INFLUENCE OF FOREIGN CAPITAL ON CORPORATE PERFORMANCE OF THE HUNGARIAN FOOD PROCESSORS

CSABA JANSIK¹

The ultimate objective of the study is to measure the impacts of foreign capital in the Hungarian food processing. The analysis was designed and carried out at meso-level, which means that the individual food processing industries are in the focus of investigations. Yet, calculations rely on corporate data, which were used to uncover the impact of foreign ownership on company performance.

The analysis sets forth with grouping the Hungarian food processing companies by their ownership structure and comparing the performance of the two major groups of owners, foreign investors and domestic private capital.

The investigation of the dynamic performance gap concludes that foreign owned companies surpass the domestically owned private companies in all the important efficiency and performance categories. The major tendency of performance gap between the two groups of companies has been of opening nature between 1995 and 1998.

KEYWORDS: Foreign investments; Food processing; Corporate performance.

I he Hungarian food processing suffered from severe crisis in the beginning of the 1990s. Restructuring and privatisation of companies, and fundamental changes in the operational environment exacerbated and deepened the recession, which culminated in the beginning of the decade. The aggregate performance indicators of food processing have improved since 1993. Although some of the figures stagnated or even slightly declined in 1998, a definite recovery characterised the overall performance of the industry in the second half of the 1990s. Table 1 presents value figures in dollars by using average annual exchange rates.

Foreign investors played and active role in reshaping the ownership structure of food processing. By 1998, they acquired over 60 percent of the aggregate company capital in the industry (see Table 1). This study intends to detect the influence of foreign capital in the Hungarian food processing by searching what impact corporate ownership has made on company performance.

¹ Researcher at MTT Agrifood Research Finland, Economic Research (Maa- ja elintarviketalouden tutkimuskeskus, Taloustutkimus MTTL), Helsinki.

Hungarian Statistical Review, Special number 6. 2001.

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Indicators	1992	1993	1994	1995	1996	1997	1998
Sales revenues (billion USD) Export (billion USD) Profitability (percent) Labour productivity (thousand USD/capita) Share of foreign ownership in registered capital (percent)	6.58 1.01 -2.31 36.61 31.82	6.14 0.83 0.24 40.68 43.09	7.27 1.05 0.73 49.25 47.95	7.85 1.40 0.70 56.76 52.66	7.85 1.52 1.55 59.83 52.92	7.59 1.65 2.77 58.65 60.44	7.42 1.55 2.72 55.91 62.62

Indicators of Hungarian food processing between 1992 and 1998

Source: own calculations based on data of AKII (1997; 1998a).

The opening question of the analysis rises pursuing the previous research objective: is the performance of either foreign owned or domestically owned food processors superior to that of the other group? The hypothetical response states that ownership does have an impact on company performance in the food processing and that foreign affiliates have better performance indicators than their domestically owned rivals.

This hypothesis is built upon the finding that comparative advantages of the foreign investors are soon after investing abroad internalised into their production subsidiaries (*Dunning*; 1997). This results in an overall performance and efficiency growth at the foreign owned companies, which – in the case of considerable foreign participation – would have a measurable impact on the performance of the entire food processing.

Rare examples can be found in the literature that would feature empirical or accounting based impact analyses of multinational or other foreign subsidiaries in the Hungarian food processing. Most studies consider food processing as one of the processing industries in manufacturing comparisons.

Hamar (1995, p. 115) also viewed food processing as one in the set of all processing industries. She attributed the rapid growth of food processing to the participation of foreign investments. Her study also documented a uniform cost structure in the industry.

In one of the most recent studies, Szabó (2000) introduced an interesting and novel approach. He traced down the history of 38 large food processors between 1990 and 1998, which were transferred from state control to foreign ownership. The sample included only those companies that had distinct equivalents in both years of observations. This criterion eliminated several multinational enterprises from the investigations. The restricted size of the sample may be the explanation for the surprising fact that the aggregate growth of sales revenues and profit earnings at the sample companies stayed below the industrial average. On the other hand, the growth of equity and total assets in the sample surpassed the industrial average; it indicates quick development and the intensity of investments. Besides, the companies in the sample were also among the best ones in terms of productivity growth, which is a result of their internal rationalisation and intensive labour lay-off (*Szabó*; 2000. p. 47).

The direction in the current article differs from the mentioned two studies in terms of

1. the applied database includes the accounting information – excerpts from balance sheets and income statements – of the complete set of Hungarian food processing companies that is over two and half thousand enterprises between 1995 and 1998;

2. the analytical approach, namely the dynamic measurement of performance difference between foreign and domestically owned companies that gives novelty to the current analysis.

