

THESES OF THE PHD DISSERTATION

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**REVENUE RELATIONSHIPS OF THE ACTORS OF
POULTRY (BROILER) AND SWINE PRODUCT PLANES**

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1. OBJECTIVES AND PRELIMINARIES OF THE RESEARCH

In the past 50 years so great changes took place in the agriculture and food industry of the world that previously took several centuries. Agricultural production multiplied, as an effect of technical advancement and the so called green revolution, and parallel to this the population of the world also surged. According to various international organizations (OECD, FAO) the population explosion shall continue further. In spite of significant growth in agricultural production, the problem of equally distributed alimentation remains unsolved, as a result of this in the developed part of the world (USA, EU) food overproduction is notable, whereas in underprivileged regions thousands of people die of starvation even in 2010.

Our country joined the EU on 1st of May 2010 under the conditions briefly described above. Our accession provided possibilities besides agriculture and food industry for other sectors, to gain new markets. Subsidies received from the EU opened up new perspectives for most sectors of the national economy. This was much needed since the Hungarian agriculture had not got over the problems caused by the change of system of 1989-1990 (new structure of landholding, and operation, privatization, unfortunate system of compensation etc.). beside these the significance of agriculture and food industry sectors in national economy diminished (by 2008 the share of agriculture of GDP is 3,7%). the domestic plant production could maintain its competitiveness on the markets of the EU – first of all due to the role of cereal oleaginous protein and fibrous plants - mainly because of subsidies. The significance of animal breeding diminished so that by 2008, our position in pork meat changed from net exporter to net importer.

Experts researching the state of our agriculture – among them Balogh (2009) – warns us, that the 5 years since accession is too short a period to clearly evaluate the effects of accession.

Making consequences we have made several references on positive or negative effects of Hungary's EU accession, but the present state of matters cannot be solely explained by the effects of accession.

The subject of our research was the thorough analysis of the pork and poultry more nearly broiler chicken product planes which are the backbone of domestic meat industry. The choice of topic was motivated by the fact, that both sectors fall within the so called soft regulation of the Common Agricultural Policy, the regulation of the production of both sectors being managed – through animal fodder consumption - by regulation of COPF plants. The accessible data of the past 5 years (2004-2008) has enabled us to perform analyses and based on these to draw conclusions regarding agricultural production within that broiler chicken and pork production and the sector of food industry (meat production). Our basic aim was the examination of the fodder consuming sectors (poultry and pork) more and more in crisis, with the aim of getting a complex picture of the situation of actors of the two planes regarding income and competitiveness. It was among our goals to discover the factors which can chiefly influence the competitiveness of both examined sectors both on national and regional levels. The aim of this work to present and examine in the network of interrelations the levels of the poultry (broiler) and pork meat product planes according to the following:

- the present economic and revenue related position of farms producing slaughter raw material (producing on national level and in the Western Transdanubian Region)
- the present state and the changes of the last 5 years in the domestic food industry (poultry and pork slaughter and processing) presented by the economic analysis of two significant processing plants of the Western Transdanubian region
- the role of domestic retail in food economy in price structure and sales of products of meat industry
- the revenue relations at the actors of both product planes (producers of raw materials, processing units and distributors)

2. MATERIAL AND METHODOLOGY

Subject related research was conducted at the Department for Agroecology of the Faculty of Agricultural and Food Sciences of the University of West Hungary, between 2007 and 2010. The financial background was provided by the Markovszky Ingatlanhasznosító Zrt.

To the theoretical support of the thesis databases of domestic research and analytic institutions (Központi Statisztikai Hivatal - KSH, Agrárgazdasági Kutató Intézet - AKI, GfK Hungária Piackutató Intézet, Kopint-Tárki Zrt., AC Nielsen Piackutató Kft.) were used. Several instances of data were provided by the Poultry Product Council, and the Slaughter Animal and Meat Product Council.

Since our country has been a member state of the EU since 2004, the basic foundation of which among others is the free flow of products, it is necessary to present the poultry and pork sectors of other EU member states and other leading countries of these markets alongside the domestic situation. Presentations of international trends were based on databases and the articles of experts of United States Department of Agriculture (USDA), European Commission Eurostat, Association of Poultry Processors and Poultry Trade in the EU countries (AVEC), Swine Progress, Poultry Sciences.

Preparing the thesis, the examinations performed, were divided into the following groups:

- Producer level (production of slaughter raw material)
- Processing unit level (slaughter, splitting, and processing)
- retail level (sales)

In the analysis of the producer level only the production of slaughter raw material was dealt with, since only this phase of the vertical product plane can be regarded as critical in aspects of economy and production. The thesis does not deal with the questions of fodder production, production of breeding material, and with other levels belonging to the whole product plane.

