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RETURN ON EQUITY OF FURNITURE INDUSTRY

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Abstract

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Economic efficiency of the furniture production is closely associated with high input costs. Despite the fact that the material makes up 80% of total costs, there were 7,908 active furniture manufacturing companies in 2011 in the Czech Republic and they generated sales of nearly 30,812,199 thousand with an added value of CZK 9,592,032 thousands CZK and employed nearly 22,000 people. The aim of this paper is to assess the development of economic efficiency ratio indicator using return on equity (ROE hereinafter). The evaluation method was developed using statistical methods. The sample included 107 enterprises with more than 50 employees. For each company of the sample the ROE ratio was calculated and descriptive statistics and correlation analysis followed. Average ROE was 3.54% and the median was 3.3% in 2011. ROE of the sample in 2011 decreased compared to the base year 2007, which was the peak of the economic boom, the arithmetic average decreased by 74.68% and a median decrease was 63.7%. The linear trend of the sample and of the entire manufacturing industry had almost identical falling course of ROE development unlike the furniture industry in the Czech Republic. When using correlation analysis the tightness was in the arithmetic average of 30.42% and the tightness of the median was 39.00%.

economic efficiency, economics, financial analysis, furniture production, return on equity

This paper is part of scientific research dissertation, which deals with economic efficiency of furniture production. The topic of the article itself is the development of economic efficiency of furniture manufacturing in the Czech Republic from 2006 to 2011. The topic is relevant and important, as owners, shareholders or other investors in the furniture industry, especially in times of economic crisis, want to have an overview of the state of economy, in which they invested their funds. So they want to know the company's ability to valorize the resources invested in business. The actual conditions and return on investment can be measured by the economic efficiency of the enterprise. This is on top of rationality criterion incurred. The level of economic efficiency is based on comparison of the costs incurred and economic benefit achieved, and therefore on the quantification of the profit of evaluation period. Economic efficiency is usually measured by the ratio of profit (before taxes, respectively. after taxes) and the average amount of either total capital invested, or embedded equity, respectively average level of assets used in the business (KRÁL, 2003). The traditional approach of measurement is often criticized for recording only the achieved reality on the basis of financial statements and for a weak connection to the value of the company. In response to this situation, many new standards such as EVA, MSA, CFROI, CVA, NPV, and more have been created (ĎURIŠOVÁ, MYŠKOVÁ, 2010). Nevertheless, according to the conclusions of the Hult research team (HULT, 2008) the most commonly used indicators to assess the company are based on revenues and profitability. In 2010, a research team of Šiška and Lízalová (ŠIŠKA, LÍZALOVÁ, 2011) found that long-term evaluation of the company should use indicators of profitability and growth based on equity ROE and ROA which is based on more stable total assets. Return on equity ROE indicator represents thanks to a synthetic work with reports a simple concept to identify problem areas of the company and their subsequent correction (PARRINO, KIDWELL, 2009).

The result of the combined effects of liquidity, asset management and debt management, which are relative indicators, is the profitability or profitability of equity (SYNEK, 2007).

$$\frac{Net\ profit}{Equity} = \frac{Net\ profit}{Revenues} \times \frac{Revenues}{Assets} / \frac{Equity}{Assets}$$

Return on equity (ROE hereafter) is one of the key indicators, which shareholders, partners and other investors in the furniture industry focus their attention on. It measures how much net profit fall on one crown of invested capital. The basic equation is as follows: (KISLINGEROVÁ, 2010)

$$ROE = \frac{Net\ profit}{Equity}.$$

The rate of profit divided by equity is an indicator whether the capital gives sufficient yield, i.e. whether it is used with an intensity which corresponds to the size of investment risk. Investor understandably requires that the price that a firm receives for the capital (dividend on shares, the share of the profits of the invested deposit, etc.) was higher than the price that would be received in any other form of investment (e.g. purchase of bonds, saving money at financial institution, etc.). This requirement is justified because the investor, who put their capital into stock company, carries a relatively high risk (GRÜNWALD, HOLEČKOVÁ, 2007). If the value of long-term ROE is less than or equal to the return on securities guaranteed by the state (government treasury bills, government bonds, etc.) the company is likely to be sentenced to death. Rational investor will in that case seek to invest their capital more conveniently and more profitably (KOVANICOVÁ, 1995). Company management has three tools that determine ROE (KISLINGEROVÁ, 2008):

1. The profit margin – the ratio of net profit per unit of sales.
2. Asset utilization measured by revenue per unit of assets – we call it the turnover of assets
3. Leverage – the amount of equity used to finance assets.