1. IMPACT OF OWNERSHIP ON CORPORATE PERFORMANCE FIGURES

In the first part of the calculations, performance of the companies is measured by sales revenues, profit earnings, export sales, and investment activities. Sales revenues is an essential indicator of corporate performance, since it embodies market power. In an earlier analysis, market power was proved to significantly motivate the inflows and industry choices of foreign capital in the food sector (*Jansik*; 2000a, p. 83).

1.1. Indicators of corporate performance and data set

In the post-socialist economic environment, profit earnings have provided rather distorted information on the performance of food processing companies. In the second half of the decade, partly owing to the halved corporate tax rates, the profit performance of the companies improved.²

Although experience indicates that food industrial foreign investors settle themselves primarily to supply domestic markets, the traditional export performance also strengthened in the Hungarian food processing sector. The amount of investments is an indicator that signifies the future objectives and anticipations of the companies.

The impact of ownership on corporate performance is first identified by segmenting the companies. The database used in the study embraces all food processing companies for four years from 1995 to 1998. The most recent data were used in the initial calculations; total number of observations in 1998 amounted to 2977, which narrowed to 2961 after eliminating the companies with zero registered capital. Two major groups were identified according to the ownership structure of the companies: *1.* majority-foreign owned and *2.* majority-domestically owned companies.

The segmentation was done on the basis of foreign versus domestic ownership share in the registered company capital of each enterprise.

1.2. Results of the company segmentation

Table 2 demonstrates the corporate figures of the companies in the two groups. Beside aggregate figures, it also displays group averages. The data in the table confirms the 'size-superiority' of foreign owned companies. The difference in sales revenues refers to the fact that foreign owned companies are typically among the largest ones in food processing.

In terms of average profit and export sales, the superiority originating from foreign ownership seems to be even more pressing than in the case of sales revenues, while average investments of foreign owned companies are nine times more than average investments of the domestic companies.

² Nevertheless, many domestically owned companies are presumed to 'hide' their profit, while foreign owned companies may tend to exercise hidden profit repatriation. Yet, the only available profit figures are official reported ones, which were also used in the calculations.

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Aggregate figures of mangarian food processing companies by majority owners in 1770											
Ownership	Net sales revenues	Value of investments									
	billion HUF										
Total majority foreign (<i>N</i> =398) Total majority domestic (<i>N</i> =2563) Average of foreign owned Average of domestically owned	764.96 826.08 1.9220 0.3223	45.14 5.78 0.1134 0.0023	188.62 143.18 0.4739 0.0559	14.35 10.17 0.0361 0.0040							

agata figuras of Hungarian food processing companies by majority owners in 1008

The mere data of Table 2 may well raise a doubt: since all large companies are in foreign ownership, the real reason for different performance is not the ownership type, but rather the magnitude of companies. A two-step segmentation was to address this apprehension. The initial grouping attribute is the size of the companies by using their sales revenues: the first group includes all companies, whose revenues exceeded HUF 100 million, the second group included all companies below that limit. The segmentation follows the previously applied method afterwards. The objective of double segmentation is to compare the foreign and domestically owned companies within their own size groups. Table 3 shows the results of the analysis.

Table 3

Size and ownership	Sales revenues	Profit	Export sales	Value of investments					
	million HUF								
Sales revenues above HUF 100 million Total majority foreign (<i>N</i> =167) Total majority domestic (<i>N</i> =718) Average of foreign owned Average of domestically owned Sales revenues below HUF 100 million Total majority foreign (<i>N</i> =231) Total majority domestic (<i>N</i> =1845) Average of foreign owned Average of domestically owned	760 953.8 788 898.2 4 556.6 1 098.7 4 005.6 37 182.1 17.3 20.2	43 886.9 7 552.1 262.8 10.5 1 250.0 -1 770.5 5.4 -1.0	187 560.2 141 789.1 1 123.1 197.5 1 062.9 1 393.1 4.6 0.8	13 720.7 8 439.6 82.2 11.8 632.8 1 734.9 2.7 0.9					

Corporate figures of Hungarian food processors by size and ownership type in 1998

A little more than 40 percent of the foreign owned companies are situated in the group of the large companies, their power continues to be evident (see Table 3). Although they make up less than one-fourth of the number of the large companies, their combined sales revenues still amount to nearly half of the entire large-scale group. Consequently, the difference in average sales revenues between the two ownership types in the group of large companies is more than fourfold. The difference in terms of average profit is even considerably wider than in the case of sales revenues. It indicates that foreign owned companies are much more profitable than domestically owned ones. The differences between group averages in the field of profit, exports and investments surpass the magnitude of difference in sales revenues.