At the examination of the level of processing we present the state of food industry and within that of meat industry, the main changes of the past few years, furthermore through the example of two processing plants functioning in the western Transdanubian Region we examine the state of the meat industry of the Region, and its part in national production.

At retail level, the thesis presents the structure and relationships of sales, their role in the formation of retail prices, and the habits of consumers

2.1. Methodology of the economic analysis used at the raw material producing (slaughter raw material) level

Numerous consultations with practical experts and experts of product councils, that in both sectors the grave financial situation of actors of both sectors and black market economy gaining more ground resulted in general lack of trust, that prevents economic analysis based on realistic data.

As a result of the factors listed above we tried to uncover the general relationships, by the method of making personal and telephone call interviews. We did not ask for production data during interviews, but about general mood of entrepreneurs, the effectivity of production, critical points of sectors, the levels of satisfaction, and on motivation to work. The contact data of the interviewed subjects were provided by product councils.

Choice of the interviewed subjects was performed by taking a random sample of the producers working in the Western Transdanubian Region. In selection of the sample 12-12 farms were selected, 10 pork and 8 chicken farmers agreed to participate in the interviews so the number of participants were reduced to 8-8 in both sectors to facilitate analysis.

From the part of swine farms interviews were performed with 8 producers (4 independent farmers, and 4 CEO-s of companies, and the CEO of an organization active in the field of acquisition and sales. In the broiler chicken industry the interviews were performed with the same questions with 8 producers,

In order to receive data regarding the real income status of poultry and swine farms, data was taken from the test-plant system kept up by the Agrárgazdasági Kutató Intézet (AKI)- The network of test-plants has built in mechanism to guarantee the quality and realism of data. Since 2001 the network has a full national coverage, with more than 1900

farms in 19 counties providing anonymous financial, income and natural data for AKI.

The income and capital strength status and efficiency of farms were calculated based on financial data. The indicators were calculated on both regional and national level, for the years of 2004 and 2008 separately for farms active in the swine and broiler sectors.

Calculation of indicators was summed up in Table No 1.

Table 1.

Financial indicators analysed in the thesis, their calculation and definition

Name	Formula	Explanation
Evaluation of financial situation		
Rate of liquidity	$\frac{\text{current assets}}{\text{short term liabilities}}$	defines the rate of the company's short term working capital and short term liabilities
Quick rate of liquidity	$\frac{\text{currents assets} - \text{stocks}}{\text{short term liabilities}}$	A refined version of the rate of liquidity. The value of stocks is deducted from the value of current assets...
Indicators of capital structure		
Rate of debt	$\frac{\text{liabilities}}{\text{total assets}}$	It shows how great a percentage of assets are covered by liabilities.
Net debt	$\frac{\text{liabilities} - \text{demands}}{\text{total assets}}$	It shows how great a percentage of assets are covered by liabilities corrected by the deduction of demands.
analysis of profitability		
return of assets	$\frac{\text{net income}}{\text{total assets}}$	It shows us the extent of revenue producing capacity of assets.
return on Equity	$\frac{\text{net income}}{\text{own capital}}$	It shows us to what extent the net income is capable of increasing own capital.

return on sales	$\frac{\text{net income}}{\text{net sales}}$	It correlates the net income of a company to the net sales.
sales on work output	$\frac{\text{net sales}}{\text{work output}}$	It shows the correlation between work time and net sales.

Source: www.penzugysziget.hu

Besides the examination of methodology results and experiences of participation in forums conferences, and interviews consultations and talks with CEOs of companies and leaders of professional associations were also used

A problem tree was constructed based on conclusions derived from the analysis of indicators and the help of interviews that presents in a comprehensive form the factors of competition drawbacks of domestic poultry and swine farms.

2.2. Methodology of the economic analysis used at the processing unit level

With the detailed analysis of meat industry we used the database published by AKI in 2010 (title: Names and addresses of food industry organizations using double entry bookkeeping as of 31st of May 2008.) the companies were ranked according to the net sales income of 2007 with listings of company seat and range of activities (according to the general order of activities). The database includes 352 companies of the meat industry belonging to the activity category of meat processing and curing (code: 15.1). 81,2% of companies listed in the database had data regarding net sales income of 2007, so this was used to set up the list, and companies of the Western Transdanubian Region were highlighted.

