

CZECH CHEMICAL INDUSTRY IN THE PERSPECTIVE OF ONGOING CRISIS

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Abstract

Chemical industry (section 20 – Production of Chemical Substances and Chemical Preparatives within the CZ-NACE standard classification of economic activities) can be viewed as an industrial sector with a long tradition in the territory of the Czech Republic. This paper focuses on the chemical industry's development and its comparison to the development of the manufacturing industry as a whole in the 2007 – 2011 periods. The paper characterises the development of basic economic indicators in the sector, with focus on the development of revenues, expenses and economic profits. It deals also with selected sector financial analysis indicators and their comparison with the development of the manufacturing industry as a whole.

Key words: financial analysis, economic indicators, chemical industry

JEL Code: O14, L22

Introduction

Financial crisis which originally came into effect in USA and then moved to Europe impacted majority of industrial branches. Severity of the impact on various industries was however uneven. The paper focuses on the chemical industry. The paper's goal is to characterise the development of basic economic indicators in the sector, with focus on the development of revenues, expenses and economic profits. Financial analysis technique is used for reveal how deeply was chemical industry impacted by crisis and how serious crisis consequences were. The financial analysis in general is a set of activities aimed to assess the financial health of companies, identify weaknesses that could threaten businesses in the future and recognise the strengths on which companies might rely on in the future (Blaha, Jindřichovská, 2006; Kislingerová et al., 2007; Mrkvička, Kolář, 2006; Růčková, 2010) . The paper uses publicly accessible resources, primarily from the data from the Czech Statistical Office (CSU) and the Ministry of Industry and Trade (MPO).

1 Basic indicators of chemical industry's development

Basic development of chemical industry's selected indicators in the 2007-2010 periods is listed in Table 1.

Tab. 1: Development of chemical industry's selected indicators in 2007-2010

Indicator/Year	2007	2008	2009	2010
No. of active entities:				
– Chemical industry	1 498	1 500	1 560	1 884
– Manufacturing industry total	149 578	151 753	156 245	169 077
No. of employed persons (thousands):				
– Chemical industry	32	32	29	29
– Manufacturing industry total	1 362	1 366	1 209	1 197
Revenues (CZK bln):				
– Chemical industry	161	178	145	170
– Manufacturing industry total	3 913	3 967	3 316	3 648
Total expenses (CZK bln):				
– Chemical industry	152	175	144	161
– Manufacturing industry total	3 706	3 840	3 225	3 480
Value added (CZK bln):				
– Chemical industry	33	29	22	31
– Manufacturing industry total	813	775	667	729
Earnings after taxes (CZK bln):				
– Chemical industry	9	3	1	9
– Manufacturing industry total	209	130	93	168
Long-term property investments (CZK bln):				
– Chemical industry	11	12	7	8
– Manufacturing industry total	202	228	141	142
Average monthly wage (CZK):				
– Chemical industry	23 187	24 741	25 129	26 177
– Manufacturing industry total	19 802	21 399	21 820	22 710
Value added per worker (CZK thousands):				
– Chemical industry	1 088	941	811	1 118
– Manufacturing industry total	664	634	625	701

Source: Processed acc. to CSU (2012), Krause and Špička (2013)

The no. of active entities doing business was growing both in the chemical industry and the manufacturing industry in the 2007-2010 periods. The no. of persons employed in the sectors was decreasing gradually over the monitored period, though; chemical industry had 3,000 employees fewer in 2010 than in 2007, while the no. of employees in manufacturing industry decreased by 165,000. The average wage in chemical industry grew 13 % in the monitored period, down 2 p.p. on the growth rate in the manufacturing industry as a whole. However, the average monthly wage in the chemical industry was higher than in the manufacturing industry as a whole over the entire period.

