FINANCIAL SITUATION OF CZECH PIG BREEDERS IN THE PERIOD 2007 – 2013

Špička J.

Institute of Agricultural Economics and Information

Abstract

The aim of the article is to evaluate financial situation of the Czech pig breeders in the period 2007 – 2013. Beyond the global aim, the article also provides a useful tool for financial benchmarking of Czech pig breeders. Financial analysis is based on data from financial statements provided by Bisnode Company. Dataset covers 58 pig breeders, legal persons only. Accounting data are evaluated through financial ratio indicators (profitability, liquidity, capital structure and cash conversion cycle), indicators of labour productivity and investment activity. Results reveal that financial situation of Czech pig breeders is getting better. After long period in loss, pig breeders became profitable in 2012 (return on total assets was 3.6 %) and 2013 (return on total assets was 2.3 %). However, there is a big gap in quality and quality and strategy of financial management between pig breeders in 25th and 75th quartile. Top pig breeders have approximately four times higher labour productivity than the worst quarter on average.
Key Words: Pig breeding, financial analysis, benchmarking, income

Pig breeding has been one of the most threatened sectors in Czech agriculture. It has been the least supported sector within the EU Common Agricultural Policy for a long time since pig breeders do not use much agricultural area under single area payment scheme. In recent years, analytical work has focused mainly on commodity view, rather than a whole-farm view (ABRAHAMOVÁ, BOUDNÝ, 2013; BOUDNÝ, JANOTOVÁ, 2013). Nevertheless, pigs are bred in the Czech Republic either in specialized farms or in mixed type of farming. From the whole-farm perspective, worse financial results of pig breeding in mixed farms can be improved by profitable crop production and other livestock production. For this reason, it is highly desirable to perform an economic analysis of the income level of pig farmers at the whole-farm level.

Financial results of pig breeding are influenced by many factors. Some factors are easier to manage; some factors are more difficult to manage. The former factors include genetics, reproduction, nutrition and management of weaner pigs (VARLEY, WISEMAN, 2000) and breeding efficiency (MCGLONE, POND, 2003; WHITTEMORE, KYRIAZAKIS, 2006; SPENCER, 2010). Best practice in financial management is also one of the essential factors of success (BARRY, ELLINGER, 2010; MUßHOFF, HIRSCHAUER, 2011). The latter risky factors are contagious diseases, price volatility, weather, market difficulties and changes in agricultural policy (HOAG, 2009).

Overall financial evaluation as an impact of above mentioned internal and external factors of competitiveness is needed to get the picture of income situation in pig sector. The aim of the paper is to evaluate financial situation of the Czech pig breeders in the period 2007 – 2013. The period covers both good times and bad times. Moreover, individual farm data enables to measure not only mean but also quantiles of each indicator. So, pig breeders can compute the financial ratio indicators and compare themselves with best ones. The article is a useful tool for pig breeders for their financial management.

The article is organised as follows. After presentation of data and analytical methods, each group of financial indicators is introduced. Comments are devoted to the time development and comparison between the best and the worst group of pig breeders. Besides conventional financial indicators, investment activity and labour productivity is assessed. Article is one of the outputs of the national research project QI 111A166 "Biotechnological processes in reproduction and pig breeding as a tool of the economic growth and competitive advantage".

Material and Methods

A long-term overview (2004 – 2013) of income indicators is available in FADN CZ database. The Farm Accountancy Data Network (FADN) is an instrument for evaluating the income of agricultural holdings and the impacts of the Common Agricultural Policy. According to the European Commission, the main indicators of farm income situation are

- Net Value Added per Annual Work Unit (FNVA/ AWU). FNVA is obtained by deducting total intermediate consumption (farm-specific costs and overheads) and depreciation from farm receipts (total output and public support). When expressed per annual work unit (AWU) it takes into account differences in the labour force to be remunerated per holding.
- Profit per Annual Work Unit (Profit/AWU). Profit is calculated by adding subsidies on investment to FNVA and, on the other, deducting total external factors (interest, wages and rent paid) and the total own factors of the farm (labour, capital and land, excluding interest paid). When expressed per annual work unit (AWU) it takes differences in the labour force into account in what is left at the farm after remunerating all costs.

