FOREIGN VERSUS LOCAL OWNERSHIP AND FIRM PERFORMANCE IN THE EU RETAIL INDUSTRY – AN EXPLORATORY CANONICAL CORRELATION ANALYSIS

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Abstract

We propose an exploratory analysis of the differences between the performance of companies in the retail industry, as well as of the links between firms' characteristics and measures of performance within the retail industry and across EU countries with the help of canonical correlation analysis (CCA), in the foreign versus local ownership dichotomy. We find that performance in the EU retail sector is highly variable across countries, but foreign-owned companies generate higher turnover and value added at enterprise and employee level, pay higher salaries and invest more compared to locally-owned enterprises. The aggregate performance of companies, measured through labour productivity and operational profitability, is more homogeneous across countries and foreign versus locally-owned companies. We identify a link between firm attributes and performance, but foreign and locally-owned companies display, to some extent, a different pattern of this link particularly in the case of labour productivity, but not in the case of profitability.

Introduction

Distributive trade is a significant part of the economic activity of the European Union, contributing with around 11% to the EU's gross domestic product (GDP; the sector also creates about 33 million jobs, or almost 15% of total employment in the European Union (European Commission, 2018). Within the distributive trade sector, retail is a dynamic industry with strong competition and whose dynamics have been strongly shaped by business expansion on international markets fuelled by limited growth opportunities in the home countries, restrictions set by the governments, the high cost of land, commercial space and labour, but also by the attractiveness of other markets, given the potential for increasing the purchasing power and an underdeveloped retail infrastructure in the host countries.

The distributive trade landscape in the European Union was changed by the Global financial crisis of 2007-2009, but the retail industry was more exposed to these turbulent times; thus, as people reduced expenses on food and shopping and gave higher preference to shops located closer to home with the aim of reducing transportation costs, the number of insolvency cases among distributors increased and retail sales dropped. But the industry recovered after 2009, also with the support of e-commerce; while turnover declined by 5.1%, between 2008 and 2009, the period after 2009 until 2016 saw a CAGR of 2.19% in the turnover (European Commission, 2018). At the same time, the retail industry performance is uneven across the EU countries, depending on local consumers' preferences, income levels and competition, but the same is true about the performance of foreign versus local companies in the industry.

We propose an analysis of the retail sector performance within the European Union, which is novel for this field of research. The next section briefly presents the most relevant results from the literature, Section 2 outlines the data and the specific research methodology and Section 3 discusses the main results. The last part of the paper concludes and indicates directions of future research.

1 Literature review

The academic literature has investigated for quite a long time the companies' performance and its main drivers, starting with the contributions of Bain and Mason on industrial organization in the fourth and fifth decade of the XIXth century (Porter, 1983). The theory of industrial organization sees the industry environment as playing the central role as the driving factor behind corporate performance, in the "structure – conduct – performance" triad, where "structure" refers to industry-specific attributes (such as diversification and technological level and competition), "conduct" makes reference to company's strategy and "performance" is defined by the level of industry's profitability (Ralston, Blackhurst, Cantor & Crum, 2015). Empirical studies building on the industry attributes' impact on business performance have also tackled the diversity of locations where companies operate (Cantwell, Dunning, & Lundan, 2010) and, more recently, the cities' characteristics as determinants of superior business performance ((Manyika, et al., 2018).

The traditional framework of business performance was complemented with contributions that introduce the type of ownership, i.e. foreign or domestic, as an explanatory factor. However, the existing literature on the impact of foreignness on performance does not clearly indicate a superior performance of foreign-owned over the locally-owned companies.

For example, Gelübcke (2013) observes that German foreign-owned companies employ higher number of persons and pay higher salaries, while their profitability is lower compared to locally-owned companies; still, there are no major differences between the labour productivity of domestic companies compared to their foreign-owned peers. A similar result is obtained by Griffith, Redding, & Simpson (2004) who find that British multinational companies operate with lower labour productivity levels and make lower investments compared to their foreign-owned companies operating in the United Kingdom, but the productivity gap is higher in the services sector compared to the manufacturing sector.