The group of the small companies results in some unexpected findings as opposed to the group of large companies. The average sales revenues of both ownership groups are around the same magnitude; in fact, the figure of domestically owned companies is even slightly higher than that of the foreign owned group. Due to the similar size among the small companies, any difference in corporate performance can purely be attributed to the differences in ownership structure. Further data inform about the superiority of foreign ownership: foreign subsidiaries earned considerable profits compared to the losses of domestically owned companies, their exports are nearly sixfold and the value of investments are threefold in comparison to the respective average figures of domestically owned processors.

Investment is an extremely important performance category in terms of future corporate growth. Investments of the foreign owned companies surpass the respective figures of domestically owned enterprises in both company size groups. The difference is not that surprising in the group of large companies, where capital strength of the large multinational enterprises is overwhelming. In the other group, small and medium-scale ventures could be the ones that are mobile, flexible and perceptive to emulate the modern techniques of foreign owned companies. They are believed to be the germ of a strong Hungarian owned food processing segment and they are expected to constitute a competitive group against foreign subsidiaries. Since these small Hungarian enterprises can not easily compete with the large foreign ones in terms of innovation, product differentiation or know-how, the only relevant way of corporate growth appears to be physical investments. Therefore, it is regrettable to recognise that Hungarian owned small-scale processors take such a low-key approach in investments.

2. DEFINITION OF THE CORPORATE PERFORMANCE GAP

A difference in corporate performance has been verified to prevail between the foreign and domestically owned food processors in Hungary; the corporate operational data in the previous analysis confirm the existence of the gap. Therefore, the analysis can be continued one step further and incorporate the dynamic aspect. The opening question of the study now takes a modified form as follows: is the performance gap between foreign and domestically owned food processors widening or narrowing over time?



Figure 1. The concept of performance curves of majority foreign and majority domestically owned food processors

The dynamic concept of the performance gap is illustrated in Figure 1, where shaded area signifies the gap. The widening or narrowing nature of the gap can be revealed only through a care study of dynamic indicators. Such calculations require comparable data for many years. Data availability limited the surveyed period to four years, from 1995 to 1998. Again, enterprises with zero registered company capital were eliminated from the data set.

3. COMPARISON OF FOREIGN AND DOMESTICALLY OWNED COMPANIES

In order to quantify the changes of the performance gap, a wider group of indicators of corporate performance is computed.

3.1. Relative performance indicators used in the comparison

Calculations contain four profitability, one productivity and three other accounting indicators: $^{\rm 3}$

Profit rate (profitability margin):⁴
$$ROS_i = \frac{P(bt)_i}{R_i}$$
 /1/

Return on equity:⁵
$$ROE_i = \frac{P(bt)_i}{E_i}$$
 /2/

Profit to assets:
$$p_i^a = \frac{P(bt)_i}{TA_i}$$
 /3/

Profit per capita:
$$p_i^{emp} = \frac{P(bt)_i}{EMP_i}$$
 /4/

Labour productivity:⁶
$$prod_i^{emp} = \frac{R_i}{EMP_i}$$
 /5/

Own capital intensity:
$$e_i = \frac{E_i}{TA_i}$$
 /6/

Share of export sales:
$$exp_i = \frac{EXP_i}{R_i}$$
 /7/

Asset efficiency:
$$r_i^a = \frac{R_i}{TA_i}$$
 /8/

 3 The group of indicators were sorted out based on the traditions of the corresponding international literature; see *Jansik* (2000b, p. 248–258.) for a detailed literature overview.

⁴ The indicator is identical to the category of Return of Sales – ROS.

⁵ The measure is not fully identical to Return on Equity – ROE indicator, since the figure of so called 'own capital' is used in the denominator as a substitute for equity. ⁶ Labour productivity is usually calculated with value added produced by the company. However, when value added fig-

^o Labour productivity is usually calculated with value added produced by the company. However, when value added figures are unavailable, net sales/capita is an internationally applied proxy. The indicator does not directly denote labour productivity, but it expresses corresponding trends of the particular corporate performance aspect (*Frydman et al.*; 1999).

where

 $P(bt)_i$ is the *i*th company's profit before taxation, R_i is the *i*th company's sales revenues, EXP_i is the *i*th company's export sales, E_i is the *i*th company's own capital, TA_i is the *i*th company's total assets, EMP_i is the *i*th company's labour force.