The financial analysis of the Czech pig breeders in the period 2007 – 2013 is based on data provided by Bisnode Company. Bisnode collects data from balance sheets and income statement over all branches of national economy. The dataset originally covered 74 companies either specialized in pig breeding or with mixed type of farming including pigs and poultry. The final dataset of 58 farms contains only farms that have not cancelled pig breeding till 2013. So, 16 farms cancelled the pig breeding between 2007 and 2013.

Following indicators are used to evaluate whole-farm financial situation of Czech pig breeders (KISLINGEROVÁ, HNILICA, 2008; KISLINGEROVÁ ET AL., 2010). The analysis is based on financial ratio analysis which is suitable for inter-company analysis since it is not sensitive to differences in size of farms (SYNEK, KOPKÁNĚ, KUBÁLKOVÁ, 2009).

A) Profitability ratios indicate how much profit or loss is gained from one unit of assets, equity or sales.
   - Return on Assets (ROA) = Earnings before Interest and Taxes (EBIT) / Total Assets. It is the whole-farm indicator of profitability.
   - Return on Equity (ROE) = Net income (i. e. after interest and taxes) / Equity. If equity is negative as a result of debt overburden, ROE is not available. It is appropriate indicator for shareholders.
   - Return on Sales (ROS) = Net Income (i. e. after interest and taxes) / Total Sales. It indicates how much net income was generated from one unit of sales. The indicator is also known as profit margin.

B) Capital structure indicators measure the percentage of a company's assets that are provided via debt or equity.
   - Debt-Equity ratio (D/E) = Total Debt/Equity.
   - Debt ratio (DR) = Total Debt/Total Assets.
   - Financial Leverage (FL) = Total Assests/Equity.

C) Liquidity ratios express a company's ability to repay short -term creditors out of its total cash
   - Current Ratio (L3) = Current Assets/Current Liabilities.
   - Acid Test Ratio (L2) = (Current Assets – Inventory)/ Current Liabilities.
   -Cash Ratio (L1) = Short-term Financial Assets/Current Liabilities.

D) Indicators of cash conversion cycle indicate how long takes the cash conversion cycle. This metric looks at the amount of time needed to sell inventory, the amount of time needed to collect receivables and the length of time the company is afforded to pay its bills without incurring penalties.
   - Days Inventory Outstanding (DIO) = Inventory*365/ Total sales.
   - Days Sales Outstanding (DSO) = Accounts Receivable*365/Total sales.
   - Days Payable Outstanding (DPO) = Accounts Payable*365/Total sales.

E) Other financial ratios
   - The Share of Net Working Capital in Total Assets (NWC/TA) = (Current Assets – Current Liabilities)/ Total Assets
   - Labour Productivity = Value Added per Employee. Value added is calculated as follows: (Sales of goods – Cost on goods sold) + (Sales of production – Cost of sales).
   - Investment activity = (Long-term $assets_t$ + $Depreciation_t$ - Long-term $assets_{t-1}$)/Long-term $assets_{t-1}$

In order to make benchmarking of financial indicators within the branch, results of the financial analysis present mean, median, 25th (bottom in case of MAX-indicators, top in case of MIN-indicators) and 75th percentile (top in case of MAX-indicators, bottom in case of MIN-indicators).

Table 1 presents description statistics of pig breeders in the sample provided by Bisnode company.

Table 1. Basic description statistics of the sample in the period 2007 - 2013

Statistic	Total assets (th. CZK)	Equity (th. CZK)	Total sales (th. CZK)	Share of sales from pig production	Number of employees
Mean	144,353	69,181	118,603	65.9 %	55
Standard deviation	142,518	80,222	151,405	43.6 %	41
75th quartile	178,752	87,844	138,428	100 %	75
Median	112,178	52,670	81,505	100 %	46
25th quartile	62,271	15,898	36,573	12.3 %	22

Source: Author's calculation

Results

Table 2 provides a long-term overview on income situation of Czech pig breeders. It includes FADN indicators FNVA/ AWU and Profit/AWU.