Solid and comprehensive investigations of the differences in retailers' performance across the EU countries are lacking, as the overwhelming majority of studies refers to the country or at most region level. Butigan (2017) discusses the development of retail trade and the specific role of strategic alliances in the European Union and suggest that consolidation and concentration growth is an essential attribute of retail trade in the region over the past two decades, with effects at the performance level. Another study conducted at EU level is proposed by Lindenblatt and Feuerstein (2015), which addresses price convergence within the EU after the 2004 enlargement using micro data on retail food prices. Interestingly, their results point towards strong price convergence within the EU23 group, which is mostly explained by convergence between the two subgroups of old and new EU member states, but not necessarily within them.

2 Data and research methodology

Our analysis is performed on the EU retail industry for the 2009-2016 timeframe, and includes the foreign versus locally-owned enterprises included in the G47 NACE code „Retail trade, except of motor vehicles and motorcycles". Data was collected from the Eurostat Inwards FATS (Foreign Affiliates Statistics). It should be mentioned that FATS are foreign direct investment enterprises in whose case the share of foreign capital represent a minimum of 50% of the subsidiary's capital.

We include in our sample 24 EU countries for whom data availability was the highest – Austria (AU), Belgium (BE), Bulgaria (BG), Croatia (CR), Czechia (CZ), Denmark (DE), Estonia (ES), Finland (FI), France (FR), Germany (GE), Hungary (HU), Ireland (IR), Italy (IT), Latvia (LA), Lithuania (LI), Netherlands (NE), Poland (PL), Portugal (PT), Romania (RO), Slovenia (SL), Slovakia (SK), Spain (SP), Sweden (SW) and United Kingdom (UK). Our

sample is highly representative at EU level, as it represents 92.9% of the number of enterprises and 96.4% of the turnover in the G47 sector at the end of 2016 (based on Eurostat FATS).

The variables considered in our research are business attributes based on five main indicators: turnover (TN), value added (VA), gross operating surplus (GOS), gross investments (GI) and personnel costs (PC). For each category of enterprises, foreign and locally-owned, we have calculated the average of these indicators' values for the 2009-2016 and further divided them by the average number of enterprises and the average number of employees for the same timeframe, as this procedure removes the inherent fluctuation in data from one year to another. Moreover, we have considered two derived indicators for labour productivity (Wage-adjusted labour productivity - WALP) and operational profitability (Gross operating rate - GOR)[1].

Our methodological approach has two stages; first, we investigate the differences between the performance of companies in the retail industry depending on their ownership – foreign versus locally-owned -, building on the previously discussed literature on the impact of foreignness on company performance. Second, we explore the links between firm attributes and measures of performance within the retail industry and across EU countries with the help of canonical correlation analysis (CCA), in the foreign versus local ownership dichotomy.

CCA, proposed back in 1936 by Hotelling (Shawe-Taylor and Cristianini, 2004) represents a useful multivariate data analysis tool that explores potential linear relationships between two sets of variables, unlike the traditional correlation analysis that considers only the relationship between two variables. Thus, it serves as an exploratory instrument in the analysis of several variables that belong to the same analytical category and it may be thought of as being close to a generalization of linear multiple regressions. CCA has been used in multivariate data analysis researches to investigate various industries, such as air transport (Kuljanin, Paskota, & Kalić, 2018) or apparel manufacturing industry (Ha-Brookshire and Lee, 2010).

CCA constructs aggregative indicators called variates or canonical correlation variables as a linear weighted association of original variables and the algorithm selects the canonical coefficients (or loadings) so that the correlation between the variates is maximized. In our study, the two sets of variables are the following: the first set includes two variables, i.e. the aggregated indicators of labour productivity (WALP) and profitability (GOR), while the second set consists of ten firm attributes at enterprise and employee level, i.e. TN, VA, GOS, PC and GI. All indicators are averages of 2009-2016 values. Specifically, we use CCA to identify the measure of correlation between firm attributes (as "input" indicators) and their aggregate performance

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[1]   The   definition   of   these   indicators   is   provided   by   Eurostat   at
https://ec.europa.eu/eurostat/cache/metadata/EN/bs_esms.htm

(as "output" variables) and, in the process, to observe whether ownership may be considered as a differentiating factor in terms of performance in the retail industry. In order to mitigate differences in scale between variables we have applied the well-known standardization procedure. The analysis has been conducted in STATISTICA.