Although ROE is generally regarded as the main indicator of financial efficiency of the company, its evaluation must be careful because it is associated with three problems: 1. The problem of time (some activities, such as introducing a new product, cause an increase in costs and thereby reduce the value of ROE, but will grow in the coming years), 2. The problem of risk that ROE is ignored (in general, the higher the risk, the higher the required ROE), 3. Valuation problem, since it uses accounting (historical) values rather than market values, which are critical for investors (BRIGHAM, HOUSTON, 2006), (SYNEK, 2003). The aim of this paper is to characterize and evaluate the evolution of the return on equity of selected furniture producers with help of the proposed methodology and descriptive statistics. This paper is intended for owners, investors, shareholders and the general expert public to get an overview of the profitability through ROE in medium and large furniture businesses.

Characteristics of furniture industry

The furniture industry is considered to be essentially an assembly industry, which uses different materials for the production of its own products. Currently, the European furniture industry has a high level of production in the technical design, ecology, design, aesthetics and fashion related products and has a strong image in the world. From the perspective of the economy the furniture production company is characterized by a high proportion of the input material costs. Material makes up 80% of total costs. The use of new techniques and technologies and respect for the required legislation means that the products doesn´t contain any dangerous or harmful substances endangering people or the environment. The furniture industry in the Czech Republic belongs to the smaller industries regarding its share of the revenues from sales of own products and services. Its share on the revenues of manufacturing industry in 2011 was 0.94% (1.25% in value added and 2% of the workforce). Furniture manufacturing sector is a typical sector of small and medium enterprises and is classificated under the NACE 31 code. The CZ-NACE 31 sector in 2011 counted 7,908 companies, produced sales of nearly 30,812,199 thousand with an added value of CZK 9,592,032 thousands and employed nearly 22,000 people. CZ-NACE 31 sector reached also high surplus of almost 20 593.7 million in 2011, driven by exports increased by 7.6% (compared to 2010) to almost CZK 44 873.8 million and imports growing by 11.3% (compared to 2010) to 24 280 CZK 1 million (ŠTĚPÁNEK, 2012).

METHODS

Businesses which fell into the CZ NACE 31 sector with the number of employees higher than 50 were subject to statistical examination based on set targets. List of statistical units to create the sample was set at 30. 4. 2012. Czech Statistical Office provided at the above date a basic set of data of the sector 31 CZ NACE. Consequently, businesses with more than 50 employees were selected from this basic sample. The total number of statistical variables was 107 businesses. In the next step the value of individual profit for given period and equity for the period 2006–2011 was retrieved. The commercial register of the Czech Republic, to which companies present their financial statements including the balance sheet and profit and loss account with the necessary data, was used as a basic source for this information. The balance sheet was the source of information regarding the equity and the profit and loss account presented results for the accounting period. A firm that had negative results for the accounting period and at the same time negative equity was deleted from the sample for given year, the same approach

was used for companies that did not publish their data in a given year. We then used the indicator of return on equity ROE, the profit for the period was divided by the equity for each company and for each year separately

$$ROE = \frac{result\ for\ the\ accounting\ period}{equity} \times 100.\ [\%]$$

Through this process we gained a sufficient amount of measurable quantitative characteristics in tables, which created a basis for calculation of arithmetic mean, geometric mean, harmonic mean, quadratic mean, median, variance, standard deviation, minimum, maximum, lower quartile, upper quartile, basic index, chain index and correlation analysis. The values obtained were then presented using tables and graphs for the evaluation of economic efficiency of furniture businesses with more than 50 employees (HINDLS, HRNOVOVÁ, NOVÁK, 1999), (KOVANICOVÁ, KOVANICA, 1995).

RESULTS

Based on the methodology used, the point characteristics of the ROE on the sample in% from 2006 to 2011 were detected. These characteristics are listed in the Tab. I.

