MARKET CONCENTRATION AND PROFITABILITY OF THE GROCERY RETAILERS IN CENTRAL EUROPE

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The aim of the article was to internationally compare the market concentration of grocery retailers in the six countries of Central Europe – Austria, Czech Republic, Germany, Hungary, Poland and Slovakia. The market concentration was measured by CR_4 ratio, Herfindahl-Hirschman Index and the GRS index. Data covered the period 2010 – 2015. The secondary data came from the Euromonitor International and Bureau van Dijk databases. The results showed that the market structure of the Central European grocery retailers has mostly a character of asymmetric oligopoly. The pairwise correlation did not reveal any strong relationship between the market power and profitability of the grocery retailers. The Central European grocery market is controlled by strong national retail chains and multinational companies which operate modern grocery retail formats. However, traditional grocery retailers are still popular in Hungary while traditional individual grocers in other countries are disappearing or gradually joining the networking system based on franchising.

Keywords: Market concentration; grocery retailers; Central Europe; oligopoly; profitability
JEL classification: D40, M10

1. Introduction

The market power of the grocery retailers has been discussed for a long time (Bloom & Perry, 2001). It has been especially discussed in the agribusiness as the characteristics of food markets in Europe (and elsewhere) suggest that these markets are more typically oligopolistic (McCorriston, 2002). Particularly important in this regard is the growing market power of retailers specialized in food and other fast moving consumer goods in many European countries (Dobson et al., 2001). Farmers, as well as food processors, have complained about the strong pressure of grocery retailers on the price level of goods as well as about the unequal conditions in contract agreement. Currently, the intensive development of the retail chains and high-level of increasing of their power are causing a shifting of powers, changes of positions and the establishment of new relationships between the members of marketing channels. It is noticeable in the developing markets, where retail chains have a key role in creating and managing the channels (Lovreta, Koncar, & Stankovic, 2015). This is the case of Central European countries, where strengthening of the position of large grocery retailers is evident.

Recently, there have been published some studies about market power of grocery retailers. Most of them are focused on special commodities. A study from the United Kingdom (Fofana & Jaffry, 2008) assessed the extent to which UK salmon retail firms have exercised oligopsonistic power. Results indicated that retailers as a whole behaved competitively. An Italian study (Sckokai, Soregaroli, & Moro, 2013) focused on special food, traditional Italian quality cheeses. The authors found evidence of downstream market power by retailers (toward final consumers), but no evidence of upstream market power (toward processors/ripeners). These results may be explained by the structure of the supply chain and by the peculiar characteristics of the two cheeses. Special products may have a different competitive position towards buyers than common goods in a highly competitive market. A general study from Australia (Sutton-Brady, Kamvounias, & Taylor, 2015) investigated the existence of power asymmetry in the Australian context and outlined the impacts on the industry. The authors concluded that power asymmetry in the short-term is benefitting consumers, but that the long-term impacts on the supply chain may be detrimental to the grocery industry in Australia if nothing is done to curb the market power of the two major supermarkets chains. The highly concentrated nature of the grocery retail market has a power imbalance.

Recent studies also investigated topical issues of retailers' market power – the phenomenon of private labels and food waste. Concerning private labels, retailers gain bargaining power through lower wholesale prices on imitated national brands. However, the gain is greater in niche categories than in mass categories, suggesting that niche national brands with limited "pull" power lose greater bargaining power (Meza & Sudhir, 2010). Big market power could also significantly affect food waste. Peitz & Shin (2013) showed that when the manufacturer has upstream market power, the retailer sells all units purchased from the manufacturer. However, when the retailer has the market power, it might deliberately purchase more than it sells to the final users. So, this conclusion can explain the problem of food waste in developed countries.

From the author's point of view, the international comparison of the market power of the grocery retailers in the Central Europe has not been enough investigated in English-language-based studies. In the Czech Republic, a discussion about the market power of grocery retailers (Vrbova, 2010) led to addition of the Act on a significant market power that should prevent unfair business practices between the grocery retailers. These could take a number of forms such as listing charges, slotting allowances, retroactive discounts on goods already sold, buyer forced application of most favored nation clauses, unjustified high contribution to retailer promotional expenses, and insistence on exclusive supply (Dobson et al., 2001). So, the question about market concentration in the group of grocery retailers is a very relevant issue. It is worth comparing it internationally in the Central European region to view country-specific differences in market concentration, strategies and profitability of the grocery retailers.

2. Theoretical Background

Market concentration is an important measure to assess the bargaining power of market players. There are two fundamental and mutually compatible theories - first, the economics of imperfect competition as introduced by Joan Robinson (Robinson, 1933); second, the theory of strategy as introduced by Michael E. Porter (Porter, 1979). Concerning price and output determination, literature distinguishes between pure competition, monopolistic competition, oligopoly and pure monopoly. Since there is antitrust law in most developed countries, the most common forms of the market structure are monopolistic competition (Dixit & Stiglitz, 1977) and oligopoly (Appelbaum, 1982). Nevertheless, the bargaining power of the grocery retailers needs to be assessed from the buyer's point of view, i.e. theory speaks about oligopsony and monopsony (Dobson et al., 2001). Three conditions are necessary for the exercise of buyer power in the form of oligopsony. First, buyers contribute to a substantial portion of purchases in the market. Second, there are barriers to entry into the buyer's market. Finally, the supply curve is upward sloping (a number of agricultural markets feature upward sloping supply).