Main results and discussion

The descriptive statistics of the foreign and locally-owned EU companies show both the diversity of the industry across countries, given the rather high range compared to the mean and the difference between means and medians, as well as the pervasive performance gap in the favour of foreign-owned companies for almost all variables; the only notable exception is GOR (see Tab.1.). Thus, although companies controlled by local capital are more numerous, employ more personnel, generate higher turnover and value added, pay higher personnel and have higher investments overall, the perspective is changed when performance at enterprise and employee level is considered.

The results in Tab.1 depict a landscape of foreign-owned companies generating on average higher turnover, value added and gross operating surplus, accompanied by higher personnel costs and gross investments per enterprise and employee compared to locally-owned companies. The performance gap is in the range of 30 to 55:1 in favour of foreign-owned companies when the enterprise level is considered, but reduces significantly at the employee level, where the performance of foreign-controlled business is only at most two times higher than for the locally-owned ones. Interestingly, there is no significant difference in the two types of companies at EU level in the case of labour productivity and particularly GOR. These findings suggest that, overall, EU foreign-owned companies generate higher turnover, profits and cash flows, pay higher overall wages and invest more, but their labour productivity is rather similar to the local-owned companies productivity; this is linked to the higher level of wages and salary-related costs that foreign-owned companies pay to their employees. At the same time, their profitability is, on average, slightly higher, but this result is most likely connected to their smaller size and, overall, the marginal higher profitability of locally-owned companies does not compensate for higher cash flows or investments.

Tab.2 shows the summary of CCA and the statistical significance of our results. CCA extracted two canonical roots, corresponding to the lowest number of variables in the two sets. The overall canonical R that pertains to the first and most significant canonical root has a high value (0.898) and is significant at 5% level; therefore, the correlation between the weighted-

based variates from both sets of variables is high, which shows that firm attributes are significantly correlated to "output" indicators at EU level. Also, the average amount of variance extracted by all the canonical roots is 100% for the first set of variables, but only 17.23% for the second set of variables, which denotes the high variability of firm attributes among the various EU countries and ownership categories. The redundancy results confirm the values of extracted variance; as such, based on the two canonical roots, 62.38% of the variance in the "output" set of variables is accounted for by the variables in the "input" set, but only 10.41% of the variance in the "input" set is accounted for by the variables in the "output" set. These results indicate a fairly strong relationship between the two sets of variables.

Tab. 1: Descriptive statistics of variables, means of 2009-2016 across EU

Variables	Unit	Mean		Median		Range	
		F	L	F	L	F	L
Turnover (TN)	Mill. €	19,269.5	89,360.0	12,036.5	33,031.60	92,414.4	468,067.0
Value added at factor cost (VA)	Mill. €	3,478.5	15,624.1	1,739.0	4,954.0	19,803.9	81,772.2
Gross operating surplus (GOS)	Mill. €	1,186.0	5,164.8	551.7	1,401.5	8,257.9	25,420.4
Personnel costs (PC)	Mill. €	2,292.1	10,459.5	1,126.0	3,521.8	11,545.9	57,821.6
Gross investment in tangible goods (GI)	Mill. €	532.8	1,866.2	270.5	558.8	3,069.1	10,631.3
Enterprises	Number	580.0	130,513.9	404.06	67,705.19	1,650.4	630,930.6
Persons employed	Number	103,261.4	635,652.7	53,643.1	257,788.0	561,167.9	3,242,232.5
Turnover per enterprise (TNE)	Thousand €	50,135.4	1,326.1	28,969.0	801.8	303,301.3	11,583.9
Value added per enterprise (VAE)	Thousand €	8,128.4	195.4	4,099.3	134.7	47,566.72	1,339.1
Gross operating surplus per enterprise (GOSE)	Thousand €	2,555.2	61.0	1,368.2	37.6	12,448.3	370.0
Personnel cost per enterprise (PCE)	Thousand €	5,520.4	134.4	3,454.7	87.2	35,118.9	969.0
Gross investment per enterprise (GIE)	Thousand €	1,209.0	25.7	781.9	14.4	5,324.8	204.2
Turnover per employee (TNEM)	Thousand €	189.1	128.5	176.7	123.2	217.7	235.4
Value added per employee (VAEM)	Thousand €	81.2	80.7	49.3	42.9	690.4	690.4
Gross operating surplus per employee (GOSEM)	Thousand €	9.5	6.7	9.5	7.1	19.9	15.7
Personnel cost per employee (PCEM)	Thousand €	20.4	14.2	19.6	14.1	30.0	27.6
Gross investment per employee (GIEM)	Thousand €	5.1	2.6	4.8	2.3	7.0	7.6
Wage-adjusted labour productivity (WALP)	%	151.5	134.5	144.0	132.3	79.8	62.5
Gross operating rate (GOR)	%	5.1	5.2	4.4	4.7	10.7	5.0

