

## CHANGES AND PERSPECTIVES OF SLOVENIAN PIG PRODUCTION BEFORE AND AFTER ACCESSION TO THE EU: THE CASE STUDY

*M. Kastelic*

Professional paper

### SUMMARY

*The changes in pig production during the last six to ten years were studied in case of Farne Ihan d. d., the Slovenian pig producer. At the beginning of the period, the company produced 70 to 75 thousand slaughtering pigs per year. At the end of the period the production increased to 150 thousand. As expected, the prices of pigs were reduced during that period. According to the new legislation, the large part of facilities was reconstructed and some environment protection investments were done. The production was improved: the number of weaned pigs per sow per year increased from 19.2 in 1996 to 25.48 in 2006 and reached the Danish average. The percentage of meat was increased in the same period from 52.7 % to 58.6 %. The progress in daily gain and in feed conversion ratio was moderate. To secure the access to the market, the own slaughter facility was bought and reconstructed. For the same reason, the company became shareholder of two meat processing companies. The transition period has not been finished yet. Production results may improve faster than in old EU member countries. Investment cycle has also not been finished yet. More investments, especially in environment protection are needed.*

*Key- words: pigs, Slovenia, accession to EU*

### INTRODUCTION

Slovenian pig production is representing less than half percentage of the common EU pig production. The number of pigs in Slovenia in year 2005 was estimated on 547 thousand (Statistical yearbook 2006, 2006). Only 390 thousand from 730 thousand animals were slaughtered in slaughterhouses. The rest of the pigs were slaughtered on farms for family use.

Pig producers in Slovenia can be divided into three groups. The first group consists of very small producers with 10 or less animals. Animals are sold only occasionally. The next group consists of larger producers on family farms. The pig production is important or sometimes the most important production on the farm. The majority of the farms are still small. Only few farmers keep more than 200 sows or own 500 or more fattening places. The third group consists of five larger enterprises with seven production sites. All production sites, except two, are connected with slaughterhouses – the slaughterhouses own them or vice versa. Five production sites have the whole production cycle. Two of them are producing twelve to thirteen weeks old pigs. Four enterprises are working with contractors. Contractors, mostly small holder farmers fatten pigs from 30 kg live weight to slaughter weight. One company has contractors also for the production of piglets.

After three years of Slovenian membership in the EU, Slovenian pig production is still trying to secure its own position on the market. The Slovenian market is very small and only minor quantities of pork from other EU countries disturb market situation. A lot has been done, but production costs are still relatively high. The industry still needs to invest additional money in the education, genetics, welfare (buildings and equipment) and environment. Most of the future investments will rather increase than reduce production costs. If small family farms find the market and if they are free of debts, they are in short term much less sensitive on low prices than larger companies. They have direct access to market, but they have invested a lot of loaned money and the costs of work have been high. The influence of changed legal and business environment on production parameters on the largest pig production enterprise (Ihan d.d.) in Slovenia is presented in this paper.

## MATERIAL AND METHODS

All the production and financial data used in this study were obtained from the information system of Ihan Ltd., the largest Slovenian pig production enterprise. The company owns three pig production sites, slaughter unit for pigs and participates as major partner in two meat processing plants. The production data have been collected in computerized information system since 1990. Because some data, especially production costs and prices, are classified as corporate secret, the data are recalculated on standardized value.

Slovenian prices were calculated from SIT to EUR by official exchange rates published on the official site of Bank of Slovenia. Data were stored and evaluated with the following programs: Oracle RDMBS, MySQL 5.0 and Microsoft Excel.

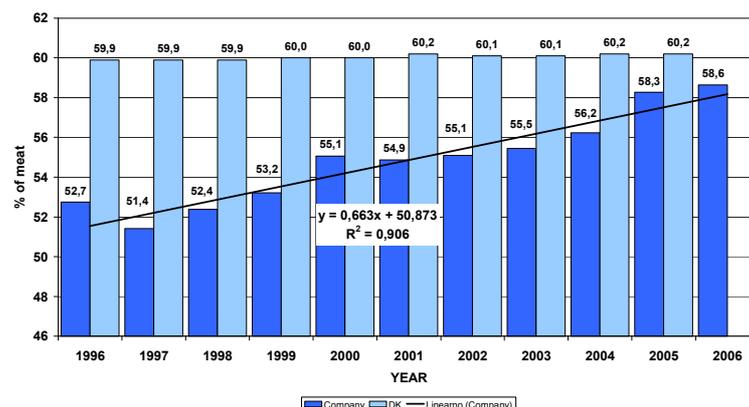
## RESULTS AND DISCUSSION

It was already known in 1999 that Slovenia would join the EU. Ihan Ltd. started to prepare itself on new business environment. It was concluded that the weak points of the company were:

- high production costs comparing to average price in EU,
- welfare and environment protection standards inside the company were not harmonized with the EU standards,
- low quality (eg. meatiness) of pigs, unsuitable production results
- and insufficient market share; the direct access to market was not secured. It was assumed that the slaughter industry would try to transfer its own ineffectiveness on pig producers.