There is an impact of the market structure on the economic profit. In the article, the author attempts to compare the level of market concentration and profitability of medium and large grocery retailers in six countries. According to economic theory, monopsony may earn economic profits or incur losses in the short run. The first effect of a retailer's monopsony is that the manufacturer's output (i.e. input for retailer) is lower and its price is lower compared to pure competition. The second effect of a retailer's monopsony is a detrimental welfare effect, where it involves buyers' action in some way to restrict purchases. The buyer surplus is increased but does not compensate for the loss of producer surplus (Dobson et al., 2001). Under the oligopoly, long run economic profits are possible as long as entry is restricted (McConnell, Brue, & Flynn, 2011). However, the dual structure of the grocery retailers and strategy of each segment are very important. In other words, there is a group of big market players which behave as a dominant firm and the second group of fringe firms, each one of them being tiny and all of them collectively adding up to a minor share of the market. Since there are low entry barriers in the grocery retail market, the market structure is close to the dominant firm model with freedom of entry for fringe firms (Cherry, 2000). From the practical point of view, however, the theoretical assumptions could be affected by the fact that grocery retailers provide many products to consumers, that these products are not homogeneous, and that the firms are not single-product firms.

In his Five Forces Concept, Porter explained how the bargaining power of suppliers and buyers affects the competitive position and profitability. In the article, the author considers the power of grocery retailers as the key distribution channel for food processors and farmers. So, the issue of customers' bargaining power is in spotlight. Porter's concept was included in many books on strategy and strategy analysis (Johnson, Scholes, & Whittington, 2007; Grant, 2012). The buyers have less power when:

– Buyers are not concentrated (no monopsony). It means that there are many potential buyers, each accounts for a small fraction of sales. Monopsony power seems to be in the grocery retail market because there are a few of buyers (retailer) and many suppliers (food processing industry, farms).
– Buyers have few options when products are differentiated, there are high switching costs and buyers cannot backward integrate. In the grocery retail market, buyers can choose from many suppliers with low switching costs. Suppliers usually struggle to be listed by the supermarkets or hypermarkets. So, the bargaining power of grocery retailers seems to be strong.
– Buyers are segmented, price information is not widely available, and price discrimination and bundling are possible. Grocery retailers are segmented by

channel. There are convenience stores, discounters, forecourt retailers, hypermarkets, supermarkets and independent small grocers. Since the portfolio of goods is similar between the segments, there is price competition in the grocery retail market.

3. Methods

There are multiple ways to calculate the market concentration. The Concentration Ratio (CR_4) and the Herfindahl-Hirschman Index (HHI) are the most frequently used indicators. The author uses both indicators because each provides a specific view on the market structure. The concentration ratio (CR_m) is calculated as the percentage of market shares held by *m* largest firms in an industry. Usually, the market share of the four biggest companies is calculated (CR_4)

$$CR_4 = \sum_{i=1}^{4} S_i \tag{1}$$

where S_i denotes the individual market share, i.e. the percentage of the i-th firm calculated as the production of the company divided by the sum of production of all firms in the market. Value of sales of goods is a proxy for production. The weakness of the CR_4 ratio relates to its construction. Since it does not use the market shares of all the firms in the industry and does not provide the distribution of firm size, the CR_4 just provides a sign of the oligopolistic nature of an industry and indicates the degree of competition.

Dobson et al. (2001) extended the CR concept. They used CR_5 (%) ratio and defined market structure based on market share of each individual company in the group of the five largest ones (MS1, MS2, MS3, MS4, MS5).

- Dominant firm: MS1 > 25 percent and MS1 > 2.0 * MS2.
- Duopoly: MS2 > 15 percent and MS2 > 2.0 * MS3 but not dominant firm.
- Asymmetric oligopoly: MS1 > 15 %, MS4 > 5 percent and MS1 > 1.5 * MS4, but not dominant firm nor duopoly.
- Symmetric oligopoly: None of the above; each firm is “sizeable” (MS > 5 percent), and at least 67 percent the size of its immediate, higher ranked, neighbor.
- Unconcentrated: No firm has MS > 10 percent, and CR_5 < 33 percent.

The Herfindahl-Hirschman Index (HHI) is calculated as the sum of the squares of the market shares of all firms within the industry, where the market shares are expressed as follows:

$$HHI = \sum_{i=1}^{n} P_i^2 \tag{2}$$

where P_i is the proportion of market share for the i-th company in percent (Hirschman, 1964). The higher the HHI is, the higher is the inequality among market shares of companies. In other words, the situation is distinct from equal market shares. For an industry with a single firm (monopoly), this value would be 10,000. In contrast, the HHI takes on a very small value, theoretically approaching zero, in a purely competitive market in which there are many firms with small market shares. Value of the sales of goods is a proxy for production.

However, HHI has some limitations. It follows from the formula (2) that the criterion bearers which obtained a larger part of their sum are assigned a larger weight, while those, which obtained a smaller part of this sum, get a smaller weight. On the other hand, if the emphasis is placed on large market players in the competitive environment, the results reported by the Herfindahl index are rather accurate (Ginevicius & Cirba, 2009). In this article, the HHI is calculated from all companies in the market.

Both CR_4 ratio and HHI have the thresholds for determination of the competition level (see table 1).