3.2. Results of the dynamic performance gap analysis

Pursuant to the definition explained in Figure 1, data in Table 4 show a snapshot of the dynamic performance gap for t=1998. The numbers prove a significant disparity between the performance of foreign and domestically owned food processors. Indicators signify a notable advantage of foreign owned companies: their labour productivity was twice, while their profit rate was seven times as high as the respective figures of domestically owned enterprises.

The advantage of domestic ownership was disclosed in the case of one indicator, asset efficiency. This indicator, however, carries rather illusive than real competitive advantages. A logical explanation lies behind the domestic superiority in the case of asset efficiency. Many domestically owned enterprises operate with almost fully or fully depreciated assets. Hence, the lower value of denominator results in higher measures of asset efficiency than in the case of foreign owned companies with their typically more valuable or recently installed assets. The indicator of capital intensity already gives a better understanding on real power relations.

Table 4

Performance indicator	Majority foreign owned (N=398)	Majority domestically owned (<i>N</i> =2563)	Total food processing (N=2961)		
<i>1</i> . Profit rate – ROS (percent)	4.94	0.70	2.74		
2. Return on equity – ROE (percent)	12.56	2.8	8.59		
3. Profit to assets (percent)	6.08	1.12	3.83		
4. Profit per capita (thousand HUF /capita)	868.4	64.8	328.5		
5. Labour productivity (million HUF /capita)	17,569	9,264	11,989		
6. Own capital intensity (percent)	48.4	40.1	44.6		
7. Share of export sales (percent)	24.65	17.33	20.85		
8. Sales to assets (percent)	122.95	160.27	139.86		

Relative corporate indicators of majority foreign owned and majority domestically owned food processors, 1998

Source: the author's calculations based on the data of AKII.

The dynamic approach of the performance gap is evidently more essential than a static type of comparison. Data in Table 4 get full sense by placing them into the dynamic context of a longer period.

In order to illustrate the development of the gap in practice, Figure 2 shows the curves of average sales revenues for foreign and domestically owned food processors in Hungary. The figure confirms that the difference in average sales revenues between the two ownership groups has been growing. Although such a chart of performance curves is illustrative, it has to be admitted that the mere comparison of annual values may imply the danger of inaccurate calculation of the gap.



Figure 2. Average sales revenues of foreign and domestically owned food processors in Hungary between 1995 and 1999

Since indicators of both groups of companies change over time, the comparison of absolute values would really not capture the opening or closing nature of the gap.⁷

In order to resolve the issue, a similar methodology is applied that *Pilat* (1996) developed at OECD to measure international productivity gaps. The performance of the most productive country was fixed at unity (or at 100 percent), and the productivity of other countries was expressed as its proportion. Productivity gap is defined by the difference between the most productive country and the other ones. This approach allows a reliable and accurate dynamic interpretation, even if the denominator changes in the meantime, or the title of the most productive country is taken over by a new one.

Data in Table 5 were calculated by applying a similar concept to the productivity gaps suggested by *Pilat*. In order to quantify the performance gap among the Hungarian food processors, the figure of the better group was fixed at unity. The denominating base of the proportion was the performance of the foreign owned companies in the majority of cases. The following formula expresses the performance gap (PGAP) for a particular indicator:

$$PGAP = 1 - \frac{\sum_{i=1}^{n} P_i^w}{\sum_{i=1}^{m} P_j^b}$$

⁷ A simple arithmetic example enlightens the problem. Let us suppose two economic actors – enterprises or nations – whose performance figures are compared for three subsequent years. Let the values of the better performer be 10, 12 and 15, while the values of the weaker performer 2, 3, and 5, respectively. Then, the absolute difference between them will be 8, 9 and 10, which would suggest a widening gap. The performance gap given by the PGAP formula, however, will be 0.8, 0.75 and 0.66, or in percentage form 80, 75 and 66 percent. The values calculated on the basis of the PGAP formula confirms exactly the opposite trend that absolute figures suggested, namely a narrowing performance gap.

where:

 P_i^w is the indicator of the i^{th} company in the ownership group with weaker performance,

 P_j^b is the indicator of the j^{th} company in the ownership group with better performance.