The arithmetic average of the ROE indicator exceeded in the years 2006 to 2008 and in 2011 the median. This is caused by the fact that the sample contained a wide outlying items and that samples are not symmetrically distributed. Positive deviation from the center isnot sufficiently compensated by the negative. Standard deviation in all years vastly exceeded the arithmetic mean, which is due to considerable variability of the data. The standard deviation has good properties in the case of normal distribution of the data. If this model were used for ROE, it would be confirmed that a considerable part of the businesses has a negative balance of equity or net profit for the period, which was the reality. Additional symmetry was found in 2010 and 2011 in the absence of outliers, since the value of the median and average are close. This may be caused by the fact that the sum of positive and negative deviations from the average is small. From 2006 to 2010 the development of ROE showed multiplicative symmetry, and it was very close to the median value of the geometric mean, but in the same period, median was several times higher than the harmonic mean, which confirms that positive data are remote down towards zero.

Basic index value in Tab. II, calculated from the average in 2011, decreased by 74.68% to 3.54% compared to 2007. This was mainly due to the economic crisis that has hit the medium and large furniture businesses in following years. The largest growth of average basic index was recorded at the peak of the economic boom in 2007, when the return on equity of the sample increased in 2007 compared to 2006 by 43.4% to 14.14%. Value of the chain index for the year 2011 can be interpreted as a decrease by 30.34% of return on equity in 2011 compared to 2010. The highest increase in the value of the chain index was reached in 2007, when profitability has increased by 76.68% compared to 2006.

Basic index value in Tab. III, calculated from the median in 2011 shows that the return on equity of the sample in 2011 compared to 2007 decreased by 63.7% and the decrease was comparable with basic arithmetic average of the index over the same

I: *Point characteristic of ROE of the sample set (in % for the period 2006–2011)*

Point characteristics	2006	2007	2008	2009	2010	2011
Arithmetic mean	8.00%	14.14%	12.60%	4.11%	5.08%	3.54%
Harmonic mean	1.77%	2.43%	2.72%	1.85%	2.96%	3.68%
Geometric mean	7.90%	9.01%	10.28%	6.32%	7.17%	11.51%
Root mean square	32.34%	29.32%	27.82%	30.02%	30.25%	13.67%
Scattering	9.82%	6.59%	6.15%	8.84%	8.90%	1.74%
Standard deviation	31.34%	25.68%	24.80%	29.73%	29.83%	13.21%
Median	7.25%	9.08%	9.10%	6.13%	5.59%	3.30%
Minimum	–158.66%	–39.08%	–20.17%	–57.77%	–125.19%	–30.81%
Maximum	97.28%	148.06%	95.98%	91.21%	147.05%	29.49%
Lower quartile	0.60%	2.12%	0.77%	0.87%	0.43%	0.99%
The upper quartile	21.10%	19.18%	21.90%	14.71%	13.58%	11.34%

Source: own research, 2013

II: *Base and chain indices of the aritmetic average of ROE from 2006 to 2011*

Year	2006	2007	2008	2009	2010	2011
Base indices (2007 = 100)	56.60	100.00	89.07	29.09	35.92	25.02
Chain indices (2006 = 100)	X	176.68	89.07	32.66	123.50	69.66

Source: own research, 2013

period of 3.3%. The largest growth of basic index was reached in 2008, when the return on equity of the sample increased compared to 2007 by 18% to 9.10%. Value of the chain index for the year 2011 can be interpreted as a decrease of 41.09% of return on equity compared to 2010. The highest increase in the value of the chain index was in 2007, when the profitability has increased by 25.22% compared to 2006.

Fig. 1 shows the column chart of the development of arithmetic mean and median of return on equity in the sector CZ NACE 31 Manufacturing of furniture in the Czech Republic in the period 2006–2011. Varying data are balanced by simple smooth function, which has a linear trend. Linear trend data for average and median of ROE are falling, higher values of decrease are recorded in case of the arithmetic average and similar developments can be expected in 2012.

A decreasing linear trend is associated with a reduction of the amount of work for furniture producers. Owners and managers of furniture companies reduce product prices and thus profit margins to remain competitive. Production capacities are not fully employed and the proportion of sales per unit of assets falls.