Since 2004, income of Czech pig breeders has experienced hard times in 2007-09 and 2011 when they mostly generated loss. After that, the situation has turned for the better since 2012. The overall income is small relative to other types of farming. However, the production of pig farms covers all specific costs (which mainly consist of feedstuffs) and farming overheads (machinery and building costs, energy, contract work, and other direct inputs) unlike other types of farming which are more supported by CAP (e. g. cattle breeding). The share of current subsidies in total revenues is small since the pig breeding is not supported by the Common Agricultural Policy as other types of farming. From the market point of view, the income is influenced by relations between sales price of pork meat and purchasing price of feedstuffs. Table 3 informs about development of profitability indicators in the period 2007 – 2013.

ROA indicator measures the whole-farm profitability. It quantifies how much profit before interest and taxes was generated from total assets employed on farm. The mean

ROA was negative between 2007 and 2010. The chief cause of loss was unfavourable relation between value added and staff costs. The value added was unable to fully cover all staff costs till 2011. Thus, pig breeders couldn't generate profit. The pig breeders in the first quartile (below 25th quartile) have not generated profit since 2007 (except 2012). They may have problems to survive without restructuring of their production! On the contrary, the most successful pig breeders (above 75th quartile) have generated profit in the whole period. ROA ranged from 2.5 % in 2009 to 9.4 % in 2012. ROE is a meaningful indicator for shareholders. It should be higher than expected return in order to generate positive economic profit. Moreover, it should be higher than ROA after taxes to ensure positive impact of debt to ROE. The rule has been fulfilled in top pig breeders in the whole period 2007 – 2013 and, on average, in the whole sample since 2011. ROS has quite the same development as ROA and ROE.

Table 4 shows important information about capital structure. The share of debt has to be compared with profitability because companies pay costs of debt service (interests on the principal and repayment of the principal) and short-term liabilities (mainly towards suppliers) from the profit. So, a profit has to be sufficiently high in order to meet creditors' claims.

Debt-Equity ratio is a financial ratio indicating the relative proportion of shareholders' equity and debt used to finance a company's assets. The maximum recommended value is 1. So, the total debt should not exceed the total equity. The comparison between mean and median indicates extremely high amount of debt compared to the equity in some pig breeders. Such farms have the D/E ratio higher than 75th quartile. It is very risky to have D/E ratio higher than 1 and negative profitability. It often leads to bankruptcy. There are 19 farms in the sample (32.76 %) with such unfavourable relation between profitability and capital structure. Finally, D/E ratio and debt ratio confirm that pig breeders used more debt in the crisis period than in profitable years.

Financial leverage is important indicator for impact evaluation of debt to ROE. When the financial leverage grows and ROA is positive, debt helps ROE grow. Unfortunately, financial leverage increased in the loss period. So, the pig breeders have not used the positive effect of financial leverage on ROE.

Table 5 gives information about liquidity of Czech pig breeders. Liquidity ratios measure the ability of a company to meet its short term debt obligations. The highest level of liquidity ratio is L3 which measure a level of the current assets to cover the short term liabilities. A recommended level is between 1.5 and 2.5. The median fulfils the recommended interval, mean is slightly higher than 2.5. There is not any clear trend of L3 liquidity. The farms in the fourth quartile had L3 higher than 4 in the last two years. It is very conservative strategy of short-term financial management. Companies should optimize the liquidity. High liquidity may indicate excess inventory, poor debt management or unnecessarily high level of cash and cash equivalents. Excess current assets can be effectively converted into profit.

Liquidity L2 is a universal indicator of liquidity since it does not include inventory that can be farm-specific. Liquidity L2 is relatively stable in time. It means that pig breeders manage the current assets good despite significantly volatile income. Liquidity L1, like L2 and L3, shows big difference between top and bottom quarter of pig breeders. The 25th percentile has liquidity L1 close to zero (aggressive cash management) whereas the 75th percentile is able to cover one half of short-term liabilities immediately by cash (conservative cash management). It is obvious that cash management strategy significantly differs across farms.

Table 6 gives information about turnover ratios. It is important for evaluation of cash conversion cycle.