Note: F – foreign-owned companies; L – locally-owned companies.
Source: Eurostat data and authors' calculations

Furthermore, we investigate the significance of both canonical roots – see Tab. 3. We see that both canonical correlations have high values and are statistical significant at 5% level and we will proceed with them both.

Tab. 2: Summary of CCA

Canonical R: 0.898	Chi-square: 89.112	p-value: 0.000
	Set 1 ("Output" variables)	Set 2 ("Input" variables)
Number of variables	2	10
Variance extracted (%)	100.0	17.23
Total redundancy (%)	62.38	10.41

Source: Authors' calculations

We computed the correlations between the variables in each set with the identified canonical roots, reported in Tab. 4. For the first canonical root, both structure coefficients are

negative, but the coefficient for WALP (-0.9963) shows a strong correlation with the canonical root; on the other hand, the coefficient for GOR in the second canonical root (0.9778) indicates a strong positive correlation to the canonical root. Thus, the first canonical root shows the overall correlation of "input" variables to labour productivity, while the second root shows the correlation to profitability. Within EU, turnover, value added and personnel costs at employee level are positively correlated to labour productivity, while all variables at enterprise level and two variables at employee level (gross investments and gross operating surplus) correlate indirectly to productivity. The structure coefficients for the second root indicate positive correlations to profitability in the case of all variables, both at enterprise and employee level, except for value added per employee. At the same time, none of the variables in the "input" set shows strong correlations to any of the canonical roots, which confirms the high variability of business performance within the retail industry in EU.

Tab. 3: CCA analysis for the canonical roots

Canonical roots	Canonical correlation	Canonical R^2	Chi-squared	p-value	Wilk's lambda
Measures of model fit					
1	0.8981	0.8066	89.1121	0.0000	0.1108
2	0.6535	0.4271	22.5609	0.0073	0.5729

Source: Authors' calculations

Another interesting result is offered by the extracted variance and redundancy values by the two canonical roots in our sets of variables; the first canonical root accounts for about 52% of the variance in the "output" set and only 8% of the variance in the "input" set, while the second canonical root, also significant, accounts for approximately 48% of the variance in the "output" set and 9% in the "input" set. These values are reduced by the rather low correlations between the canonical roots and the "input" variables.

Tab.4 also presents the canonical loadings or weights that are used to compute scores for the canonical variates represented in Fig.1. We observe in both graphs the positive overall correlation between the "input" and "output" variable sets, but accompanied by "agglomerations" that suggest the presence of clusters and stronger in the case of the first canonical root. For the first root, there is a cluster of locally-owned companies in the right-upper part of the graph and another of foreign-owned companies in the lower part of the graph. For the second root we observe only a grouping of locally-owned retail companies from six EU countries, but we interpret this as an outlier group; at the same time, all the other cases introduced in the analysis do not seem to indicate any clear differentiation between companies based on their ownership. These results show that foreign and locally-owned companies

display, to some extent, a different pattern of the link between their attributes, on one hand, and labour productivity, but this is not necessarily valid in the case of profitability.