The formula of PGAP determines that the figures of performance gap can take values between zero and unity. Multiplying the values by 100, PGAP may also be expressed in percentage form. Then, the arbitrary value of a PGAP=0.72 can be interpreted in two different ways: the performance gap is 72 percent of the performance of the better group, or the performance figure of the weaker group reaches 28 percent of the performance of the better group. This latter one is an intermediate step in the calculation process. Due to its demonstrative power, however, it is also included among the results in Table 5. P^W is expressed by the following two formulas:

$$PGAP = 1 - P^w$$
 and $P^w = \frac{\sum\limits_{i=1}^{n} P_i^w}{\sum\limits_{i=1}^{m} P_j^b}$

The values of PGAP and P^{W} should be interpreted based on how they change over time: descending values of P^{W} or ascending values of PGAP would indicate the widening of the performance gap and vice versa, ascending P^{W} and descending PGAP values would signify the narrowing of the gap.

Although access to data limited the time span of the analysis to four years, the amount of computed indicators is sufficient to draw pertinent conclusions. The changes in the performance gap demonstrated by eight corporate indicators disclose a dramatic shift in the Hungarian food processing sector. All the profitability, productivity and export indicators notify a distinctly widening performance gap: domestically owned companies constantly keep falling behind foreign owned processors. In terms of capital intensity, the lag has been stagnating since 1996, the only advantage of the domestically owned companies is a stable superiority shown in the case of asset efficiency.

It would be early to alert on the basis of four year development of the performance gap, although future prospects do not promise spectacular improvement for the domestically owned processors. The figures in Table 5 reveal a notable disparity among investment activities between the two ownership groups, which may continue to open the performance gap also in the coming years. This danger equally shades the future of both small and large domestically owned firms in the Hungarian food processing.

Results shown in Table 5 should be interpreted with caution also due to another fact. Since the performance gap is calculated from group averages, the numbers conceal the heterogeneity in the performance of group members. In the multitude of food processors, there might be laggards amongst the foreign owned companies just as well as rapidly developing domestically owned enterprises.

Table 5

	and domestically	owned fo	ood proce	essors be	tween 199	95 and 19	98		
		19	95	19	96	19	97	1998	
Indicators/Elements of performance gap	Formulas	Foreign	Domestic	Foreign	Domestic	Foreign	Domestic	Foreign	Domestic
				ma	jority own	ed compai	nies		
Number of firms	n, m	399	2 153	397	2 289	400	2 468	398	2 563
Sales revenues/ enterprise (billion HUF)	$\frac{\sum_{i=1}^{n} R_i}{n}, \frac{\sum_{j=1}^{m} R_j}{m}$	1.034	0.262	1.246	0.307	1.544	0.324	1.917	0.322
SL*	P^W		0.253		0.246		0.210		0.168
PG**	PGAP	0.2	747	0.	754	0.2	790	0.8	32
<i>1</i> . Profit rate (Profit to sales, percent)	$\sum_{i=1}^{n} ROS_i, \ \sum_{j=1}^{m} ROS_j$	0.07	1.06	2.23	1.07	5.03	1.04	4.94	0.7
SL*	P^W	0.065			0.478		0.206		0.142
PG**	PGAP	(0.9	935)	0.:	522	0.2	794	0.8	858
2. Return on equity (percent)	$\sum_{i=1}^{n} ROE_i, \sum_{j=1}^{m} ROE_j$	0.16	3.56	6.32	4.35	11.68	4.26	12.56	2.80
SL*	P^W	0.045			0.689		0.364		0.223
PG**	PGAP	(0.955)		0	<i>311</i>	0.0	536	0.2	777
3. Profit to assets (percent)	$\sum_{i=1}^n p_i^a$, $\sum_{j=1}^m p_j^a$	0.08	1.60	2.94	1.66	6.22	1.68	6.08	1.12
SL*	P^{W}	0.048			0.562		0.271		0.185
PG**	PGAP	(0.9	952)	0.438		0.2	0.729		815
 Profit per capita (in 1000 HUF/capita) 	$\sum_{i=1}^{n} p_i^{emp}, \ \sum_{j=1}^{m} p_j^{emp}$	6.5	63.9	277.8	83.0	777.2	92.8	868.4	64.8
SL*	P^{W}	0.102			0.299		0.119		0.075
PG**	PGAP	(0.8	898)	0.701		0.881		0.925	
5. Labour productivity (in million HUF/capita)	$\sum_{i=1}^{n} prod_{i}^{emp},$ $\sum_{j=1}^{m} prod_{j}^{emp}$	9 431.6	6 021.5	12 434.1	7 772.1	15 441.8	8 949.5	17 569.5	9 264.5
SL*	P^W		0.638		0.625		0.580		0.527
PG**	PGAP	0.3	362	0	375	0. 4	420	0. 4	173
6. Own capital intensity (percent)	$\sum_{i=1}^{n} e_i, \sum_{j=1}^{m} e_j$	47.34	44.98	46.62	38.07	53.26	39.55	48.39	40.07
SL*	P^W		0.950		0.816		0.743		0.828
PG**	PGAP	0.0	050	0.	184	0.2	257	0.1	72
7. Share of export sales (percent)	$\sum_{i=1}^{n} exp_i, \sum_{j=1}^{m} exp_j$	18.28	17.12	22.56	17.35	25.36	18.92	24.66	17.33
SL*	P^W		0.936		0.769		0.746		0.703
DC++	DC (D				1			0.297	