Table 1 | Levels of competition, CR_4 ratio and HHI

CR_4 (%)	Competition level	HHI	Competition level
0	Perfect competition	**< 1000**	Highly competitive industry
0 – 40	Effective Competition or Monopolistic Competition	**1000 – 1500**	Unconcentrated markets
40 – 60	Loose Oligopoly or Monopolistic Competition	**1500 – 2500**	Moderately Concentrated Markets
> 60	Tight Oligopoly or Dominant Firm with a Competitive Fringe	**> 2500**	Highly Concentrated Markets

Source: Naldi & Flamini (2014)

In this article, the author also uses a relatively new concentration measure that was published in 2009 (Ginevicius & Cirba, 2009) – GRS index. It has been evaluated as the most accurate concentration measure when compared to the HHI (Hirschman, 1964), Horwath index (Horvath, 1970), entropy (Hart, 1971), Häni index (Häni, 1987), Rosenbluth index (Hall & Tideman, 1967) and GIN index (Ginevicius & Cirba, 2007). The formula of the GRS index is more complicated than HHI and CR_4 index.

$$GRS = \sum_{i=1}^{n} \frac{n^2 P_1 + 0,3P_i^2}{n^2 + 0,3nP_1P_i} P_i \ , \qquad (3)$$

where P_1 represents the value of the largest criterion bearer, P_i defines the market share of i-th company, n denotes the number of all market players.

The profitability that could be related to the market concentration can be quantified in multiple ways. In the article, the author uses common profitability indicators. However, profitability indicators were modified to exploit Eurostat database which is an official statistical data source in the EU.

- Gross margin (%) = Gross value added / Output * 100, where Gross value added is defined as Output minus Intermediate consumption.
- EBITDA margin (%) = Gross operating surplus / Output * 100, where Gross operating surplus is defined as Gross value added minus Compensation of employees.
- EBIT margin (%) = Net operating surplus / Output * 100, where Net operating surplus is defined as Gross value added minus Consumption of fixed capital.
- Profit margin (%) = Net operating surplus / (Output – Net operating surplus) * 100.

To calculate the relationship between market share and profitability, it was necessary to use individual financial data of grocery retailers from the Amadeus database. So, the profitability indicators at the micro-level were calculated with respect to the structure of financial statements.

– EBIT margin (%) = (Profit before tax / Operating revenue) * 100
– EBITDA margin (%) = (Earnings before tax, depreciation and amortization / Operating revenue) * 100. The indicator has been widely used since EBITDA is closer to cash flow than profit margin.
– ROE using Net income (%) = (Net income / Shareholder funds) * 100
– ROA using P/L before tax (%) = (Profit before tax / Total assets) * 100

Because data on profitability and market share are continuous, the Pearson pairwise correlation coefficient reveals the relationship between market dominance and profitability in the 2012 – 2014 period.

4. Data

In the article, two main secondary sources provided data for the analysis. The first is the Passport module by Euromonitor International, a global market research system. It contains statistics, studies, surveys and news on consumer products, commercial industries, national and global economics and consumers worldwide (Euromonitor International, 2016). Passport provided data about sales, distribution channels and strategy of the grocery retailers in six Central European countries in the period 2010 – 2015. The analysis covers markets in Austria, Czech Republic, Germany, Hungary, Poland and Slovakia. The concentration ratios were investigated over time to verify that the concentration has been generally increasing, not as a country-specific phenomenon.

Eurostat provided official country-specific aggregates of national accounts in NACE code 47. So, data on profitability calculated at the country level are more reliable than individual data that could be afflicted by low representativeness of the sample. The author averaged profitability indicators in the 2012 – 2014 period to present recent profitability level and to avoid year-by-year fluctuations.

Secondary data about profitability indicators were gathered from the Amadeus database. Amadeus contains comprehensive and comparable information on companies across Europe. The profitability indicators were calculated from income statements of the grocery retailers under the NACE code 4711 "Retail sale in non-specialized stores with food, beverages or tobacco predominating". The analysis covers only medium-sized companies and large and very large companies, because the bigger companies publish income statements more regularly than small companies. The author averaged financials in the 2012 – 2014 period to avoid year-on-year fluctuations and to view recent profitability of the grocery retailers. Of course, the concentration ration and profitability were analyzed in the same period, 2012 – 2014.

5. Results

The first part of the results section provides an overview of market concentration as it was calculated through four different methods (table 2, table 3). Calculation of company shares rather than brand shares is more objective in this case. Chapter "Discussion" then provides more detailed discussion of the results, especially concerning competitive environment, brand shares and the strategy of key market players.