To avoid the influence of weaknesses on the future of Ihan Ltd., the program for the development of the company was prepared.

The meat percentage became a problem first in year 1997, when the payment of pigs started to depend on meatiness. For the first time it became clear how far behind was the meatiness comparing to West European standards. Before 1991 pigs were paid by the amount of meat per live weight. Slovenian pigs were on the average the meatiest in ex-Yugoslavia. Some meat was imported from Eastern Europe where the average meatiness was the same or lower. After the fall of Yugoslavia, the pigs were paid by live weight. In such conditions there was no need to improve carcass quality. After 1997 the meat percentage became the only parameter of quality in Slovenia. There were some attempts to establish some brand marks at the market, but until now they were not recognized as special quality products with higher prices. Due to importance, every producer in Slovenia worked hard on meatiness. The average meat percentage per year of Ihan Ltd. and in Denmark is shown in Figure 1 (The national report..., 1999; The National Committee..., 2000, 2001, 2002, 2003, 2004, 2005).

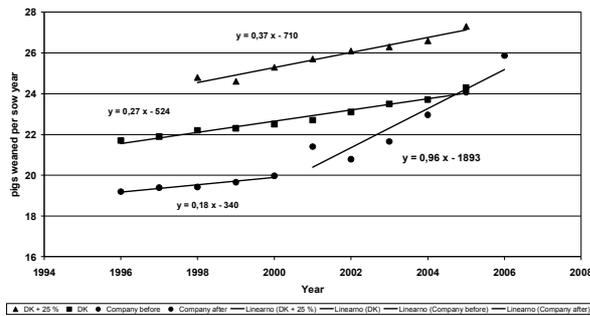


**Figure 1: Average meat percentage from 1997 to 2006: Ihan Ltd. and in Denmark (DK)**

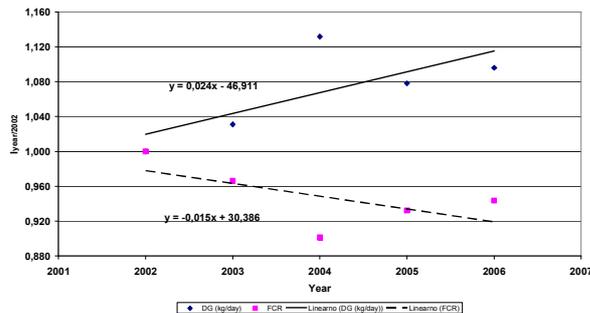
With selection on meat percentage, import of semen from Norway and import of terminal breed boars from UK started in the middle of the nineties. The selection on the basis of performance test was used until the middle of the year 2001, when selection program, based on animal model, was introduced. The job was continued till 2003, where the first boars from Denmark were imported. Selection of the company's own boars stopped in 2004. All the boars are nowadays imported from Denmark. The

import of breeding material had impact on all production traits and not only on meatiness, known for rapid progress.

With so many measures, the increase of meat percentage was successful. Meat percentage increased on the average by 0.66 per year. Higher quality helps to keep the market share, but average price was not influenced by increased meatiness, because higher meat percentage became standard at the market. The importance of other production traits, like reproduction traits, daily gain, and feed conversion has been increasing since year 2000, when the accession to EU became certain. The improving of other production traits is the only real possibility to increase the profitability of production. The costs must be reduced with increased productivity of animals and people. Some representative results from Ihan ltd. are shown in Figures 2 and 3.



**Figure 2. Number of weaned piglets per sow per year in Ihan ltd., in Denmark (DK), and in the best 25 % of the farms in Denmark (DK + 25%)**



**Figure 3. Indices ( $I_{\text{year}/2002}$ ) and estimated linear trends for daily gain and feed conversion ratio in fattening between years 2002 and 2006. Base year is 2002**

At the beginning of the period the average result of Ihan ltd. was 19.2 weaned piglets per sow per year. In that year the average result in Denmark was 21.7 weaned piglets per sow per year. The progress in the number of weaned piglets per sow per year from year 1996 to the middle of the year 2000 (when the company changed production philosophy) was very moderate - 0.18 weaned piglets per sow per year. The average progress in Denmark was at that time 0.27 weaned piglets per sow per year. Following that trend, the difference between Denmark and Ihan ltd. will be increasing. Ihan ltd. will reach the average Danish results from year 1996 in 2010, when the expected average Danish result will be 25.48 weaned piglets per sow per year. Yearly progress in the best quarter of herds in Denmark was as high as 0.87 weaned piglets per sow per year.