Based on interviews with slaughter raw material producers and processing units with regard to the consultations with experts of product councils the compilation of competition drawbacks of the processing unit level was compiled.

In order to receive more detailed information on the meat sector, major structural and ownership changes of the past few years were drafted by the method of document analysis, thus presenting the sectoral concentration present in the market situation. Database of our analysis was based on the materials of Agrár Európa. The listing of meat producing companies is not complete, only those companies and holdings having major influence on the domestic market are presented in it that underwent significant changes.

The leading plants (with an annual income over one billion Forints) of the Western Transdanubian Region were selected, and randomly one poultry and one swine processing plant were selected. Based on the example of the two companies the economic situation of the companies of the Region was presented using the financial and revenue indicators used at the presentation of the level of producers.

Company data, and tables and charts presenting market and financial environment were presented by the Opten Informatikai Kft., all data was used with permission of the company.

2.3. Methodology of the economic analysis used at the retail level

At the presentation of the level of retail, we processed secondary data thus presenting the gaining of ground of retail chains, and the effects of the spreading of hyper and supermarkets. In the analyses the essays and reports of KSH and AC Nielsen were used.

After the general presentation follows a detailed analysis of main financial and revenue indicators of major retail chains. The results were compared with those of poultry and swine processing companies to present the differences the economic differences of the two levels. The database used was the open access database on the webpage of Világgazdaság, out of which companies close to the subject of the present thesis were selected.

3. RESULTS

3.1. Financial indicators of the production of slaughter material

As results of empiric research main factors of the competitive drawbacks of the production of slaughter raw material were uncovered, that can affect directly or indirectly the revenue producing capacity of the farms examined. The profitability and the changes of that in the cases of poultry and swine farms are presented beside the method of interviews are presented by financial indicators of 2004-2008 both in regional and national comparison.

The indicators provide detailed information on the real economic situation of the sector, and further point out those factors, with the improvement of which the effectivity of the production of companies can be improved, and thus the risk of investors reduced.

To the analysis of the profitability of company activities data of the annual reports were used besides those of the balance sheet. Profitability is expressed by single categories of revenue. Special attention was paid to profitability in economic analysis. Table 2. Sums up the calculated results, which form the basis of stating new and novel results.

Table 2.

Financial indicators of companies producing slaughter raw material

	Broiler chicken				Swine			
	National		Regional		National		Regional	
	2004	2008	2004	2008	2004	2008	2004	2008
Liquidity rate	1,48	1,46	2,89	3,43	2,43	1,63	4,48	5,94
Quick rate of liquidity	0,9	0,98	1	2,32	0,96	0,62	1,21	2,83
Debt indicator (%)	48,8	64,8	57,1	73,4	57,8	39	41,7	49,6
Net debt	0,71	1,21	1,19	2,46	1,15	0,43	0,63	0,76
Net income to work production (Ft.)	11,45	26,77	27,22	60,57	8,04	13,31	16,93	6,67
return on assets Ft/100Ft	-0,82	4,78	2,99	-3,49	-0,81	-1,21	5,09	-0,2
return on equity Ft/100Ft	-1,7	13,9	7,1	-20,9	-1,9	-2,1	20,8	-0,6
return on sales Ft/100Ft	-0,6	2,8	1,4	-3,9	-1	-1	19,1	-0,9

3.2. Economic situation of meat processing level

In the next section of our research we are dealing with the sectors of production of meat and poultry products, poultry meat curing and meat processing and meat curing (according to the categorization of activities 1511, 1512, 1513).

Similar to the level of raw material producers, interviews were used to state, which factors are thought to be most critical with regard to efficient production by experts. Besides discovering factors critical to profitability, an economic analysis of meat processing units of the Western Transdanubian Region was compiled. The companies were ranked according to the sales income data published by AKI, and poultry and pork processing companies were selected the annual income of which exceeded 1 billion Forints. By the example of these the economic situation of the processing companies of the region are presented in the year of 2008.

To present the changes during the period, the data of 2004 is listed; this is followed by the comparative analysis of the two periods. The results of these were compared to the national data of the relevant sectors, which enabled the evaluation of the examined companies on national level.

The calculated results are presented in table 3.

Table 3.