Table 2 | Market concentration (company shares) by the CR_4 ratio, HHI and GRS

Country	Indicator	2010	2011	2012	2013	2014	2015	2015/10
AT	CR_4 (%)	66.50	66.90	67.20	69.20	69.80	70.60	106.2
	HHI	1,396.02	1,410.04	1,423.42	1,503.11	1,522.16	1,544.65	110.6
	GRS	0.195	0.192	0.196	0.203	0.204	0.205	105.1
CZ	CR_4 (%)	55.30	56.90	57.80	58.80	62.50	63.10	114.1
	HHI	917.44	966.31	1,000.78	1,052.07	1,154.63	1,177.87	128.4
	GRS	0.149	0.159	0.168	0.183	0.192	0.197	132.0
DE	CR_4 (%)	63.40	64.10	64.60	65.50	66.00	66.10	104.3
	HHI	1,110.78	1,140.44	1,151.95	1,178.79	1,201.44	1,206.42	108.6
	GRS	0.190	0.196	0.195	0.197	0.202	0.202	106.3
HU	CR_4 (%)	49.00	49.20	49.50	48.20	46.90	46.80	95.5
	HHI	774.77	788.85	802.64	765.91	796.26	809.01	104.4
	GRS	0.130	0.135	0.134	0.129	0.126	0.130	99.7
PL	CR_4 (%)	29.90	33.20	35.30	38.30	40.20	41.20	137.8
	HHI	319.66	411.98	461.54	539.86	605.13	640.02	200.2
	GRS	0.069	0.092	0.105	0.122	0.135	0.145	209.2
SK	CR_4 (%)	59.40	60.50	63.10	64.30	64.30	65.50	110.3
	HHI	1,024.23	1,056.7	1,165.09	1,207.81	1,207.31	1,263.39	123.4
	GRS	0.145	0.142	0.154	0.163	0.171	0.185	127.4

Source: own calculation based on Passport by Euromonitor International (2016)

Tables 2 and 3 provide interesting results. Overall, grocery retail markets have the character of asymmetric oligopoly. The concentration of grocery retail markets increased between 2010 – 2015, except for in Hungary. The growth of concentration has been more dynamic in the three Visegrad countries (Poland, Czech Republic, Slovakia) than in Germany or Austria. So, the market concentration in the Central European region has converged in recent years.

The highest concentration of grocery retailers is in Austria. The CR_4 ratio indicates a tight oligopoly, HHI indicates moderately concentrated markets. There is an asymmetric oligopoly with three strong market players (trigopoly) - Rewe Group, Internationale Spar Centrale BV and Aldi Group. The concentration experienced a slight increase over time.

Table 3 | Market concentration (company shares in percent) by Dobson et al. (2001)

Country	Year	CR_5	MS_1	MS_2	MS_3	MS_4	MS_5	Market structure
AT	2010	69.0	24.5	23.1	15.1	3.8	2.5	Asymmetric oligopoly (triopoly)
	2015	73.7	24.8	24.6	16.8	4.4	3.1	Asymmetric oligopoly (triopoly)
CZ	2010	62.6	18.7	14.4	11.4	10.8	7.3	Asymmetric oligopoly
	2015	70.3	23.6	14.6	14.4	10.5	7.2	Asymmetric oligopoly
DE	2010	68.0	23.0	15.3	13.3	11.8	4.6	Asymmetric oligopoly
	2015	69.7	24.4	16.2	13.5	12.0	3.6	Asymmetric oligopoly
HU	2010	55.3	16.9	13.3	9.9	8.9	6.3	Asymmetric oligopoly
	2015	56.6	15.3	10.9	10.3	10.3	9.8	Symmetric oligopoly
PL	2010	34.0	11.4	7.9	5.9	4.7	4.1	Close to symmetric oligopoly
	2015	46.5	18.9	11.1	5.7	5.5	5.3	Asymmetric oligopoly
SK	2010	63.9	19.6	16.8	16.5	6.5	4.5	Asymmetric oligopoly
	2015	70.1	21.9	19.3	17.5	6.8	4.6	Asymmetric oligopoly

Source: own calculation based on Passport by Euromonitor International (2016)

On the opposite site, there are Hungary and Poland with relatively low concentrations. However, the concentration of the grocery retailers in Poland significantly increased between 2010 and 2015. The CR_4 indicator has shifted from monopolistic competition to a loose oligopoly, from symmetric oligopoly to asymmetric oligopoly. The market share of the two biggest grocery retailers (Jerónimo Martins SGPS SA, Schwarz Beteiligungs GmbH) significantly increased whereas the market share of companies in the competitive fringe changed slightly. The concentration of the grocery retailers in Poland moved up by 100 percent between 2010 and 2015, as shown by the HHI and GRS indicators.

There has been a relatively stable situation in Hungary. The market share of the first market player (Tesco Plc) and second market player (CBA Kereskedelmi Kft) slightly decreased whereas the market share of other big market players increased (Coop Hungary Zrt, Nemzeti Dohánykereskedelmi Zrt). Thus, the asymmetric oligopoly changed to a symmetric oligopoly.

Table 4 demonstrates indicators of profit margins of the Central European grocery retailers. The profitability is calculated separately for each country.

Table 4 clearly shows big differences in profitability between countries. Poland has the highest gross margin and profit margin with an increasing trend. On the opposite side, Hungary and Germany had significantly lower profit margins.

Table 4 | Profit margins of the Central European grocery retailers in 2012 – 2014

Country	Gross margin	EBITDA margin	EBIT margin	Profit margin
AT	61.2	22.7	17.5	21.2
CZ	50.6	24.0	15.4	18.2
DE	51.8	11.5	7.2	7.8
HU	50.2	14.5	7.7	8.4
PL	69.2	49.3	46.7	88.0
SK	57.9	31.7	27.6	38.5

Source: own calculation based on Eurostat

Gross margin is the most comparable indicator since it is not affected by compensation of employees. It ranges from 50 to 70 percent. Special attention is given to the difference between gross margin and EBITDA margin. The difference represents the importance of employees' compensation. There is the biggest difference between gross margin and EBITDA margin in Austria (38.5 p.p.) and Germany (40.3 p.p.). It corresponds to the higher level of wages compared to the Visegrad countries. Alternatively, Poland had the lowest difference between gross margin and EBITDA margin. It makes sense since Poland has one of the lowest labor costs between the selected countries.