The technological process changed in year 2000. The animal model, where the litter size was included, was introduced one year latter. The combination of technological and genetic measures was very successful. An average progress in year 2006 was 0.96 weaned piglets per sow per year and the average results in Ihan ltd. and in Denmark were at the same level in 2005. The progress was even better than in the best quarter of herds in Denmark. Ihan ltd. reached 25.87 weaned piglets per sow per year in year 2006. Due to generation interval, offspring of Danish boars strongly influenced the average result first in year 2006.

The progress in other traits was less successful. An average increase of daily gain was 2.4 % per year. At the same time, the feed conversion ratio decreased by 1.6 % per year. With more contractors fattening the pigs and with more pig losses because of the outbreak of PMWS (circovirus), higher FCR was observed in 2005 and 2006 than in 2004. The rapid increase of number of contractors

decreased the average results, but experienced contactors are more successful than the producer alone in its own facilities.

The arrival of new competitors at Slovenian pig meat market forced Ihan Ltd. to improve the production. The increase was very impressive in the number of piglets weaned per sow and year and in meatiness, where results, comparable with the best European producers, were achieved. The progress was less successful on traits daily gain and feed conversion ratio, where there is still a lot of possibility for improvement. Improved production helps to survive in today business environment. Costs for more improvement are necessary because of the increasing salaries and higher environment protection.

The production units were built by the standards which were in force in former Yugoslavia. There were no standards to protect the animals and the standards for protection of environment were more the subject of discussion with local authorities than the matter of legislation. Basic needs for animals are stated in Directives 2001/88/EC and 2001/93/EC. The minimum space for gilts sows and boars will come in force on January 1, 2013. Prescribed minimum areas per animal and the average areas per animal are shown in Table 1.

**Table 1. Minimum area per animal, actual area per animal and percentage of prescribed area (Directives 2001/88/EC, 2001/93/EC) compared to actual area before accession to EU at Ihan Ltd.**

	Directive 2001/88/EC, m <sup>2</sup>	Ihan Ltd, m <sup>2</sup>	Directive/Ihan d.d.
Gilt after first insemination	1,64	0,80	205,00%
Sow	2,25	0,80	281,25%
Boar	6,00	4,00	150,00%
Piglet to 10 kg	0,15	0,15	100,00%
Piglet 10 do 20 kg	0,20	0,15	133,33%
Piglet 20 do 30 kg	0,30	0,25	120,00%
Fattener 30 do 50 kg	0,40	0,35	114,29%
Fattener 50 do 85 kg	0,55	0,50	110,00%
Fattener 85 do 110 kg	0,65	0,65	100,00%

With exception of two categories, the available areas were too small compared to regulations. The number of animals was by 15 to 20 % too high with regard to available area. Production decrease was not acceptable. The problem was solved in different ways.

- Around 12 thousand m<sup>2</sup> was reconstructed from integrated production to production of 30 kg pigs.
- Some parts of production facilities - special fattening units were reconstructed with minimal investment and the number of animals was reduced.
- The number of breeding sows was reduced because of increased production per sow (Figure 2).
- The surplus of pigs was fed on farms of contractors.

Instead of reduced production by 15 to 20 % per year due to increased area per animal, the production of Ihan Ltd. increased during that period from 120 thousand to 150 thousand fatteners per year. The necessary buildings were provided by contractors. The dispersing of production had long term consequences on profitability of pig production and on environment protection. The main regulation on environment protection against substances in manure is directive 91/676/ECC and Slovenian regulation (Ur. l. RS 35/2001). According to legislation, the quantity of manure from two animal units is allowed to be spread on one hectare of land. Because of the size, all the Ihan Ltd. production units are obligated to implement so called IPPC (Integrated Pollution Prevention and Control) Directive 96/61/EC. The directive must be applied by the end of this year, when the facilities must obtain so called environmental permission.

The most of the buildings, owned by Ihan Ltd., were built using old fashion technology with fully slatted floor, which is not a good solution because of high emission rates in the air. That means that extensive reconstructions of buildings are necessary. One location with 12 thousand m<sup>2</sup> was rebuilt and the second one with 10 thousand m<sup>2</sup> is already under reconstruction and will be finished by the end 2007. The last one with 33 thousand m<sup>2</sup> area needs environmental permission (Directive

96/61/EC) by the end of the year 2011. This exception was a matter of accession negotiations of Slovenia. During the reconstruction, the welfare regulation is also being applied.

