***	0.000***
Canned food: cherry compote, sweet corn	< 0.001***	0.001***

****p* < 0.01, ***p* < 0.05

Market (– 13.15% points), Lidl (– 11.70% points), and Tesco (– 11.40% points) reduced the proportion of Hungarian products in the examined categories most significantly. Based on the proportion of Hungarian products, the first three places are occupied by the three domestic chains: Real (80.65%), Coop (80.17%), and CBA (76.95%).

Compared to the 2014 data (Kasza et al. 2015), we measured a decrease in the proportion of Hungarian products in the case of 9 product categories and an improvement in the case of 4 categories (Table 6). Since 2014, researchers have seen a positive shift in milk (fresh, ESL, UHT), fruits and vegetables, honey, and eggs. The largest increase was measured for fresh fruits and vegetables (11.51% points); in the other cases, the increase fluctuated between 1 and 5% points. At the same time, a decline can be seen in the case of fresh meat (chicken, pork), hams, salamis, dry sausages, Parizer, wiener/frankfurter sausage, yoghurts, sour milk products, cheeses, and jams. The largest decline was recorded for yoghurts (22.72% points), followed by jams and marmalades (18.22% points) and hams (12.88% points). On the other hand, imported cheeses increased by 10.96% points between 2014 and 2020.

In the case of highly processed products, the prevalence of products from abroad can be observed. A significant drop can be observed in regard to the share of local highly processed, higher value-added products between 2014 and 2020. It should be noted that these food items usually have longer shelf lives, allowing for easier trade over long distances. The lowest proportion of Hungarian products was found in yoghurts (19.41%), followed by hams, with 38.26% being of Hungarian origin, while for cheeses, the share of domestic products is also low, at only 46.68%.

Table 6 Proportion of domestic food products in the Hungarian retail companies

Product category	2020											2014			Difference 2020–2014 (%)		
	Aldi (%)	Auchan (%)	CBA	Coop	Lidl (%)	Metro (%)	Penny (%)	Real	Spar (%)	Tesco (%)	MEAN (%)	International retailers (%)	Domestic retailers (%)	MEAN 2014 (%)		International retailers (%)	Domestic retailers (%)
			(%)								(%)	(%)	(%)	(%)		(%)	(%)
Packaged fresh pork	100.00	100.00	Not found	Not found	100.00	79.90	92.98	Not found	100.00	0.00	81.84	81.84	100.00	88.45	86.80	100.00	− 6.61
Packaged fresh chicken meat	100.00	100.00	Not found	Not found	100.00	83.13	100.00	Not found	73.83	100.00	93.85	93.85	100.00	99.59	99.53	100.00	− 5.74
Meat products 1: hams	15.28	35.98	45.45%	74.51%	7.02	35.87	18.03	70.83%	35.50	44.16	38.26	27.41	63.60	51.14	44.49	66.67	− 12.88
Meat products 2: salamis, dry sausages	56.86	74.51	79.00%	79.08%	65.49	77.64	60.00	75.00%	86.39	82.01	73.60	71.84	77.70	76.97	74.59	82.53	− 3.37
Meat products 3: parizer (Bologna sausage), wiener and frankfurter sausages	90.83	73.80	94.08%	93.94%	47.83	89.89	72.32	97.30%	92.76	82.17	83.49	78.51	95.11	87.83	83.57	97.77	− 4.34
Milk: fresh milk, ESL milk, UHT milk	93.75	95.05	96.97%	100.00%	93.42	81.82	100.00	95.08%	100.00	100.00	95.61	94.86	97.35	90.58	90.23	91.40	5.03
Dairy products 1: yoghurts (including fruit flavoured types)	34.70	21.48	18.95%	19.64%	13.67	10.94	19.33	24.23%	14.53	16.58	19.41	18.75	20.94	42.13	36.34	55.63	− 22.72
Dairy products 2: cottage cheese, kefir, sour cream	76.27	86.33	92.38%	92.63%	88.07	90.61	92.16	97.06%	90.03	88.39	89.39	87.41	94.02	90.87	88.89	95.50	− 1.48

Table 6 (continued)