Chemical industry's revenues decreased significantly in 2009, by CZK 33 bln (i.e. 18 %) y/y. The demand for chemical products was renewed in 2010 and chemical industry managed to generate revenues of CZK 170 bln, up 6 % on 2007. Similar development was registered in the whole manufacturing industry, as the revenues in 2009 dropped by 16 % y/y. Manufacturing industry's revenues grew in 2010, but were below 2007 levels. Chemical companies managed to respond to the decline in revenues in 2009 by cutting their expenses, but the expenses were decreasing at a slower pace than revenues. A similar expense development was registered also in the whole manufacturing industry. Manufacturing industry's Expense to Sales Ratio reached 97 % in 2009, i.e. 2 p.p. less than the Expense to Sale Ratio of the chemical industry. Both chemical and manufacturing industry performed better in 2010 and the Expense to Sales Ratio returned to 2007 levels in the case of chemical industry (94.5 %) and was lower than for the manufacturing industry as a whole (95.4 %). Thanks to the aforementioned development of revenues and expenses, chemical industry managed to generate positive value added and positive earnings after taxes. Chemical industry's value added dropped already in 2008 (down 12 % y/y). The indicator registered further massive decline in 2009, having dropped 24 % on the previous year (as compared to just 14 % drop in the manufacturing industry as a whole). Chemical industry companies were thus unable to adjust the consumption of material, energies and purchased services to the development of demand (revenues) – see for example Hyršlová, Souček and Špaček (2013). With the aforementioned development of the value added indicator, labour productivity, quantified as value added per worker, decreased as well in 2008 and 2009. Labour productivity dropped 13 % in 2008; value added formation decreased, while the employee base stagnated. Labour productivity continued to drop even further in 2009, when it reached CZK 811,000 per worker. Value added was thus decreasing at a faster rate than the workers' base. Over the entire monitored period, labour productivity (quantified as value added per worker) in chemical industry companies was higher than in the manufacturing industry as a

whole. The earnings after taxes for both chemical industry and the whole manufacturing industry started decreasing already in 2008; chemical industry dropped 67 % on 2007 levels. Another massive decline was registered in 2009 (chemical industry dropped further 67 % y/y, while manufacturing industry lost 28 %). In 2010, chemical industry managed to generate earnings after taxes comparable to 2007, totalling CZK 9 bln.

Chemical industry companies have not stopped their investments into long-term assets even in the years when their performance was decreasing. Investments into long-term assets totalled CZK 38 bln over the entire monitored period, with the lowest investment (CZK 7 bln) made in 2009. The investments headed primarily into long-term tangible assets.

2 Sector's financial analysis

The following text offers a comparison of the development of chemical and manufacturing industries in 2007-2011. Selected financial analysis indicators are compared: leverage ratios (Equity Ratio), profitability ratios (Return on Assets - ROA, Return on Equity - ROE, Labour Costs to Sales Ratio), activity ratios (Total Assets Turnover Ratio) and liquidity ratios (Current Ratio, Quick Asset Ratio, Cash Position Ratio).

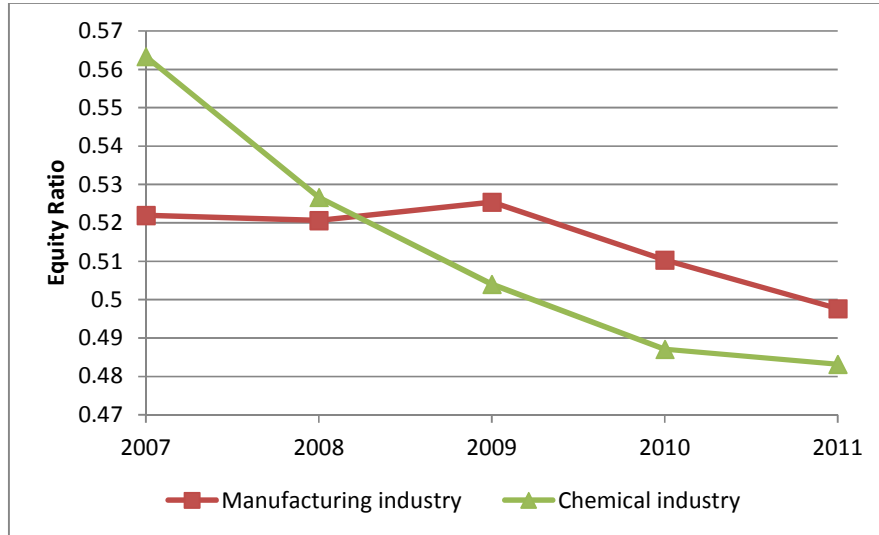
2.1 Sector indebtedness

The utilisation of debts affects business profitability and entails risks. Leverage ratios characterise long-term financial stability; they measure how the companies use debts for their financing and to what extent they are able to cover their liabilities. Equity Ratio is one of the balance indicators. The ratio characterises the structure of the company's capital; it measures the contribution of equity to the financing of corporate assets. The share of equity on total capital, or its potential growth, is an indicator of the company's financial stability and helps reduce the risk of insolvency. The indicator's development for chemical and manufacturing industry in the monitored period is depicted in Figure 1.