The slurry is used in more ways, depending on location. It is used as fertilizer on its own agricultural land. Contractors use the surplus of slurry on their own farmland. Some treatment of slurry is done on the largest location. The biogas unit is producing renewable electric energy and the content of nitrogen is lowered. The last process is reducing the necessary land area needed for application of slurry.

Investments in environment and animal protection are necessary because of legislation. Better environment for animals helps to increase production, but costs are higher than the benefit. The higher costs from those investments must be covered with better production and other rationalizations of production.

The number of pigs, slaughtered in Slovenian slaughterhouses, the number of pigs produced in Ihan ltd. and the market share of Ihan ltd. are shown in Table 2. The number of pigs, slaughtered in Slovenian slaughterhouses decreased after Slovenia had accessed EU, partially because the total production decreased, partially because some pigs were exported to Austria, where they were slaughtered and returned to Slovenian market as meat. In the years 2001 to 2006 the production on Ihan ltd. increased by nearly 100 %. Market share was increased from 15 % to nearly 35 %.

**Table 2. Number of fatteners slaughtered in slaughterhouses in years 2001 to 2003 in Slovenia (SI), produced on Ihan ltd. and market share of Ihan ltd.**

Year	2001	2002	2003	2004	2005	2006
SI	467,383	482,807	476,973	442,870	391,788	409,590
Ihan d. d.	71,755	110,910	127,207	136,289	139,123	140,708
Market share	15.35%	22.97%	26.67%	30.77%	35.51%	34.35%

Ihan ltd. bought two pig production facilities in 2002. Facilities became fully in use in 2003, when rebuilding of one of the two facilities started. The number of produced animals was increased every year.

The company has owned a slaughter house since 2003. The slaughter house was reconstructed and has enough capacities to slaughter and dress all the produced pigs. In years 2005 and 2006 Ihan ltd. became a shareholder in two meat processing plants.

Prices at the market

The fall of average pig prices was expected long before Slovenia joined EU. Before May 1 2004 the internal market was protected. The price of pigs was only indirectly influenced by prices at European or world market. After Slovenia had joined EU, prices of pigs became more dependent on prices in EU. Pig prices calculated as percentage of average price are presented in table 3.

**Table 3. Average prices and prices calculated as percentage of average price of slaughter weight for carcasses in Slovenia (Statistični urad RS), Austria (Statisik Austria) for years 2000 –2006 and for Ihan ltd. for years 2005 – 2006**

Year	Average price			As % average price Ihan ltd. 2000 -2006		
	SI <sup>1</sup>	A <sup>2</sup>	Ihan ltd. <sup>3</sup>	SI	A	Ihan ltd.
2000	1.36 €	1.38 €		93.45%	94.90%	
2001	1.67 €	1.65 €		114.61%	113.46%	
2002	1.44 €	1.31 €		98.74%	90.08%	
2003	1.36 €	1.21 €		93.45%	83.21%	
2000 -2003	1.46 €	1.39 €		100.06%	95.41%	
2004	1.40 €	1.36 €		96.10%	93.52%	
2005	1.47 €	1.40 €	1.38 €	101.39%	96.27%	95.19%
2006	1.49 €	1.46 €	1.46 €	102.27%	100.40%	100.20%
2004-1006	1.45 €	1.41 €	1.42 €	99.92%	96.73%	97.70%
2000-2006	1.45 €	1.40 €	1.42 €	100.00%	95.98%	97.70%

SI<sup>1</sup> = Slovenia; A<sup>2</sup> = Austria; Ihan d.d.<sup>3</sup> = internal prices in Ihan ltd.

The average price in Slovenia was 4 % higher than in Austria. In some years (2000, 2001, 2004, 2005, 2006) the price was nearly the same in both countries, in others (2002, 2003) the difference was much higher. Years 2002 and 2003 were the years of crisis. It is not known what will happen in the following crisis years in Slovenia; because pig prices were high in years 2004 to 2006. The lowest point of price cycle will come in years 2007 and maybe 2008. The most of the pig producers are linked like Ihan ltd. with slaughter industry. The official prices coming from free market where the pigs are not available and higher than transfer prices inside the companies. Those prices are much more like Austrian prices or Ihan ltd. internal prices, shown in table 3.