Performance gap between foreign

(Continuation.)												
		1995		1996		1997		1998				
Indicators/Elements of performance gap	Formulas	Foreign	Domestic	Foreign	Domestic	Foreign	Domestic	Foreign	Domestic			
			majority owned companies									
8. Asset efficiency (percent)	$\sum_{i=1}^n r_i^a, \ \sum_{j=1}^m r_j^a$	110.5	150.9	131.8	155.0	123.6	162.2	123.0	160.3			
SL*	P^W	0.733		0.850		0.762		0.767				
PG**	PGAP	(0.267)		(0.150)		(0.2	238)	(0.233)				

* SL – Standardised level of weaker group. ** PG – Performance gap.

Note: the values of PGAP in parenthesis indicate the superiority of domestically owned group.

Domestically owned food processors face three main options as far as their future is concerned:

1. Catching up; in other words it is the alternative of survival. It is a function of initial level of development but to a certain extent it also depends on industrial affiliation. Those domestic companies may enter the group of up-comers that will narrow the performance gap with the application of state-of-the-art technology and modern business techniques. Capital for the development will hardly be available from own resources, it will need to be mobilised in the domestic or international capital markets. Domestically owned companies may develop competitive advantages by two ways: one is product differentiation, and meeting uncommon or specific consumer needs; the second way is special market strategy in a geographic sense, exploring the white spots of Hungarian market, or specialising in export markets.

2. Falling behind. Companies utilising outdated equipment and management methods, and restrained marketing strategies will inevitably be forced on the way of dropping back. These companies would have typically similar product mix to that of their large foreign competitors; they lack resources for development and access to financing channels.

3. Middle alternative. The middle alternative would involve co-operation or collusion with large competitors. It is possible only for some companies with special status in given industries. Large competitors may need co-operating companies because of market distribution or other regional reasons. Middle alternative has a very limited applicability. Its outcome is risky, since company acquisitions may soon cease the independence of the smaller partner in any strategic alliance.

4. INDUSTRIAL IMPACTS OF OWNERSHIP STRUCTURE

The impact analysis of foreign ownership ends with unveiling industry-specific tendencies. The foreign ownership share in the registered company capital represents ownership structure (OSTR). The value of variable OSTR ranges from 0 to 1, this way it expresses the division between foreign and domestic ownership. The impact of

ownership structure is estimated in the case of six corporate performance indicators with descriptive regression analysis:

$$PER_i^j = a_0 + a_1OSTR_i + \varepsilon$$
,

where

 PER_i^j is the j^{th} corporate performance indicator in the i^{th} industry,

 $OSTR_i$ is the variable of corporate ownership structure in the *i*th industry.

The following six corporate performance indicators were used to measure industryspecific impacts: the categories of sales revenues, profit, export sales, investments, labour productivity and asset efficiency. Estimations were run in all 12 industries, where the number of observations allowed such calculations. Owing to the nature of OSTR variable, the positive sign of estimated parameters indicate a larger impact – or in other words the advantage – of majority foreign owned companies, while negative values signify a bigger effect – or advantage – of majority domestically owned companies in the case of the specific indicator.

Based on the calculations so far in the article, the superiority of foreign owned companies is anticipated in the first five performance categories, while the advantage of domestically owned companies is more probable in the field of asset efficiency. Table 6 shows the sign of estimated parameters of OSTR variable in the cases of various indicators and industries. The findings do verify the anticipations, the superiority of foreign owned companies can be declared overwhelming with the exception of asset efficiency.