In 2007, equity accounted for 56 % of the financing of assets of companies in the chemical industry; companies thus moderately preferred the utilisation of equity. The development of indebtedness of chemical and manufacturing industry was different in the monitored period. Chemical industry's indebtedness was gradually growing over the monitored period and debts accounted for 52 % of asset financing in 2011. The increase in the share of debts on total capital was driven also by slower growth rate of equity, due to companies' generally lower operating performance and related lower earnings after taxes

generated by the firms. The manufacturing industry maintained an indebtedness of 48 - 50 % in the monitored period.

Fig. 1: Development of Equity Ratio



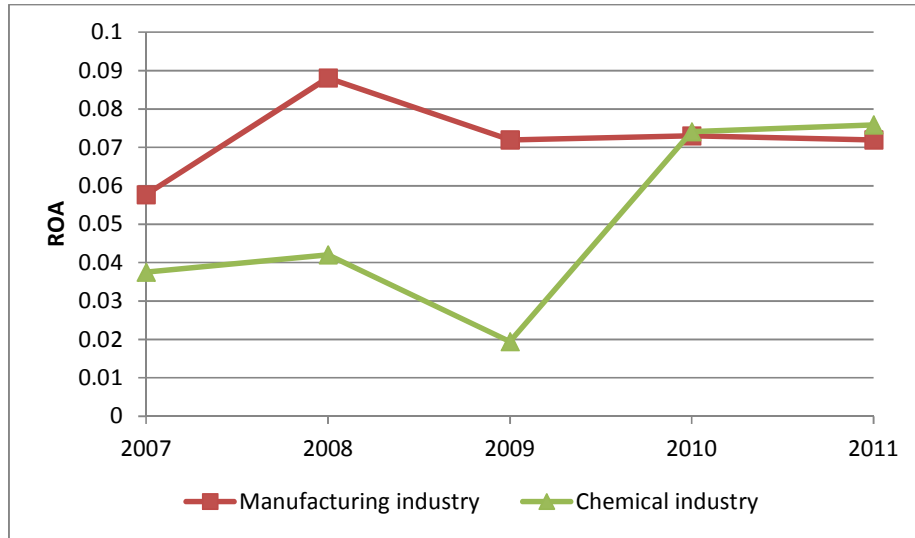
Source: Processed acc. to MPO (2013); Note: Equity Ratio = (Equity/Total assets)

2.2 Business profitability

Profitability is an indicator that quantifies the companies' ability to generate new resources, i.e. profits, through invested capital, regardless of the origin of the resources. Profitability expresses the rate of profit from business. Figure 2 depicts the development of the ROA in the monitored period in companies in chemical industry and manufacturing industry.

Manufacturing industry's ROA ranged between 5.8 % and 8.8 % in the period from 2007 to 2011, peaking in 2008. Chemical industry failed to achieve the same level of returns as manufacturing industry in the period from 2007 to 2009, with the lowest ROA (1.9 %) reported in 2009. Chemical companies managed to raise their returns substantially in 2010 and 2011, getting to the return levels of manufacturing industry as a whole. The development of the ROA in chemical industry points to the seemingly paradox phenomenon, as financial crisis forced companies in the chemical industry to restructure their businesses and use their resources more effectively. The development of the ROA was sending warning signs already in the pre-crisis period, as the ROA oscillated around 4 % in 2007 - 2008, thus mostly not fulfilling the prerequisite that ROA should be higher than the interest rate on loans.