The profit margin in the Czech Republic is close to 20 percent (EBITDA margin was 24 percent, profit margin was 18.2 percent). It corresponds to the findings of the Czech Statistical Office that the average margin of retailers has varied between 23 and 24 percent since 2008. Large grocery retailers have their margin close to the retailers' average (Boušková, 2014).

Table 5 presents a degree of representativeness in the period 2012 – 2014. First, the representativeness of the sample gathered from the Amadeus database is calculated. The criterion of the representativeness is the share of turnover of the sample in total market turnover in each country.

Table 5 | Grocery retailers in the Central Europe – representativeness by turnover (2012 – 2014)

Turnover	AT	CZ	DE	HU	PL	SK
Sample (mn EUR)	4,301	8,045	50,316	4,269	10,105	1,246
Market total (mn EUR)	22,642	13,043	192,091	12,502	44,944	6,514
Sample / market (%)	19.00	61.68	26.19	34.15	22.48	19.13
Sample proportion	5.49	10.28	64.27	5.45	12.91	1.59
Market proportion	7.76	4.47	65.84	4.29	15.41	2.23

Note: Spearman's rank correlation between sample proportion and market proportion is 0.943 (p-value = 0.0048). Proportions are closely related.

Source: own calculation based on Amadeus database and Passport database

The sample is the most representative in the Czech Republic (61.68 percent). The lowest share of the sample in population is in Austria (19 percent). So, the sample does not represent the population equally for all countries. However, the sample proportion and market proportion are closely related, except in the Czech Republic.

The question is whether the market share of the company relates to the profitability. The hypothesis is that there is no relationship because of some factors. First, there is a strong price competition between the grocery retailers and none of them dares to set higher prices to be more profitable than the competitors. Second, the quality of financial management could affect the profitability. Last but not least, consumers in each country have specific shopping habits and prefer different distribution channels. Due to the continuous character of the variables, the author used Pearson pairwise correlation coefficient (table 6).

Table 6 | Relationship between profitability and market share of grocery retailers (2012 – 2014)

Profitability indicator	Correlation coefficient	p-value
Profit Margin	-0.0266	0.4534
EBITDA Margin	-0.0271	0.4449
ROE	0.1647	0.0000
ROA	-0.0926	0.0088

Note: H_0: Market share and profitability indicator are independent.

Source: own calculation based on the Amadeus database

There are two statistically significant relationships (at $\alpha = 0.05$) – between market share and ROE and between market share and ROA. However, all relationships are weak. So, we cannot conclude that the market share strongly relates to profitability of the grocery retailers.

6. Discussion

The chapter provides discussion about the possible reasons of market concentration development and profitability level in each country. It also focuses on the strategy of key market players based on their annual reports. Discussion is based on data from Euromonitor International (Passport) and annual reports of companies (not specially cited).

The competitive environment of the grocery retailers in **Austria** is specific. The concentration measures the indicated triopoly (Rewe Group, Internationale Spar Centrale BV, Aldi Group). Table 7 presents the brands and market shares of the three retailers.

Austria is the EU member state with one of the highest price levels for food and non-alcoholic drinks. Grocery retailers in Austria gain nearly 6 000 EUR of sales per 1 m^2 of sales floor, which is two times higher than in Hungary or Poland (Euromonitor International, 2016). The main reason for this was the high average income level in Austria, combined with the high willingness of Austrian consumers to spend money on high quality goods including organic and regional products (there are special compartments for regional products in the supermarkets and hypermarkets). Other reasons for the high food and drink pricing levels in Austria are high market concentration in grocery retailing and the extremely high number of grocery retailer outlets per capita, which leads to high costs for operators. However, the discounters tend to be widespread in Austrian grocery retailing.

Table 7 | Brand shares of grocery retailers in Austria (2010 and 2015)

Retailer	Brand	Brand share 2010 (%)	Brand share 2015 (%)
Rewe Group	Billa	12.9	13.4
	Merkur	5.5	6.0
	Penny Market	3.2	3.3
	Adeg	2.6	1.7
	Billa stop & shop	0.2	0.3
	Merkur Inside	-	0.1
	Magnet	0.1	-
Internationale Spar Centrale	Spar	11.0	11.6
	Interspar	6.3	7.1
	Eurospar	5.7	5.8
	Spar Express	0.0	0.2
Aldi Group	Hofer	15.1	16.8
Schwarz Beteiligungs GmbH	Lidl	3.8	4.4
M-Preis Warenvertriebs GmbH (Mölk)	MPreis	2.5	3.1

Source: own calculation based on Euromonitor International (2016)

Supermarkets are the main distribution channel for grocery retailers in Austria with a 36.3% share in total turnover of the grocery retailers in 2014. Rewe Group led grocery retailers in Austria, closely followed by its major rival Internationale Spar Centrale. Each of these players was able to spread the risk inherent in the divergent growth across the different grocery retailer channels by being present in several different channels. Austria's major discounter chain is Hofer, benefiting from the highly economical behavior of Austrian consumers. Sales of discounters counted for 25.9 percent of the grocery retailers' turnover. Internet retailing is very progressive (investments of Rewe and Spar) even if the impact of internet retailing on grocery retailing overall remains minimal.