Tab. 4: Canonical results

	Canonical root 1		Canonical root 2	
	Structure coefficients	*Loadings*	*Structure coefficients*	*Loadings*
First set ("output" variables)				
Labour productivity (WALP)	-0.9963	-1.0223	0.0852	-0.2191
Profitability (GOR)	-0.2095	0.0891	0.9778	1.0418
Extracted variance (%)	51.83		48.14	
Redundancy (%)	41.81		20.57	
Second set ("input" variables)				
Turnover per enterprise (TNE)	-0.1717	-0.8096	0.3496	-9.6536
Value added per enterprise (VAE)	-0.1804	-21.9645	0.3368	-161.9394
Gross operating surplus per enterprise (GOSE)	-0.3660	6.8049	0.2848	42.6609
Personnel costs per employee (PCEM)	-0.0968	16.7737	0.3509	122.8798
Gross investments per employee (GIEM)	-0.3681	-0.6082	0.4052	9.4067
Turnover per employee (TNEM)	0.1163	0.2143	0.3379	1.1544
Value added per employee (VAEM)	0.1347	0.1524	-0.1598	-0.4021
Gross operating surplus per employee (GOSEM)	-0.3589	-0.8659	0.0162	0.5090
Personnel costs per employee (PCEM)	0.3303	0.8506	0.2249	-0.9325
Gross investments per employee (GIEM)	-0.4413	-0.3474	0.3510	-1.1817
Extracted variance (%)	8.05		9.17	
Redundancy (%)	6.49		3.92	

Source: Authors' calculations

Fig. 1: Canonical correlation scores for canonical roots
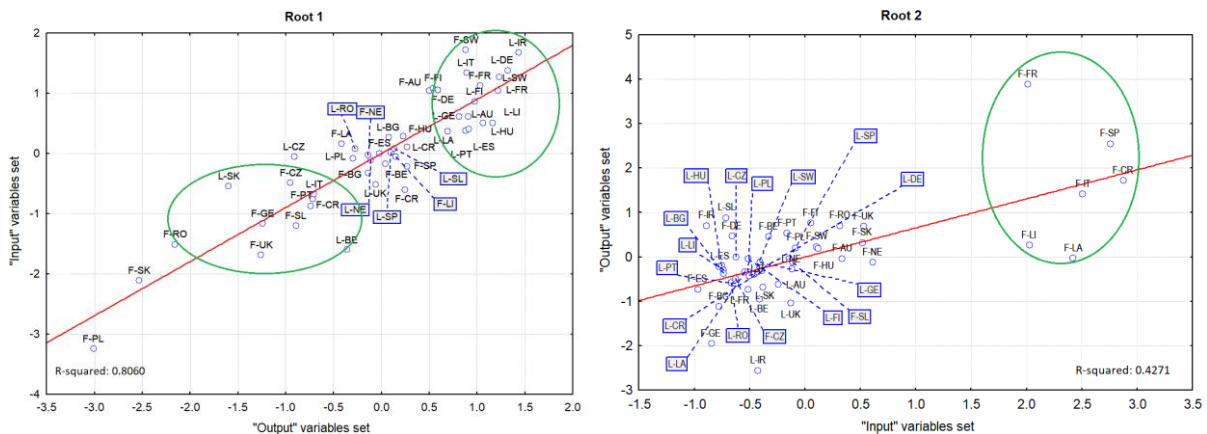
Source: Authors' calculations

Conclusion

The analysis undertaken in our paper is a novel one for the retail sector within the European Union, as it considers the differences within the region at the level of business performance and the link between firm attributes, on one hand, and labour productivity and profitability, on the other hand, in the foreign versus local ownership framework. Our results indicate clearly that foreign-owned companies within the EU generate higher turnover, profits and cash flows, pay

higher overall wages and invest more, but differences in labour productivity and profitability between foreign versus locally-owned companied are smaller and even slightly better for locally-owned companies. This is the result of the higher wages and salary-related costs that foreign-owned companies pay to their employees, on one hand, and of the smaller size of locally-owned companies, on the other hand. At the same time, foreign and locally-owned companies display, to some extent, a different pattern of the link between their attributes and labour productivity, but not necessarily in the case of profitability. This is most likely the effect of high variability of firm characteristics and overall performance within the EU retail sector. These result deserve to be further investigated using more sophisticated statistical and econometric methodologies such as multivariate data analysis, panel data and neural networks.

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