Table 6

Industries Performance indicators	Meat	Poultry	Fruit and vegetable	Vegetable oil	Dairy	Milling	Feed	Bakery	Confectionery	Distilling	Beer	Soft drinks
Sales revenues Profit Export Value of investments	+ + +	+++++++++++++++++++++++++++++++++++++++	+++++++++++++++++++++++++++++++++++++++	+++++++	+ - + +	+++++	+++++++++++++++++++++++++++++++++++++++	+++++++	+++++++++++++++++++++++++++++++++++++++	+++++++++++++++++++++++++++++++++++++++	+++++++++++++++++++++++++++++++++++++++	+ + +
Labour productivity Asset efficiency	+ -	-	+ -	+ -	+ -	+ -	-	-	+ -	+ -	+ -	+ -

The impact of ownership structure on selected corporate indicators in the food processing sub-sectors

The detailed explication of industry-specific disparities in the corporate indicators is based on the results of regression analysis in the Appendix.⁸ The influence of foreign

⁸ Results also reveal the fact that the superiority in the case of several industries and indicators is statistically not significant. In certain instances, low R^2 are attributable to the fact that the relations measure the impact of one single variable, the ownership structure. The current research did not strive for the expansion of the model. The purpose of the estimates was to map the influence of the two major ownership categories.

ownership on *sales revenues* is significant in all industries with the exception of milling and baking, where foreign ownership is initially low.

The *profit* category shows a less pronounced impact of the foreign ownership, real significant influence can only be detected in the vegetable oil and feed industry as well as in the manufacturing of beverages. Results again verify the fact that foreign companies soon adapted to the Hungarian conditions and they do not necessarily display the full amount of profits. Foreign ownership determines the development of profits in a positive way, the only exception is dairy industry. Most probably industry concentration and fierce competition for market shares deteriorated the profits of foreign owned companies; this is why the fact of domestic ownership itself may result in higher profits than foreign ownership.

Export sales inform about the unequivocal superiority of foreign owned companies. The fact of foreign ownership presumes more intense exporting activities in every industry, most significantly in the poultry, vegetable oil, dairy, grain processing, confectionery and brewing industries.

The result in the case of *value of investments* also refers to the strong activity of foreign owned enterprises. Among the individual industries, the investments of foreign owned companies are worth highlighting in the vegetable oil and feed industries as well as in the manufacturing of beverages.

The explanatory power of ownership structure in the field of *labour productivity* and asset efficiency is scarcely significant. Foreign owned companies tend to be more productive than their Hungarian rivals in the entire food processing, but principally in the dairy and beer industries. Exceptions are the poultry-, feed-, and bakery industries, where domestic ownership is the labour productivity increasing factor.

The influence on asset efficiency is mostly insignificant, although the sign of the parameters indicate the positive impact of Hungarian ownership in every industry. The result is not at all surprising, what is more, it is in compliance with the respective calculations of earlier studies about the entire set of Hungarian enterprises. *Major* (1996) reported the advantage of domestic ownership for the return on fixed assets. *Szanyi* (1998) explained the phenomenon with the age and composition of assets, which differ considerably at the foreign- and domestically owned companies. The results of the current calculations lead to the conclusions that the same patterns prevail also in food processing; the aggregate data of asset efficiency proved the tendency for the entire food processing industry (see Table 5).

The regression analysis in the individual food processing industries verified that foreign ownership has an influence on corporate performance. This impact is insignificant in the majority of the cases, but owing to the nature of the OSTR variable, the positive or negative sign of its estimated parameter means the better performance of either one of the ownership types. The results of calculations unveiled the advantages of foreign ownership in the case of most industries. The superiority of foreign owned companies is especially strong in the vegetable oil, dairy and beverages manufacturing sub-sectors. Hungarian owned companies appear to be competitive in the grain and poultry processing sub-sectors.

5. CONCLUSION

The objective of the article was to analyse the impacts of foreign investments in the Hungarian food processing. Subsequent to corporate restructuring and privatisation in the food industry, a pronounced disparity emerged between the foreign owned and domestically owned company groups in the second half of the 1990s. The majority-foreign owned enterprises enjoy unequivocal superiority over the majority-domestically owned ones in most indicators of corporate operation and performance.

The dynamic analysis of performance gap enlightened the opening tendency of corporate performance gap. Between 1995 and 1998 the Hungarian owned food processors could not reduce their lag. The dominance of foreign owned companies prevails also on the level of individual industries with the exception of poultry industry and the entire grain processing chain.

The superior corporate figures of foreign owned companies translate into constantly improving performance of Hungarian food processing. The calculations suggest a definite overall positive impact of foreign capital in the industry.