DIO indicator measures interval between purchase of inputs (day when a supplier invoices a pig breeder) and selling products (day when a pig breeder invoices a buyer). It takes about 120 days. The smaller this number is, the better. DIO was longer in crisis years 2009 and 2010 as a consequence of lower sales.

DSO looks at the number of days needed to collect on sales and involves accounts receivable. It shows interval between selling products (day when a pig breeder invoices a buyer) and cash collection. The real mean payability of buyers is 70 – 80 days; top companies collect cash from buyers after 40 – 50 days on average.

DPO involves the company's payment of its own bills or accounts payable. It measures interval between purchase of inputs (day when a supplier invoices a pig breeder) and cash expenditure. If this can be maximized, the company holds onto cash longer, maximizing its investment potential. Therefore, a longer DPO is better for cash flow. Alternatively, companies with very long DPO may betray suppliers' trust. The difference between DSO and DPO means that pig breeders collect cash from buyers significantly earlier than they pay to their suppliers. So, pig breeders use commercial credit which is good for cash flow.

Table 7 informs about other financial indicators – NWC per total assets and labour productivity. The share of NWC in total assets should remain at the same level since the NWC grows concurrently with total assets. Indicator NWC/TA dropped in the crisis period 2008 – 2011. In recent years, the share of NWC in total assets has grown. In the top quartile, the NWC/TA remains quite stable at the level of 30 %. On the contrary, pig breeders in the 25th quartile reduced the NWC/TA in the crisis period to negative values. It is known as "floating debt". There was quite different impact of crisis on short-term financial management in the sample during the crisis period.

Labour productivity measures how much value added was produced by one employee. There is big difference between 75th quartile and 25th quartile. In the period 2007 – 2013, top pig breeders have approximately four times higher labour productivity than the worst quarter on average.

The last indicator is investment activity measured as a mean in the period 2007 – 2013. Investment activity is very important for keeping competitiveness. Figure 1 clearly pictures that 7.1 % pig breeders had negative investment activity. It means that value of long-term assets dropped. It is also possible, that those farms restructured production. Most frequent growth of investment activity during the whole period was 10 – 20 % per year on average (33.9 % of the sample). But there were some pig breeders whose long-term assets increased by more than 30 % per year on average (12.5 % of the sample). Investment activity should increase in the good times when companies are able to repay loans from profit. Investments are supported from the Rural Development Programme. In the period 2007 – 2013, Ministry of Agriculture approved projects of pig breeders in the total amount 1.4 billion CZK (MoA, 2014). Investment activity was targeted at equipment upgrading (productive investments) and building or reconstruction of septic tanks (non-productive investments with environmental implications).

Table 2. Income development of Czech pig breeders

Indicator	Unit	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
FNVA/AWU	th. CZK / AWU	230.4	296.0	262.3	185.7	180.3	147.2	297.4	249.6	465.9	406.3
Profit/AWU	th. CZK / AWU	-10.1	63.5	29.5	-11.8	-1.1	-79.5	5.1	-26.9	152.1	34.1
Subsidies in total revenues	%	1.2%	1.2%	5.4%	6.8%	3.9%	2.1%	4.5%	3.8%	3.1%	4.6%
Sample size	number	22	66	72	75	67	62	74	63	50	55

Source: FADN CZ

Table 3. Profitability of pig breeders in the period 2007 – 2013

Indicators		2007	2008	2009	2010	2011	2012	2013
ROA (MAX)	75th quartile	5.2%	3.1%	2.5%	3.7%	6.5%	9.4%	7.1%
	Median	-0.5%	-1.0%	-0.1%	0.9%	2.2%	5.3%	3.4%
	25th quartile	-11.8%	-10.9%	-2.4%	-6.2%	-1.7%	2.0%	-0.2%
	Mean	-4.3%	-6.3%	-0.7%	-1.2%	0.5%	3.6%	2.3%
ROE (MAX)	75th quartile	9.3%	4.1%	3.1%	6.5%	9.0%	18.7%	11.9%
	Median	0.5%	-2.4%	-1.1%	0.2%	4.3%	8.2%	5.9%
	25th quartile	-17.0%	-21.2%	-8.0%	-6.6%	-2.7%	2.3%	0.7%
	Mean	-17.9%	-29.4%	-16.1%	-27.9%	3.2%	7.0%	5.3%
ROS (MAX)	75th quartile	7.5%	3.2%	1.5%	3.8%	7.9%	10.5%	8.9%
	Median	-0.8%	-1.5%	-0.9%	0.2%	1.0%	5.3%	3.3%
	25th quartile	-11.9%	-11.7%	-3.8%	-5.6%	-3.2%	1.5%	-1.0%
	Mean	-5.6%	-9.8%	-1.8%	-3.0%	1.0%	3.0%	2.0%