Product category	2020													2014			Difference 2020–2014 (%)	
	Aldi (%)	Auchan (%)	CBA	Coop	Lidl (%)	Metro (%)	Penny (%)	Real	Spar (%)	Tesco (%)	MEAN (%)	International retailers (%)	Domestic retailers (%)	MEAN 2014 (%)	International retailers (%)	Domestic retailers (%)		
	25.43	47.80	59.65%	65.82%	24.42	47.03	35.71	62.29%	50.08	48.55	46.68	39.86	62.59					57.64
Dairy products 3: cheeses (extra hard, hard, semi-hard and soft cheeses)																		
Dairy products 4: butter	38.30	46.89	74.67%	75.76%	25.00	28.95	55.00	69.77%	46.94	46.36	50.76	41.06	73.40					
Eggs (chicken egg)	84.85	87.42	96.88%	90.91%	100.00	91.59	100.00	100.00%	82.08	100.00	93.37	92.28	95.93	92.46	91.01	95.83		0.91
Honey	100.00	82.86	100.00%	100.00%	100.00	96.73	100.00	100.00%	92.25	100.00	97.18	95.98	100.00	92.09	89.19	98.87		5.09
Seasonal fruits, vegetables (apples, grapes, peach, apricot, nectarines, tomatoes, green peppers, carrots, cucumbers, onions, potatoes, garlic)	71.37	73.76	86.51%	84.04%	64.58	75.69	87.26	81.48%	76.08	69.04	76.98	73.97	84.01	65.47	63.51	70.03		11.51
Fruit jams (apricots, plums, strawberries, sour cherry, and raspberry)	100.00	56.14	56.36%	77.08%	16.67	52.04	0.00	84.71%	56.92	47.66	54.76	47.06	72.72	72.98	68.69	83.00		-18.22
Dry pasta	41.84	62.40	81.84%	83.48%	51.24	73.11	48.48	87.88%	55.12	59.92	64.53	56.02	84.40					

Table 6 (continued)

Product category	2020											2014			Difference 2020–2014 (%)	
	Aldi (%)	Auchan (%)	CBA (%)	Coop (%)	Lidl (%)	Metro (%)	Penny (%)	Real (%)	Spar (%)	Tesco (%)	MEAN (%)	International retailers (%)	Domestic retailers (%)	MEAN 2014 (%)		International retailers (%)
Canned food: cherry com-pote, sweet corn	68.42	93.41	94.57%	85.53%	0.00	83.23	100.00	83.54%	58.65	72.22	73.96	67.99	87.88			
MEAN 2020	68.62	71.11	76.95%	80.17%	56.09	68.64	67.58	80.65%	69.45	66.07	70.53	66.79	79.26			
MEAN 2014	67.77	77.83	86.01%	86.23%	67.79	78.21	80.73	82.29%	77.72	77.47	78.21	75.36	84.84			
MEAN 2010	58.68	73.58	84.86%	84.95%	62.25	79.56	66.04	78.54%	74.77	72.00	73.52	69.55	82.78			
Difference (2010–2020)	9.94	–2.47	–7.91%	–4.78%	–6.16	–10.92	1.54	2.11%	–5.32	–5.93	–2.99	–2.76	–3.52			
Difference (2014–2020)	0.85	–6.72	–9.06%	–6.06%	–11.70	–9.57	–13.15	–1.64%	–8.27	–11.40	–7.67	–8.57	–5.58			
Difference (2010–2014)	9.09	4.25	1.15%	1.28%	5.54	–1.35	14.69	3.75%	2.95	5.47	4.68	5.81	2.06			

The gap between the average Hungarian product supply ratios of international and domestic chains has widened. While in 2014, the difference was below 10%, by 2020, this figure exceeded 12% (Table 6). Although it was found that the proportion of local food in retail is still relatively high, it was also discovered that the proportion of domestic products decreased at both international and local retailers. Between 2014 and 2020, the recorded decline in international and domestic retail was approximately 8.57% and 5.58%, respectively. There is always a dilemma about the decision on how much food should be procured through different supply chains—prices, available stocks, security of supply, quality assurance, sustainability, and other (sometimes even political-) aspects result in a peculiar balance of different product sources (Cicatiello 2020). Prices of local food are found to be an especially important factor for retailers (Cacchiarelli and Sorrentino 2015), indicating that market competitiveness significantly determines the ratio of domestic and imported food products on the shelves. Losing competitiveness, despite the government's ongoing efforts to increase social welfare, consumer welfare, farmer welfare, and support for regional economic development might explain the observed impacts in the actual market circumstances (Xia and Sancewich 2018).

The availability and quantity of products in the retail are also influenced by relations between retailer companies and local food suppliers (Lees and Nuthall 2015), which can be fostered by a supporting logistical and administrative infrastructure as well as the ethnocentric attitude of consumers (Gazdecki et al. 2021) but can easily be hindered by market distortions, such as monopolistic and oligopolistic market structures.

Another potential factor contributing to the decline in domestic supply in general could be that domestic producers might consider distributing their products worldwide, seeking to expand their market reach and gain international recognition (Chiffolleau and Dourian 2020; Michel-Villarreal et al. 2019).

Given the many possible causes that have led to a drop in the share of local food stocks, stakeholders and policymakers need to explore the reasons for the decrease further.