The competitive environment of the grocery retailers in the **Czech Republic** has a character of asymmetric oligopoly with increasing market share of the key retailers (Schwarz Beteiligungs GmbH, Royal Ahold NV, Rewe Group, Tesco Plc and Svaz českých a moravských spotřebních družstev). Table 8 presents brands and market shares of the five biggest retailers.

Table 8 | Brand shares of grocery retailers in the Czech Republic (2010 and 2015)

Retailer	Brand	Brand share 2010 (%)	Brand share 2015 (%)
Schwarz Beteiligungs GmbH	Kaufland	12.20	14.50
	Lidl	6.50	9.10
Royal Ahold NV	Albert	11.40	14.60
	Hypernova	-	-
Rewe Group	Penny Market	8.10	8.60
	Billa	6.30	5.80
	Plus Diskont	-	-
Tesco Plc	Tesco	10.40	8.50
	Tesco Extra	0.20	1.20
	Žabka	-	0.40
	Tesco Express	0.20	0.30
Svaz českých a moravských spotřebních družstev	Coop	7.30	7.20

Source: own calculation based on Euromonitor International (2016)

There is intense competition between grocery retailers in the Czech Republic, with acquisitions by bigger companies becoming a key strategy to improving their competitive position and profitability. Recently, acquisition of Spar by Ahold was the most important event. So, growing market concentration is expected.

Hypermarkets are the main distribution channel of the grocery retailers with a 38% share in total turnover of the retailers. Table 8 shows that the majority of companies generally maintained their market share. Among the leading players, Kaufland and Lidl gained ground slightly, while Tesco lost out. Tesco has been reducing the number of it outlets, mainly of its Tesco Express banner, which is facing strong competition from convenience stores. The leading players have a multi-channel strategy, operating hypermarkets, supermarkets and sometimes also convenience stores. Members of the Schwarz Group are positioned as cheaper alternatives, offering a strong private label portfolio. COOP Centrum, a domestic chain of smaller convenience stores and supermarkets, has a widespread presence, while Billa positions itself as offering higher quality fresh products. The leading grocery retailers all offer a very similar range of services, with the key differentiator being availability and product variety. There are two main discounters (Penny, Lidl) in the Czech market since consumers are still very price sensitive and have general demand for a simpler and faster shopping experience. Sales of discounters count for 18.3 percent in the market. Internet retailing is an emerging channel, with its importance growing over the review period as it better competed with traditional store-based retailers.

According to the GRS indicator, **Germany** has the second highest market concentration of grocery retailers after Austria. There is an asymmetric oligopoly of four retailer groups with more than 10% market share (Edeka Zentrale AG & Co KG, Schwarz Beteiligungs GmbH, Aldi Group, Rewe Group). So, the key market players are quite the same like in Austria. However, the profitability of German grocery retailers is much lower than that of retailers in Austria. Table 9 presents the brands and market shares of the five biggest retailers in Germany.

Table 9 | Brand shares of grocery retailers in Germany (2010 and 2015)

Retailer	Brand	Brand share 2010 (%)	Brand share 2015 (%)
Edeka Zentrale AG & Co KG	Edeka	14.7	16.3
	Netto Marken-Discount	6.2	6.1
	Marktkauf	1.9	1.8
	Schäfer's	0.3	0.2
Schwarz Beteiligungs GmbH	Lidl	8.4	9.0
	Kaufland	6.8	7.2
Aldi Group	Aldi	13.3	13.5
Rewe Group	Rewe	6.9	8.2
	Penny Market	3.8	3.5
	Toom	1.1	0.3
Metro AG	Real	4.6	3.6

Source: own calculation based on Euromonitor International (2016)

The German grocery retail landscape is largely dominated by domestic players. This is particularly true for hypermarkets, supermarkets and discounters. German grocery retailers can count on a strong base of loyal customers. Edeka Zentrale is the leading domestic company in the German retail market. Edeka operates a wide range of different store formats, ranging from small neighborhood stores (supermarkets) to large hypermarkets, which are all operated under the umbrella brand of Edeka. Edeka, together with Rewe Group rapidly extended their online delivery areas due to new fresh food logistics, and a wider range of products was available. Moreover, Edeka also successfully transformed its discounter Netto into a modern discounter, which brought a new diversity in discount retailing. In Germany, sales of discounters count for 34.5 percent of total turnover of the grocery retailers which is much more than in Austria or the Czech Republic. So, discounters are the largest distribution channel in Germany. It could also explain the lower profit margin of the German grocery retailers against Austria. However, the discounters have recently recorded a decline in value sales. This development exemplifies and underlines the trend towards shopping at supermarkets in convenient city locations. In recent years, supermarkets increased focus on private label products (e.g. Edeka) which are perceived as being a comparable level of quality by consumers. It also contributes to the lower profit margins of grocery retailers.

The market structure of the grocery retailers in **Hungary** has the character of symmetric oligopoly with quite a low level of concentration. In the 2012 – 2014 period, the profit margin was similar to Germany. Table 10 provides information about brands and market shares of the five biggest retailers.