Source: Author's calculation

Table 4. Indicators of capital structure of pig breeders in the period 2007 - 2013

Indicators		2007	2008	2009	2010	2011	2012	2013
Debt-Equity ratio (MIN)	75th quartile	1.83	2.13	2.20	2.19	2.17	2.07	1.68
	Median	0.82	1.08	1.00	1.03	0.95	0.90	0.90
	25th quartile	0.41	0.42	0.40	0.39	0.39	0.37	0.37
	Mean	1.85	3.19	3.71	7.38	5.92	3.89	2.30
Debt ratio (MIN)	75th quartile	71.2%	71.9%	70.5%	72.6%	74.3%	69.7%	67.1%
	Median	48.7%	52.6%	51.8%	52.7%	50.7%	48.4%	49.8%
	25th quartile	29.8%	31.0%	29.8%	28.9%	33.1%	28.5%	26.9%
	Mean	52.4%	56.2%	55.6%	56.2%	59.6%	60.2%	50.7%
Financial leverage	75th quartile	2.85	3.14	3.20	3.20	3.18	3.05	2.68
	Median	1.82	2.08	2.00	2.03	1.95	1.89	1.92
	25th quartile	1.43	1.44	1.40	1.40	1.40	1.35	1.38
	Mean	2.85	4.20	4.72	8.38	6.92	4.83	3.31

Source: Author's calculation

Table 5. Liquidity of pig breeders in the period 2007 – 2013

Indicators (times)		2007	2008	2009	2010	2011	2012	2013
L3 (opt)	75th quartile	3.75	3.70	3.26	3.93	3.61	4.36	4.15
	Median	2.03	1.73	1.72	1.95	1.65	1.86	1.98
	25th quartile	1.03	0.87	0.83	0.86	0.87	1.08	1.30
	Mean	2.74	2.52	2.64	2.72	2.69	2.83	2.74
L2 (opt)	75th quartile	1.95	1.45	1.66	1.81	1.69	1.75	1.77
	Median	0.99	0.78	0.71	0.75	0.71	0.77	0.88
	25th quartile	0.51	0.39	0.33	0.29	0.35	0.47	0.53
	Mean	1.28	1.10	1.10	1.25	1.23	1.31	1.22
L1 (opt)	75th quartile	0.59	0.29	0.58	0.63	0.40	0.52	0.51
	Median	0.13	0.06	0.09	0.08	0.17	0.18	0.11
	25th quartile	0.02	0.02	0.01	0.03	0.02	0.03	0.02
	Mean	0.41	0.30	0.39	0.48	0.45	0.56	0.43

Source: Author's calculation

Table 6. Turnover ratios of pig breeders in the period 2007 – 2013 (days)

Indicator (days)		2007	2008	2009	2010	2011	2012	2013
DIO (MIN)	75th quartile	142	143	173	171	141	144	153
	Median	113	112	125	121	118	109	108
	25th quartile	90	85	80	89	83	86	83
	Mean	116	115	134	131	124	117	120
DSO (MIN)	75th quartile	91	86	82	85	84	79	79
	Median	66	64	58	58	53	51	59
	25th quartile	49	52	42	46	37	40	42
	Mean	72	73	81	81	78	70	72
DPO (MAX)	75th quartile	258	273	293	266	268	231	195
	Median	139	152	178	178	152	131	131
	25th quartile	69	86	91	85	78	78	74
	Mean	193	193	228	291	273	176	161