**Financial indicators of selected meat processing companies of the Western
Transdanubian Region**

	poultry processing		swine processing	
	2008	2004	2008	2004
Liquidity rate	0,7713	0,7943	0,9761	1,582
Quick rate of liquidity	0,6833	0,6982	0,6399	1,164
Debt indicator (%)	78,9	80,3	44,29	52,03
Net debt	6,027	5,71	8,6194	6,49
Net income to work production (Ft.)	-10,88	-5,7	0,25	0,49
return on assets Ft/100Ft	-71,41	-74,04	0,46	1,09
return on equity Ft/100Ft	-3,45	-2,07	0,14	0,35

3.3. Economic analysis of the retail level

Regarding the low level of willingness to cooperate the representation and lobbying potential is also low. So the supplying producers of food products are vulnerable to the retail chains. The comparative analysis of accounting data shows the well marked differences between single processing units and retail chains, which provide a basis for the lobbying abilities of retail chains

Beyond the lobbying ability the chains influence the function of the actors of food industry with other factors as well. During our research we have collected the factors resulting in competitive benefits, which increase the defining role of the retail level.

According to table 4 it can be stated, that retailers are in a comparatively advantageous situation compared to processing units

Table 4

Financial indicators of major retail chains and meat processing companies in 2007

	Own assets (billion Ft)	Sales (billion Ft)	Revenues (billion Ft)	profitability correlated to assets (Ft)	profitability correlated to sales (Ft)
Sága	12.071	37.039	1.33	12,93	4,21
Pick	17.327	58.826	3.76	20,36	6
Herz	2.189	8.827	0.108	-6,17	-1,53
Debreceni Hús	6.863	19.758	0.316	4,43	1,54
Auchan	38.729	208.782	0.684	-3,7	-0,69
Penny Market	28.229	130.841	2.758	13,05	2,81
Spar	29.469	261.673	5.654	14,74	1,66
Tesco	250.783	534.213	10.696	3,94	1,85

4. SUMMARY

Based on our research we can see that domestic food industry has been loosing ground since the change of political system of 1989-1990. Not even our EU accession could reverse this negative tendency. Especially the swine and broiler chicken sectors are facing grave problems that are indicated by the factors of the recession of livestock, liquidated processing plants, and the influx of imported meat.

In the thesis - according to the aims set down in the introduction – we present the major factors causing setbacks in competitive abilities on the level of the producers, which especially make the profitable production of domestic farms harder.

Factors causing major problems are the following:

- low technical level
- low level of capital
- low level of lobbying ability
- high input prices
- peculiar subsidy policies

As result of the above factors first of all single owner farms have stopped production in masses, because they did not have capital reserves to adapt to the new market situation formed by the EU accession. In the past 20 years the food industry underwent changes after the production volume receded, and the profitability of the sector continuously receded. All this was accompanied by gaining ground or imported foodstuff products. In meat industry there have been severe changes in the past period. In the poultry sector around the year 2000 there were great changes, at this time the integrations having a considerable market share – Carnex group, Hajdu Bét – were dissolved. In the area of pork processing there is an ongoing process of centralization going on at the present time, in which processing units lacking capital being dissolved or merge into a holding having a considerable market share.

The following factors prevent the competitive production of domestic food industry especially the meat industry:

- large share of black market
- high rate of value added taxes
- monetary politics
- low level of concentration

The factors mentioned above, many of the leading processing units of domestic meat industry were dissolved.

Retail chains have a major role in setting of prices in the sales of foodstuff especially meat products. This is based on their considerable economic position, definitive role on the market and their business policies. These enable them to realize a profit as well as on consumers as on suppliers.

Regarding the revenue state of the examined product planes it can be stated, that the low profit level of slaughter raw material producers went negative in 2008. The poultry processing sector produced deficits, and the swine processing sector produced marginal profit level. The retail chain examined, used 25-30% price margin on meat products, realized on the side of consumers. Based on these facts we can state, that whereas the retail sales produce profit, the production of slaughter raw material and processing produced deficit in 2008.

5. NEW AND NOVEL SCIENTIFIC RESULTS

1. With examinations performed based on financial indicators of stages of the broiler and swine product plane a novel approach was used to uncover the economic processes. After performing the calculations, a clearer view can be formed of the financial and revenue status of all actors of the product plane.

2. The revenue and competition situation of both meat product planes falling under the same regulation of Common Agricultural Policy have derogated after the years following EU accession, but the extent of worsening of the situation is not the same in the two product planes. This instance shows, that the basically cost (and price) related revenue – from the side of input – is strongly influenced by the prices of fodder, but these changes can not be solely explained by changes in the prices of fodder. Other factors beside the price of fodder (for example, capital and product concentration) also play an important role in the formation of results. These factors are in the relation of both product planes had negative effects especially on the revenue and competition situation of the processing sector.