Table 10 | Brand shares of grocery retailers in Hungary (2010 and 2015)

Retailer	Brand	Brand share 2010 (%)	Brand share 2015 (%)
Tesco Plc	Tesco	16.5	14.4
	Tesco Extra	-	0.6
	S-Market	0.4	0.2
	Tesco Express	0.0	0.1
Nemzeti Dohánykereskedelmi Zrt	Nemzeti Dohánybolt	-	10.9
CBA Kereskedelmi Kft	CBA	9.9	9.5
	CBA Prima	0.8	0.8
	Cél	2.6	-
Coop Hungary Zrt	Coop	8.9	10.3
Internationale Spar Centrale BV	Spar	8.5	9.6
	Kaiser's	1.4	-
	Plus	-	-

Source: own calculation based on Euromonitor International (2016)

Hungary has a specific structure of distribution channels. Traditional grocery retailers have high popularity (27.8 percent of sales in 2014). In the group of modern grocery retailers, hypermarkets and convenience stores have the biggest share in sales (more than 20 percent). Smaller modern grocery formats, especially convenience stores and chained forecourts perform relatively well, better than unchained retail operators of traditional grocery retailers. Traditional grocers ("the corner stores") are highly popular with local consumers mainly for fresh food purchases because of purchasing fresh products from a reliable source and loyalty with shop assistants. However, modern grocery retailers are constantly improving and promoting their fresh product ranges, such as bakery and fresh meat to attract consumers away from smaller, independent specialists.

In the modern grocery retailers, Tesco-Globál Áruházak Zrt has maintained its leading position. It is the main reason why the hypermarkets are the key distribution channel in Hungary. Nevertheless, the market share of Tesco has decreased since 2010 as it closed three underperforming hypermarkets in recent years. Unlike Tesco, Coop runs convenience stores and supermarkets and operates mainly in rural areas. The company's share has grown over the review period, with the rise being supported by its acquisition of Match chained supermarkets during 2012, since when it has been working to fully integrate them into its business. The main challenge for hypermarkets and supermarkets stems from an ongoing and strong competitive threat from discounter, which also offer products with large selling space, mostly above the average size of most supermarkets.

The share of discounters is relatively low (12.8 percent in modern grocery retailers in 2014) but they have been the fastest growth channel in sales. Confidence towards discounters tends to grow as more consumers try to purchase private label products: not just commodities, but also other groceries and apparel. Discounters also place significant efforts behind improving private labels in groceries and fresh bakery. So, the increasing share of discounters reflects the high price sensitivity of Hungarian customers and provides evidence of strong price competition leading to lower profit margins of grocery retailers.

The grocery market of **Poland** is highly specific in the Central European region. As was shown above, Poland has the lowest but dynamically increasing market concentration of the grocery retailers. Like Hungary, grocery retailers in Poland generate very low sales per one squared meter of sales floor compared to other Central European countries (just below 3 000 EUR/m^2). Alternatively, gross margin and profit margin are the highest. Table 11 provides an overview of the reasons for such specific development.

Table 11 | Brand shares of grocery retailers in Poland (2010 and 2015)

Retailer	Brand	Brand share 2010 (%)	Brand share 2015 (%)
Jerónimo Martins SGPS SA	Biedronka	11.4	18.9
Schwarz Beteiligungs GmbH	Kaufland	5.0	5.9
	Lidl	2.9	5.2
Eurocash SA	ABC	2.4	3.8
	Delikatesy Centrum	0.6	0.8
	Groszek	-	0.7
	Euro Sklep	-	0.3
	Gama	-	0.1
Tesco Plc	Tesco Extra	3.7	3.3
	Tesco	1.9	2.2
	Savia	0.2	-
Auchan Group SA	Auchan	3.1	4.9
	Simply Market	0.2	0.4

Source: own calculation based on Euromonitor International (2016)

In Poland, the share of distribution channels is more even than in other countries. Discounters are the dominant distribution channel, with a 25% share in total turnover of the grocery retailers. Convenience stores and hypermarkets have the same share in modern grocery markets (17 percent each in 2014). Like in Hungary, traditional grocery retailers have higher importance, with 23 percent in total sales of grocery retailers in 2014.

The dynamic growth of market concentration in recent years has been a consequence of channel consolidation and a continuing decline in the number of grocery outlets. The trend towards individual outlets joining large networks, mainly convenience stores and supermarkets, was visible. The largest chains are currently ABC, Groszek (Eurocash SA), Lewiatan (Lewiatan Holding SA) and Nasz Sklep (PPHU Specjal Sp zoo), these being classified as convenience stores. This allows individual shops to negotiate more favorable terms of supply so as to achieve the buying power associated with branded operators. Convenience stores are becoming increasingly popular with Polish consumers thanks to their long opening hours, convenient locations and relatively wide range of products in a fairly small sales area.

The majority of consumers are looking for lower prices and promotional offers. This trend is naturally having a positive effect on private label products. Smart consumers are focused on convenient and quick shopping at stores located close to their homes or workplaces. Moreover, consumers prefer to make smaller but more frequent purchases in outlets located nearby instead of doing a large weekend shop in a remotely located hypermarket. So, consumers' preference of price and short shopping distance caused hypermarkets' slowdown and increasing competition from discounters and retail networks of small convenience stores. Internet retailing of grocery products is still relatively uncommon in Poland because customers do not see the price advantage of online shopping.

Discounters have gradually changed, no longer competing only in terms of price but also quality. The leading chains, Biedronka (its owner is from Portugal) and Lidl, have gradually changed their interiors to increasingly resemble supermarkets. Apart from offering good quality products at low prices, they have also launched premium private label ranges. These chains are also focusing on offering fresh products such as fruits, vegetables, raw meat, fish and seafood. An obvious shift from hard discounters to soft discounters has been a clear trend since discounters increasingly resemble supermarkets, thus appealing to more demanding consumers.