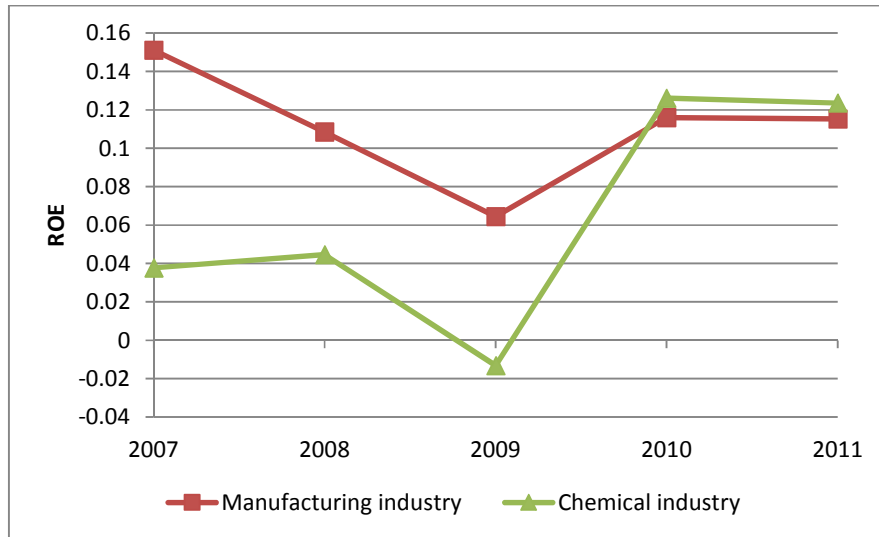
Fig. 2: Development of ROA



Source: Processed acc. to MPO (2013)

The ROE of manufacturing industry ranged from 6.5 % (in 2009) to 15.1 % (in 2007). The drop in ROE in the worst year (2009) thus reached almost 9 p.p. (see Figure 3).

Fig. 3: Development of ROE



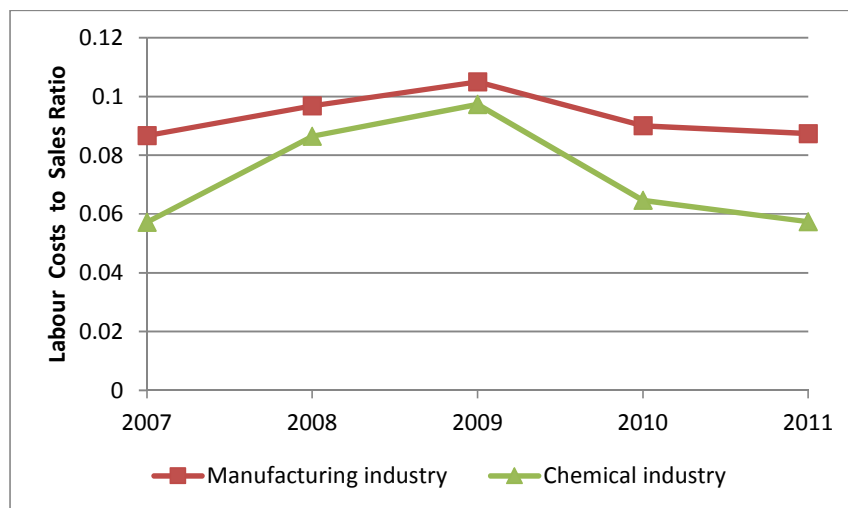
Source: Processed acc. to MPO (2013)

Chemical industry had a low ROE already in 2007 (3.8 %). However, chemical industry managed to raise the return substantially in 2010 – 2011 and posted higher values than the manufacturing industry (by 1 p.p.). This was another case of financial crisis having a positive effect on the profitability of equity. The indicator's values in the pre-crisis period

oscillated around 4 % and definitely did not motivated new investors to move into this sector. The return rates for equity and debt were drawing nearer rapidly, which was an alarming signal for shareholders, who were achieving the same return as creditors, but with much higher risks. ROE's negative value in the crisis' culmination point – 2009 – was a consequence of economic losses generated by the analysed companies, contributing to the aforementioned drop in Equity Ratio.

The Expense to Sales Ratio can also be used for reviewing the profitability of doing business (see above in this paper). In this section, attention is paid only to the Labour Costs to Sales Ratio (see Fig. 4). The highest Labour Costs to Sales Ratio was reported in 2009 (labour costs totalled CZK 0.105 per each CZK 1 of sales), while the indicator in 2011 was the lowest in the entire monitored period, similar to 2007 levels (labour costs totalled CZK 0.087 per CZK 1 of sales). The Labour Costs to Sales Ratio in chemical industry is lower than in the manufacturing industry (the ratio in 2007 and 2011 reached CZK 0.057 per CZK 1 of sales, while the highest ratio, CZK 0.097 per CZK 1 of sales, was registered in 2009). The development of the Labour Costs to Sales Ratio in chemical industry copied the development in manufacturing industry: the ratio was growing until 2009, due to declining sales and the stability of labour costs; from 2010 onwards the Labour Costs to Sales Ratio was decreasing and in 2011 it got back to 2007 levels. The Labour Costs to Sales Ratio reflected the fact that many companies waited with staff layoffs after the total revenues started to drop and reflected the effects of the crisis with a certain delay. The combination of certain market recovery and restructuring measures led to the indicator's improvement in the following years.