#### Other measures

Production was reorganized in years 2000, 2001 and 2002. Reorganization had two aims: better quality of work and lower costs of work per produced unit (fattener or piglet). Increased productivity of sows, especially in years 2001, 2002 and 2003 was mostly a consequence of better work. Better quality was not possible without reorganization of work. All employees completed an internal course for reproduction and application of medicaments. New knowledge made possible more economic organization of veterinarian curative and preventive work and of reproduction with much better results. The number of employees was reduced. At the location with new equipment one employee takes care of more than 300 sows with piglets to 30 kg live weight. Further rise of quality of work and productivity of workers is necessary because of growing salaries.

## CONCLUSIONS

Accession of Slovenia to EU strongly influenced Slovenian pig production and Farme Ihan Ltd. The competition from EU countries increased the meatiness on Ihan Ltd.. The process started in the second half of the nineties. Today there are no differences in meat percentage between Slovenia and other EU countries. Most of Slovenian producers, like Ihan Ltd., are linked to slaughter industry. The prices are at the same level as in Austria, they are lower than before EU accession. The amount of employees was reduced and the quality of work was increased. The reorganization of work started in year 2001. Much better reproduction results are the consequence of better work, but also of better genetics. The number of weaned piglets per sow per year in Ihan Ltd. production facilities increased to the average Danish level. The daily gain and feed conversion ratio are improving, but the success is much more moderate than success in reproduction.

The new legislation pushed Ihan Ltd. to invest in environment and animal protection. Investments in animal protection are partially increasing the productivity of animals, while the environment protection has no influence on production results. The new costs must be covered with better production results. The direct access to pig meat market was reached with investment in own slaughterhouses and meat processing plants.

The time period after Slovenia joined the EU was the time of conjuncture and relatively high prices. Forthcoming period the coming time with lower prices, increased salaries and new investments will show, if the applied measures are sufficient to survive in the new economical environment.

## REFERENCES

1. Banka Slovenije. Podatkovne serije.  
[http://www.bsi.si/pxweb/Dialog/varval.asp?ma=I2\\_10\\_AS&ti=2%2E10%2E1%2Ea%2E+Devizni+te%2E8aji+Banke+Slovenije+%2D+povpre%2E8ni+te%2E8aji&path=Database/slo/serije/02\\_fin\\_trgi/03\\_devizni\\_trg/&lang=12](http://www.bsi.si/pxweb/Dialog/varval.asp?ma=I2_10_AS&ti=2%2E10%2E1%2Ea%2E+Devizni+te%2E8aji+Banke+Slovenije+%2D+povpre%2E8ni+te%2E8aji&path=Database/slo/serije/02_fin_trgi/03_devizni_trg/&lang=12)
2. Council directive 2001/88/EC of 23 October 2001 amending Directive 91/630/ECC laying down minimum standards for the protection of pigs. Official Journal L 316, 1/12/2001, p. 0001 - 0004
3. Commission directive 2001/93/EC of 9 November 2001 amending Directive 91/630/ECC laying down minimum standards for the protection of pigs. Official Journal L 316, 1/12/2001, p. 0036 – 0038

4. Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources. Official Journal L 375, 31/12/1991, p. 0001 - 0008
5. Council Directive 96/61/EC of 24 September 1996 concerning integrated pollution prevention and control. Official Journal L 257, 10/10/1996, p. 0026 - 0040
6. Statistik Austria. Statistische Übersichten. 6.3 Gewogene Erzeugerpreise für land- und forstwirtschaftliche Produkte.  
[http://www.statistik.at/statistische\\_uebersichten/deutsch/pdf/k06t\\_3.pdf](http://www.statistik.at/statistische_uebersichten/deutsch/pdf/k06t_3.pdf)
7. Statistical yearbook Republic of Slovenia 2006. 2006. 45: 301-303.
8. Statistični urad republike Slovenije. SI-Stat podatkovni portal. <http://www.stat.si/pxweb/Database/Okolje/Okolje.asp#15>
9. The National Report of pig production, Annual report 1999. 1999: 4-8.
10. The National Committee for pig production. Annual report 2000. 2000: 6-8.
11. The National Committee for pig production. Research and development. Annual report 2001. 2001:6-9.
12. The National Committee for pig production. Research and development. Annual report 2002. 2002:6-9.
13. The National Committee for pig production. Research and development. Annual report 2003. 2003:5-7.
14. The National Committee for pig production. Research and development. Annual report 2004. 2004:5-7.
15. The National Committee for pig production. Research and development. Annual report 2005. 2005:5-7.
16. Uredba o spremembah in dopolnitvah uredbe o vnosu hranilnih snovi in rastlinskih gnojil v tla. Ur. l. RS št. 35-2049/2001

(Received on 27 April 2007 accepted on 6 June 2007)