In the segment of modern grocery retailers, Jeronimo Martins Polska SA is the market leader. This Portuguese-based company dominates the discounter channel. It is very popular because of the lowest prices in the marketplace, vast choice of good quality private label and branded products including gluten-free private label products, regional products and organic products. The second place in the modern grocery market ranks Schwarz Beteiligungs GmbH with Kaufland and Lidl. Like in Hungary, Tesco has little success. So, it has decided to implement a recovery plan in Poland, which involved closing unprofitable supermarkets and centralizing its management in Central Europe.

Finally, **Slovakia** is a country with relatively high profit margins and market concentration of grocery retailers. The market structure has a character of asymmetric oligopoly (table 12).

Table 12 | Brand shares of grocery retailers in Slovakia (2010 and 2015)

Retailer	Brand	Brand share 2010 (%)	Brand share 2015 (%)
Schwarz Beteiligungs GmbH	Lidl	8.70	11.20
	Kaufland	8.10	10.70
Coop Jednota Slovensko sd	Coop Jednota Potraviny	11.70	10.20
	Coop Jednota Supermarket	6.10	7.50
	Coop Jednota	1.80	1.60
Tesco Plc	Tesco	16.40	16.70
	Tesco Express	0.10	0.70
Rewe Group	Billa	6.50	6.80
Diligentia as	Terno	-	4.10
	Moja Samoska	-	0.50

Source: own calculation based on Euromonitor International (2016)

In Slovakia, there has been the highest share of modern grocery retailers in sales (87.9 percent in 2014) compared to other reviewed countries. Slovak consumers increasingly prefer healthy lifestyles and fair trade patriotism. Slovak government authorities, as well as NGOs, support these consumer trends with official educational programs and official marks and labels for Slovak or regional products. This led modern grocery retailers to change their marketing campaigns to publicly present the shares of goods by country of origin in their outlets.

However, there still exists a segment of consumers that prefers the best value for money; they shop mostly during price discounts and various price promotions. The share of discounters in modern grocery retailers is the lowest (12 percent in 2014) but dynamically increasing. The only major discounter in Slovakia is Lidl, which has expanded due to its fresh fruit and vegetable assortment, high-quality products and consumer-friendly prices.

Hypermarkets and supermarkets are the main distribution channels for groceries. Hypermarkets lead due to higher spend per shopping visit, as consumers prefer to make larger-scale purchases from larger-format stores, leaving smaller and more frequent shopping to smaller-format outlets such as convenience stores, supermarkets or grocery specialists. However, although hypermarket is the most preferred format, supermarkets, discounters and convenience shops are gaining in popularity because consumers now prefer to quickly shop for fresh and healthy goods in their vicinity rather than make large purchases of groceries for two or even three weeks at a time.

Besides foreign grocery retail chains (Schwarz Beteiligungs GmbH, Tesco Plc, Rewe Group), there is significant market share of Coop Jednota Slovakia. It is a cooperative that consists of 32 independent associations and it is gaining from its dominant position in rural areas. It incorporates the high share of local Slovak quality products offered by the company into all of its promotions.

7. Conclusion

The aim of the article was to internationally compare the market power of grocery retailers in the six countries of the Central Europe – Austria, Czech Republic, Germany, Hungary, Poland and Slovakia. The analysis revealed some important conclusions about development of concentration, structure of distribution channels and profitability of Central European grocery retailers.

The market structure of the Central European grocery retailers has a character of asymmetric oligopoly where three or four companies dominate. However, the market share of grocery retailers is not related to the profitability. Gross margin of the grocery retailers ranged from 50 (Hungary) to 70 percent (Poland). The concentration of the Central European grocery retailers increased in the period 2010 – 2015, except for Hungary. The author found a different concentration level between countries. There is the highest market concentration in Austria where the market has a character of triopoly. Alternatively, Poland and Hungary have the lowest concentration levels. The concentration level in Hungary is relatively stable. Poland experienced the most dynamic growth of concentration as a consequence of channel consolidation and a continuing decline in the number of grocery outlets, while individual stores seek opportunities to survive through switching to a networking system.

The author revealed a different structure of distribution channels between countries. While consumers in Germany prefer discounters as the type of modern grocery retail format, consumers in Poland combine shopping in discounters and traditional grocery retailers. Consumers in Hungary still have a liking for traditional grocery retailers. Large grocery formats, hypermarkets, are preferred by consumers in the Czech Republic and Slovakia. Austrian consumers prefer high quality goods in supermarkets. From the Czech point of view, there is no strong national grocery retailer like in Germany (Edeka). Coop is popular particularly in more rural areas.

Czech market concentration is increasing and it ranks in third place behind Austria and Germany, according to the GRS ratio. The gross margin is relatively low when compared to other Central European countries. Besides national grocery retailers, there are multinational companies which operate in the Central European region, like Tesco (UK-owned retail chain), Rewe Group and Schwarz Beteiligungs (German-owned retail chains). Further research should concentrate more on the strategy of Central European grocery retailers. It would be interesting to investigate whether there is a similar strategy of retailers' brands under the same owner in different countries and how the profit is distributed in the international corporation.

The implications for practitioners are significant. The market share of key grocery retailers could be valuable information for suppliers, i.e. food processing companies as well as farmers and farming associations to discuss their bargaining power towards retailers. Moreover, it could be useful for grocery retailers to compare their market position with rivals because the national and international comparison based on relevant data is the major contribution of the paper.

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