Fig. 4: Development of Labour Costs to Sales Ratio

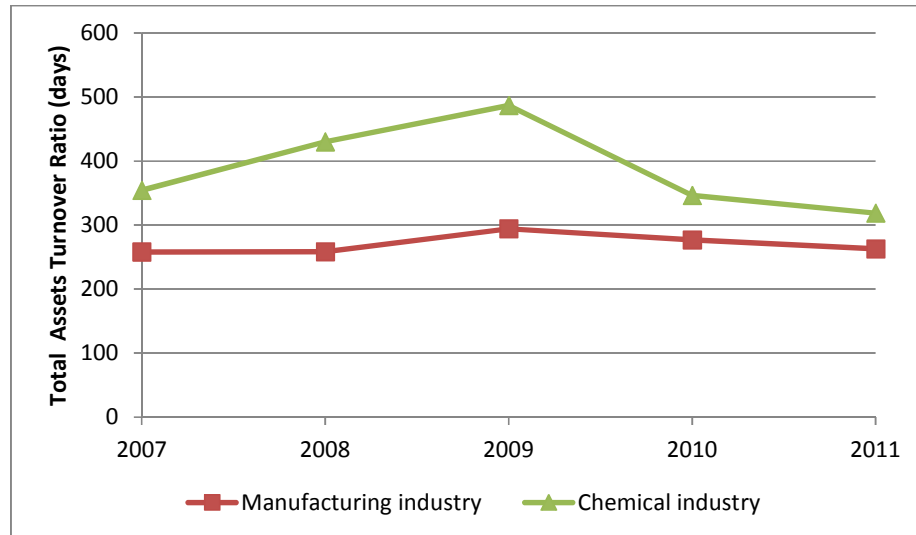


Source: Processed acc. to MPO (2013)

2.3 Utilisation of assets

Activity ratios, focusing on the company's ability to utilize its assets, are used for asset management. The indicators measure the lock-up of capital in individual asset forms, in two ways: either the indicator measures how many times the assets are turned over a certain period, i.e. the Assets Turnover Ratio or how long the assets are locked in the given form of assets, i.e. the Assets Turnover Period. The effort is to minimize the turnover period. Following Figure 5 depicts the development of the turnover period indicator for chemical industry and manufacturing industry as a whole.

Fig. 5: Development of Total Asset Turnover Period indicator



Source: Processed acc. to MPO (2013)

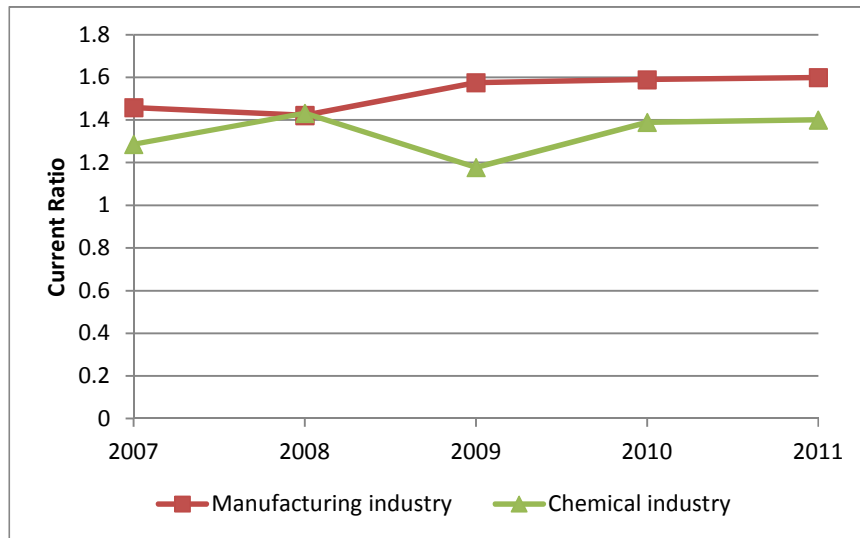
Manufacturing industry's Total Asset Turnover Period has not changed substantially in the monitored period and ranged between 258 and 294 days; the longest Total Asset Turnover Period was reported in 2009. Chemical industry as a whole reported longer Total Asset Turnover Periods (by 117 days on the average). This is due to the chemical industry's high requirements for long-term and current assets. In 2011, the Total Asset Turnover Period reached the lowest value in the monitored period (319 days).