3. All indicators of revenue production have improved on national level, and the previous indicators showing deficit have turned into positive regarding the chicken meat (broiler) sector in the examined period of five years (2004-2008). Contrary to this several revenue indicators of broiler producers in the Western Transdanubian Region worsened or turned to deficit levels. The values of these indicators show that in this sector the assets value- and capital rate have strong influences on the results or production.

4. The revenue situation of swine stall feeding was under the level of broiler production on both national and regional level, and receded significantly after the years of the EU accession. In this sector not only the revenue indicators have deteriorated, but other economic indicators (liquidity rate, debt indicator) have continuously deteriorated. This is especially true for invested capital in the single product plane stages related to the revenue. This can also explain the large amount of

dissolution among swine farms with low capital level and low level of concentration that has continued after 2008 as well.

5. Meat processing companies in spite of still having a far larger processing capacity than necessary arrived in a more and more vulnerable situation of the retail chains after the EU accession. Due to the low level of capital concentration represented by them they were forced into a price accepting position, and often are unable to realize their costs in their prices. The profitability of the majority of meat processing companies is even lower than the producers of slaughter raw materials, and this position has become worse in the period of the research and also ever since then.

6. LIST OF SCIENTIFIC ARTICLES AND PRESENTATIONS IN THE TOPIC OF THE THESIS

6.1. Scientific articles in Hungarian language published in reviewed periodicals:

TROJÁN SZ. - KOVÁCSNÉ GAÁL K. - TENK A. (2007): A termelés technológia tényezőinek befolyása a brojlersirke – hizlalás jövedelmére. *Animal Welfare, Elektronikus újság*, IV. évf., 3.sz., 1-17. pp.,

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TENK A. - TROJÁN SZ. (2008): A hazai mezőgazdaság együttműködési folyamatainak tükröződése a „Gazdálkodás” folyóiratban I., *Gazdálkodás*, 52. évf., 2008/6. sz., 600-611. pp.

TROJÁN SZ. - TENK A. (2009): A hazai mezőgazdasági együttműködésekéről a „Gazdálkodás” folyóiratban II., *Gazdálkodás*, 53. évf., 2009/2. sz., 188-194. pp.

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TROJÁN SZ. - TENK A. (2010): A hazai mezőgazdasági együttműködésekéről a „Gazdálkodás” folyóiratban V., *Gazdálkodás*, 54. évf., 2010/2. sz., 206-219. pp.

6.2. Scientific articles in Hungarian language currently under publication in reviewed periodicals:

TROJÁN SZ. – VARGA ZS. – KALMÁRNÉ HOLLÓSI E. (2009): Az állati eredetű „helyi termékek” értékesítési lehetőségei, avagy termékpálya röviden. *Animal Welfare, Elektronikus újság*

CSORDÁS S. T. – SZENTIRMAY A. – TROJÁN SZ. (2010): A takarmányárak változásának hatása a pulykahús előállítás integrátorainak gazdálkodására. Gazdálkodás,

POGÁNY É. - TROJÁN SZ. – VARGA R. (2010): Sertéshús termelés színvonala és jövedelmezősége eltérő tartási és takarmányozási körülmények között. Gazdálkodás

6.3. Scientific articles in Hungarian language published and currently under publication in reviewed periodicals:

TROJÁN SZ. – CSIZMADIA M. – CSORDÁS S.T. (2009): The formation and development of forms of cooperation in 20th century hungarian agriculture. Gazdálkodás, Vol. 53. 2009/23. Special Edition, 111-123. pp.

R. MÁRKUS – I. TELL – T. TÓTH - SZ. TROJÁN (2010): Use of rapeseed cake for improving competitiveness in swine production, Acta Ováriensis, UNDER PUBLICATION

6.4 Lectures and presentations in Hungarian language

TROJÁN SZ. (2008): A sertés és baromfihús (brojler) termékpálya szereplőinek jövedelemviszonyai. XI. Nemzetközi Tudományos Napok I-II. Gyöngyös, 2008. március 27-28., 606-611. pp.

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ESSŐSY Á. - TROJÁN SZ. (2009): A fajlagos költségek elemzése a baromfihús termelésben. Gazdálkodásban publikált PhD hallgatók és doktorok II. tudományos konferenciája, Mosonmagyaróvár

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6.5. Lectures and presentations in foreign language

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R. MÁRKUS - I. TELL - T. TÓTH - SZ. TROJÁN (2009): The cost reducing effects of novel feedstuffs in swinefarming in Hungary, MACE conference in International Congress Centre Berlin, 14th – 15th january