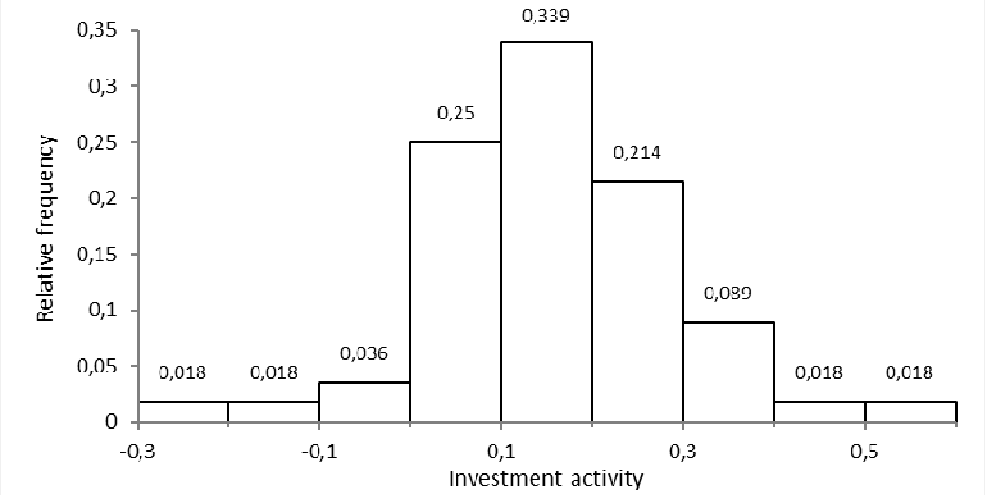
Source: Author's calculation

Table 7. Other financial indicators of pig breeders in the period 2007 – 2013

Indicator		2007	2008	2009	2010	2011	2012	2013
NWC/TA	75th quartile	32.4%	31.4%	28.2%	30.1%	28.4%	29.7%	31.4%
	Median	22.8%	18.9%	17.1%	19.6%	15.6%	19.7%	18.6%
	25th quartile	1.8%	-5.2%	-11.3%	-10.2%	-5.8%	4.5%	8.4%
	Mean	13.4%	8.6%	6.7%	6.9%	6.2%	9.4%	15.6%
Labour productivity (th. CZK)	75th quartile	325.8	315.0	385.4	473.9	569.9	825.2	550.8
	Median	236.3	227.5	243.1	303.2	352.7	564.8	346.0
	25th quartile	64.4	61.1	144.8	120.7	138.4	233.9	155.8
	Mean	180.5	130.8	251.3	346.1	500.8	502.7	365.5

Source: Author's calculation

Figure 1. Investment activity of pig breeders (2007 – 2013)



Source: Author's calculation

Conclusion

The aim of the article is to evaluate financial situation of the Czech pig breeders in the period 2007 – 2013. The financial analysis revealed big gap between top and bottom pig breeders. Whereas top pig breeders remained profitable, the worst quarter of pig breeders was loss-making in most years. The profitability of Czech pig breeders has grown in recent years (2012, 2013) as a consequence of favourable prices and better breeding efficiency. Before 2012, pig breeding in the Czech Republic was mostly loss-making. The big difference of profitability is connected with labour productivity - top pig breeders have approximately four times higher labour productivity than the worst quarter on average. Most frequent growth of investment activity during the whole period was 10 – 20 % per year on average (33.9 % of the sample).

Regarding the financial management of Czech pig breeders, it can be concluded that they manage liquidity relatively good to be stable in time despite of volatile income. The difference between DSO and DPO indicates that pig breeders use commercial credit which has positive impact on cash flow. Financial analysis also revealed big differences in quality and strategy of financial management between pig breeders in 25th and 75th quartile. Overall, the key opportunities for the future competitiveness of pig breeding in the Czech Republic are effective use of investment subsidies to improve breeding efficiency and good financial and risk management. Other factors, such as price relations, are difficult to manage by individual farms.

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Corresponding Address:
Ing. Jindřich Špička, Ph.D.
Institute of Agricultural Economics and Information
Mánesova 75,120 00 Prague 2
Czech Republic
E-mail: spicka.jindrich@uzei.cz

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