2.4 Sector liquidity

Payment ability (liquidity) is the necessary prerequisite for companies' long-term existence. Liquidity ratios are short-term fiscal balance indicators. They measure the companies' ability

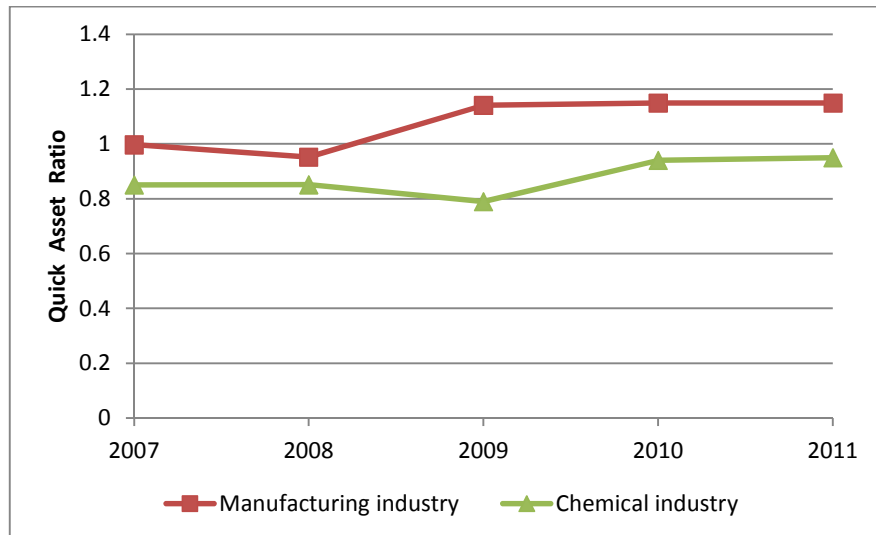
to reimburse their liabilities in the horizon of one year; they measure what the companies can use for payments in the short run (current assets, short-term assets) and what they should pay (short-term debts). The indicators have the general format: (Short-term Assets/Short-term Debts). The development of the liquidity of the rated sectors is depicted in Figures 6 - 8.

Fig. 6: Current Ratio development



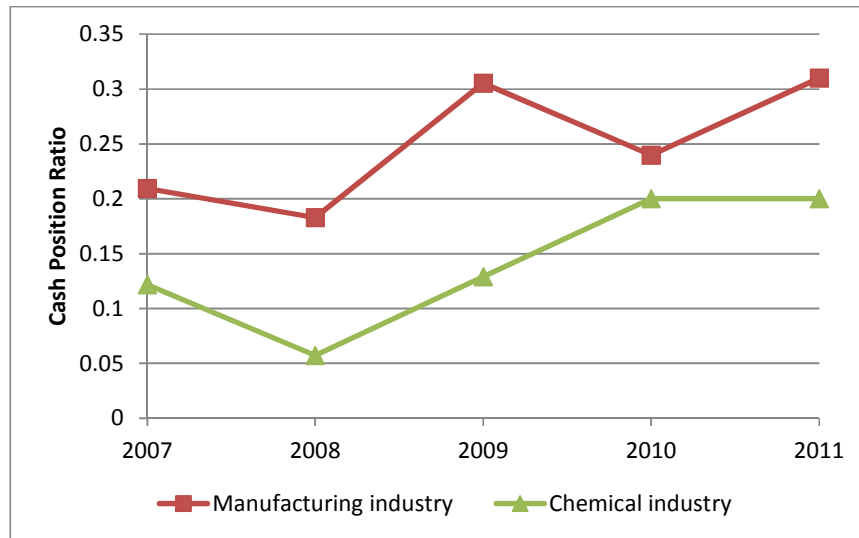
Source: Processed acc. to MPO (2013); Note: Current Ratio = (Current Assets/Short-term Debts)