Hungarian ownership appears to play an overwhelming effect on asset efficiency, although it is a sign of worn out fixed assets. The phenomenon coupled with low investment activities casts an ominous shade on the future of Hungarian owned food processors. Nevertheless, catching up is in principle still a relevant option in the present conditions and framework. After Hungary's potential accession to the EU, the current opportunities will most probably diminish.

It is the responsibility of domestically owned food processors, how much they utilise and take advantage of the spillover effects of FDI. Economic policy may alleviate the size-based disadvantages of domestically owned enterprises with dedicated supportive policy to small- and medium-scale enterprises and permanent requirement and incentives for efficiency. The banking sector and capital markets can provide a solid ground for more investments.

These can contribute to the successful development of domestically owned processors. In order to catch up to the high-performers, they have to be committed to state-ofthe-art technology, perceptive to modern management techniques and risk-takers to implement new investments. Developments should be made on the markets of particular product groups, which are driven by stable or growing consumer demand, and where there is reasonable room for expanding processing capacities.

APPENDIX

The impact of ownership structure on corporate performance in the Hungarian food processing

in the Hungarian Jood processing													
Variables	Meat	Poultry	Fruit and vegetable	Vegetable oil	Dairy	Milling	Feed	Bakery	Confectionery	Distilling	Beer	Soft drinks	
	Sales revenues												
Constant (a_0)	0.6947	1.4713	0.4854	0.0018	1.3360	0.7192	0.6811	0.1132	0.0794	0.1496	-0.0110	0.0340	
OSTR (a_1)	2.8660	11.843	1.2173	7.8600	3.7918	0.1560	2.9530	0.3281	2.8666	2.8291	7.0963	4.5054	
R^2	0.063	0.127	0.083	0.131	0.132	0.001	0.126	0.032	0.139	0.285	0.414	0.237	
	(Continued on the next page.)												

											(Contin	nuation.)		
Variables	Meat	Poultry	Fruit and vegetable	Vegetable oil	Dairy	Milling	Feed	Bakery	Confectionery	Distilling	Beer	Soft drinks		
	Profit													
Constant (a_0)	0.1939	1.2609	0.0045	-0.0061	1.1464	0.0394	0.0238	0.0017	-0.0519	0.0126	-0.0831	-0.1888		
OSTR (a_1)	5.1056	5.2609	0.0407	0.9730	-1.2735	0.5737	0.3943	0.0215	4.6303	1.1273	8.8279	6.6215		
R^2	0.044	0.015	0.007	0.121	0.005	0.001	0.196	0.018	0.059	0.414	0.128	0.102		
	Export													
Constant (a_0)	0 1502	0 4684	0 1948	-0.0136	0.0702	0.0394	0.0212	0 0004	-0.0037	0.0234	-0.0029	0.0277		
OSTR (a_1)	1.1358	5.3645	0.7117	2,7982	0.5758	0.5737	0.5433	0.0723	0.8066	0.1842	0.5623	0.4044		
R^2	0.057	0.133	0.079	0.126	0.135	0.104	0.178	0.053	0.149	0.045	0.267	0.099		
					1	/alue of in	ivestment	s				1		
Constant (a_0)	0.0052	0.0116	0.0098	0.0017	0.0125	0.0057	0.0008	0.0009	0.0036	-0.0012	0.0003	-0.0031		
OSTR (a_1)	0.0242	0.0717	0.0135	0.0204	0.0779	-0.0046	0.1260	0.0205	0.0096	0.3082	0.0953	0.2169		
R^2	0.047	0.073	0.015	0.166	0.072	0.003	0.351	0.030	0.033	0.390	0.207	0.124		
]	Labour pr	oductivity	/						
Constant (a_0)	14.970	16.637	11.486	10.140	13.341	11.081	25.297	5.395	4.967	7.578	2.282	6.650		
OSTR (a_1)	4.327	-5.547	1.1293	14.948	20.127	58.095	-2.025	-712	6.189	26.156	26.783	7.006		
R^2	0.002	0.003	0.030	0.035	0.119	0.098	0.000	0.000	0.064	0.037	0.192	0.073		
					-			-						
		1		1		Asset ef	ficiency			I				
Constant (a_0)	5.1	4.8	1.9	2.4	3.4	2.1	3.4	3.3	2.5	1.3	1.5	2.5		
OSTR (a_1)	-3.8	-4.2	-0.3	-1.1	-1.4	-0.9	-2.2	-0.5	-0.8	-0.7	-1.0	-1.4		
Rž	0.054	0.019	0.003	0.008	0.062	0.024	0.038	0.001	0.012	0.007	0.018	0.053		

Note. Estimated parameters and coefficients of determination.

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