Conclusion and research implications

Conclusion

The research found that 70.85% of the analysed products in the assortment of the 10 most important retail chains in Hungary were supplied by domestic companies. This share of domestic products was smaller in 2020 than 6 years ago, especially in the case of the high-value-added products, while the former marketing positions of the Hungarian suppliers were preserved and sometimes strengthened in the field of fresh products. This is a very strong indicator for policy-makers about the Hungarian food sector's competitiveness and highlights possible intervention points for sectoral development plans and strategies.

Some important limitations also have to be taken into consideration. The research revealed the assortment proportion of Hungarian products for 16 product categories and not the entire supply; however, these categories account for 67% of total sales in value in the Hungarian food retail sector (HCSO 2020a); therefore, the findings are relevant at the macroeconomic level. The results are especially significant because the Hungarian food industry would be able to reach a 100% self-sufficiency level in the analysed food categories, based on the geographical location, agricultural and environmental

conditions, the existing industrial capacities and the food culture of the country. Categories in which these conditions are not provided (such as marine products, tropical fruits and herbs, and olives) were excluded from the study. With the inclusion of the excluded product categories, the share of domestic products would go below the 70.53% recorded.

Several significant product categories were not involved in the study; however, they make a considerable contribution to the production value of the Hungarian food industry (e.g. alcoholic and non-alcoholic beverages, confectionery, bakery products, cereals, fish, beef, spices, ready-to-eat, or convenience products). It has to be also mentioned that even in the 16 analysed categories, some minor sub-categories were not involved in the study (for instance, soft cheeses were included, but cheese-based sandwich spreads were not; carrots were included in seasonal vegetables, but turnips were not). It seems to be relevant to include these categories and subcategories also in a future research program to obtain a completely representative overview of market shares, although it would certainly require a significant extension of the research budget. As a limitation, we should mention the snapshot nature of the findings. Seasonal effects, temporary product shortages, or transportation challenges may interfere with the objective evaluation of the supply levels. Similarly, the data do not reflect the proportion of sales, just the proportion of supply for certain product categories, which might be significantly divergent. A dynamic analysis, which also reflects on the sales, would require the active participation of the retail chains and a reliable method for validating the data flow. These conditions are not expected to be met in the near future.

Finally, it has to be mentioned among the limitations of the study that the analysis considered only the physical supply of the stores, while online food shopping has become increasingly popular in recent years, and the COVID-19 crisis significantly strengthened this tendency (Marinković and Lazarević 2021; Lu et al. 2021).

Due to the non-existence of comparable research data, the results could not be inserted into a bigger international analytic framework yet but may inspire similar studies in other countries. For policy-makers, a low ratio in certain categories might indicate underdevelopment (comparative disadvantage), while a higher level of integration can be considered good practice (comparative advantage).

The research data can be considered a very important indicator for the following reasons:

- The research method was transparent and previously approved by the stakeholders.
- The research method was tested 2 times in advance (proof-of-concept).
- The data collection was reliable, verifiable, and transparent.
- The reliability of research results was not contested by the representative organizations or individual companies.
- The dataset provides a very good level of representation in terms of the product categories in the food market and the retail sector in Hungary.
- The research results became widely known and cited by both food chain actors (including retailers) and the government, indicating that it has become a stable point for orientation.

Some take-home messages can be drawn from the study. This unique and unbiased dataset illustrates how crucial locally produced goods are to Hungary's retail, especially in the fresh food categories. By analysing the top 10 retailers that specialize in food products as representatives, this study additionally informs the reader on the distribution and share of local food products in retail in Hungary. Furthermore, despite the fact that domestic businesses supplied more than 70% of the food products sold in the Hungarian market in the selected categories, this proportion has been declining yearly since 2014. The declining percentage of domestic food might be attributed to a number of factors, including losing competitiveness and market distortions. This might be seen as a hint that negative changes have started. The declining amount of local food products in retail indicates that there are barriers or constraints preventing local food producers from entering this market, which would be favourable for a more sustainable supply chain than the current food network (Galli et al. 2015). In this scenario, further analysis should be conducted with the stakeholders to identify those regulations, logistical and administrative solutions, and market-compliant development programmes that could assist local producers in overcoming these constraints.