Fig. 7: Quick Asset Ratio development



Source: Processed acc. to MPO (2013); Note: Quick Asset Ratio = (Short-term Receivables + Financial Assets)/Short-term Debts

Fig. 8: Cash Position Ratio development



Source: Processed acc. to MPO (2013); Note: Cash Position Ratio = (Financial Assets/Short-term Debts)

Both manufacturing and chemical industries' Current and Quick Asset Ratios have not changed much in the monitored period. Chemical industry's liquidity was worse in the monitored period than manufacturing industry's. Manufacturing industry's Current Ratio was closed to the limits of the values recommended by experts (1.6 – 2.5), while the liquidity of chemical companies was slightly worse than the recommended values. Manufacturing industry's Quick Asset Ratio was higher than the recommended values from 2009 onwards (0.7 – 1). Chemical industry showed liquidity within the zone recommended by experts.

Manufacturing industry's Cash Position Ratio had better values in the monitored period than chemical industry's and was above the values recommended by experts (0.2) in the entire period. Chemical industry floated under the recommended levels in 2007-2010; it has reached the recommended level in 2011. Banks' restrictions and unwillingness to extend previously rather benevolently provided operating loans played a certain role in this. Companies' short-term operating credit frameworks were reduced and the price of extended operating loans grew in many cases. Banks have begun to review the operating performance of the lending companies more cautiously and raised the flexible interest rates incrementally in case of non-compliance to operating performance indicators.

Conclusion

The results presented in previous parts of this paper indicate that chemical industry's performance dropped significantly in 2008 and primarily 2009. The drop in sales led to lower

revenues, which resulted into lower value added and profits in the sector, despite attempts at adjusting the expenses to the development of revenues. Chemical industry thus failed to maintain its performance from 2007, the profitability of the business decreased; Return on Equity dropped most substantially. In the subsequent years – 2010 and 2011 – the demand for the sector's products recovered, revenues were growing continually and by 2011 they were higher than in 2007. The sector has thus renewed its ability to generate new resources, i.e. profit, through invested capital. Both the Return on Assets and Return on Equity were growing. Increased profitability benefited from better utilisation of assets in business activities and the Total Asset Turnover Period has become shorter. Even though the no. of employed persons has dropped, the average monthly wage was growing over the entire monitored period. Labour productivity, measured by the indicator of value added per worker, has grown since 2010. Capital structure has changed in the sector, as the presence of debts in the overall capital mix grew gradually. The indebtedness has not exceeded 52 %, though, and the business risk rate in the sector has not grown substantially. Liquidity has increased gradually, representing a prerequisite for long-term success in doing business. The Quick Asset Ratio and Cash Position Ratio are within the zones recommended by experts. Chemical industry was hit by the economic crisis more severely than the manufacturing industry as a whole. The sector managed to renew its performance. In 2011, the business profitability was higher than the average for the whole manufacturing industry.

The performed analyses indicate that chemical industry is already stabilising its budget and economic situation after the financial crisis in 2009. Even though the phase of recovery from the financial crisis is not over yet, positive effects are already apparent. Chemical companies are working to rationalise their processes and make them more effective. They are undergoing the slimming down phase, which cannot be perceived as mere staff layoffs. The companies attempt to implement new business models that would secure better access to the markets in the future. They are getting rid of unproductive assets and focus on investment process management. It is thus important for the companies not to abandon the slim management trajectory initiated by the financial crisis fully. The companies have to renew investment activities to an adequate degree and invest into technologies above the framework of mere reproduction of long-term assets. The post-crisis period is also opening space for stronger application of soft management factors, primarily in the area of work motivation.

Chemical industry companies should continue focusing on optimal spending of resources, primarily the optimisation of material and energy consumption. Given the relatively low Labour Costs to Sales Ratio and with regard to the social aspects of doing

business in the chemical industry (work safety and health protection, working conditions), companies should focus on creating adequate human resource policies. Limiting investments into long-term assets can cut the companies' total profitability in the long run. Chemical industry companies should monitor and evaluate their economic situation and adapt their investment policies accordingly. The storage of inventory entails the need for higher working capital, the costs of holding the inventory are growing and the inventories lock up capital that could have been used more effectively. Companies should thus continue to pay attention to the optimisation of current assets and optimisation of inventories. In their strategic decision-making processes, companies should focus on the optimisation of their capital structure.

Acknowledgement

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