Policy implications

As mentioned in the Introduction as well as the Materials and Methods sections, the proportion of domestic food as an indicator can be important for several national policies, such as industry development, rural development, national security, culture policy, and programs related to sustainability. In recent times, a significant emphasis has been placed on local food systems due to various crisis scenarios, including the coronavirus disease 2019 (COVID-19) pandemic and the conflict in Ukraine (Keller et al. 2022; Lang and McKee 2022). Marsden et al. (2000) also reported that, more than two decades ago, due to the severe crisis and price pressures on the British livestock industry, local food systems and the development of SFSCs greatly aided the livelihoods of livestock farmers in England as well as rural development. These many instances serve to enhance the understanding that the establishment of local food systems and SFSCs is crucial in mitigating potential food security in the market and curbing food price inflation. In addition, supporting domestic producers to gain a higher proportion in retail, the development of local food systems and SFSCs has been seen to have an impact on rural development. This is primarily attributed to their capacity to provide notable social advantages to society, farmers, and small-scale processors, including employment opportunities, preservation of agricultural land, and stimulation of the local economy. Also, the adoption of SFSCs is closely linked to the strategic objectives of the EU's common agricultural policy (CAP). Specifically, the second pillar of the CAP's objectives aims to support rural areas of the Union and sustain the rural economy by fostering employment opportunities in agriculture, agri-food industries, and related sectors while also preserving rural landscapes and areas throughout the EU (European Commission 2022, 2023; European Parliament Council 2022). To enhance rural development, it is essential to prioritize certain measures, such as strengthening domestic producers to get a greater share in the retail sector, enhancing the functioning of SFSCs and AFNs, as well as fostering food citizenship via nationwide awareness campaigns and localized initiatives.

Migliore et al. (2021) and Worstell (2020) considering that the COVID-19 pandemic situation has caused a number of nations to decrease their dependence on long-distance transportation and third parties (Shahidi 2020). The resilience of food systems and food security became a frequent question in policy debates after food shortages were experienced, especially when export restrictions were imposed by some countries, which disrupted trade flows for staple foods. The pandemic affected all four pillars of food security: availability, access, utilization, and stability (Laborde et al. 2020). While in developed countries, food shortages typically lasted only for limited periods, food systems in low and middle-income countries turned out to be vulnerable (Béné 2020). The actual crisis in Ukraine also urges the revision of the existing model of global trade. Until recent years, Ukraine accounted for about 17% of global corn exports, 12% of wheat, and 30% of sunflower seeds, contributing to the EU's food supply in a significant part. In the last decades, many countries downsized or dismantled their food stocks and have disinvested in domestic production in favour of cheaper imports (Lang and McKee 2022).

While the proportion of national food products is an important indicator, it does not represent the competitiveness or the resilience of the domestic food sector on its own (Kummu et al. 2020). Also, it is not directly related to any of the sustainability factors (Cadillo-Benalcazar et al. 2020; Enthoven and Van den Broeck 2021), nor does it provide a clear indication of the preservation of a nation's food culture. It still has a commonly accepted relationship to all of the above; therefore, national governments may find it to be an appealing gauge. This has also happened in Hungary, which is an open and internationally engaged economy with high volumes of both gross and value-added exports and imports. As part of the European Single Market, this country has only a very limited opportunity to control food imports on its own. While even politicians agreed that a certain level of imported goods is needed to satisfy diverse consumer needs, after the announcement of the main findings of our survey, intense round-table discussions and media debates took place. After a short while, these numbers started to be used as a benchmark for retailers. The authors found that the main results of the study, and especially their interpretation of the media by different actors, fostered a public discourse about the role of national products, which could contribute to the promotion of local food. As of 2020, regular measurements are expected to give feedback to food sector stakeholders on their efforts (for instance, policy interventions, supply chain negotiations, sectorial strategies, and industry development programmes). However, it should be stressed that changes in the food supply without analysing demand are only half-measure and likely will deliver negative economic consequences. Consumption trends and consumer behaviour should also be continuously monitored, with respect to demographic and lifestyle factors as well as programmes, such as trademark systems, collective marketing campaigns, propagation of short-supply-chains and also the effects of certain food safety events, which might potentially influence actual market trends.

Abbreviations

EU	The European Union
HCSO	Hungarian Central Statistical Office
ESL	Extended shelf-life

UHT	Ultra-high-temperature
e.g.,	Exempli gratia
COVID-19	Coronavirus disease of 2019
AFNs	Alternative food networks
SFSCs	Short food supply chains
CAP	Common agricultural policy

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Author contributions

GK and DS done conceptualization; GK, JO, JP, ZL, and DS did methodologies; GK, LF, EP, DS done data curation and collection; GK, JO, EP, DS, WSN performed formal analysis; GK, DS, WSN did visualization; GK and DS contributed to writing – original draft preparation; JO, JP, ZL, WSN did writing-review and editing; LF was involved in funding acquisition. All authors read and approved the final manuscript.

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Availability of data and materials

The datasets used and/or analysed during the present work are available upon reasonable request from the first and corresponding authors.

Declarations

Competing interests

The authors have no competing interests to declare.

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