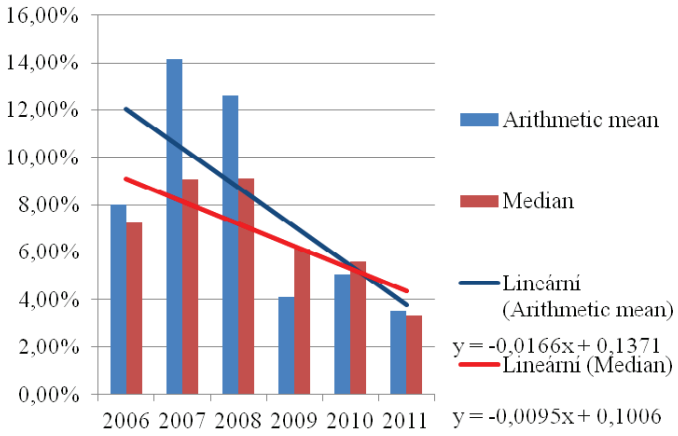
In the comparative analysis of the sample of furniture producers, characterized by the number of employees higher than 50, and the Czech manufacturing industry using arithmetic ratio indicator ROE in Tab. IV, it was found that our sample has the lowest ROE in the period 2006 to 2010. This may be caused by the fact that the sample consists of only 107 companies, which make 5.49% of the total number of 1950 companies of the whole set and thus the rest of businesses increased the average ratio of ROE indicator. Even so, this sample in total owns 60.89% of the equity and has a 27.64% share of net profit for the period from the basic set of all furniture producers in 2010.

A graph (Fig. 2), based on the values of Tab. IV, was created for mutual visual comparison of ROE with a linear trend. The linear trend of the sample and the entire manufacturing process has almost identical declining development of ROE in contrast with the furniture production in the Czech Republic. There was only a slight decline recorded for furniture production in the Czech Republic. The compliance of linear decrease trend of the sample and the processing industry may be caused by the fact that the sample is composed by medium and large furniture companies, which are focused primarily on the mass and serial production and thus more

III: *Base and chain indices of the median of ROE from 2006 to 2011*

Year	2006	2007	2008	2009	2010	2011
Base indices (2007 = 100)	79.86	100.00	100.18	67.52	61.62	36.30
Chain indices (2006 = 100)	X	125.22	100.18	67.39	91.26	58.91

Source: own research, 2013

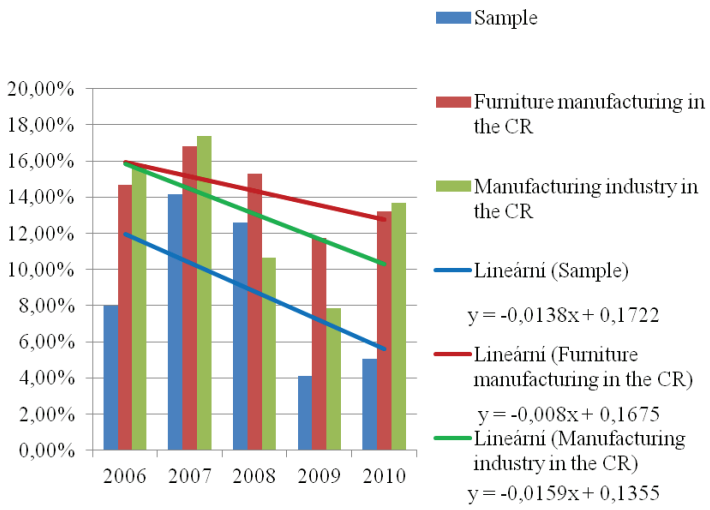


1: *Graph of characteristics of ROE indicator from 2006 to 2011*
Source: own research, 2013

IV: *Comparison of average ROE ratio indicator in % from 2006 to 2010*

Year	2006	2007	2008	2009	2010
Sample	8.00%	14.14%	12.60%	4.11%	5.08%
Furniture industry in CR	14.70%	16.79%	15.30%	11.73%	13.22%
Manufacturing industry	15.84%	17.36%	10.64%	7.85%	13.69%

Source: own research, 2013



2: *Comparison of average ROE indicator from 2006 to 2010*
Source: own research, 2013

V: *Point characteristics of tightness of equity and profit for the period from 2006 to 2011*

Point characteristics	**Correlation Coefficient**	**Determinant of correlation**
Aritmetic mean	30.42%	9.25%
Median	39.00%	15.21%

Source: own research, 2013

similar to the average manufacturing company and even more dependent on development of the construction industry than small and micro enterprises.

The point characteristics of tightness of equity and profit for the period 2006–2011 in Tab. V, using the methodology, resulted in an arithmetic average of 30.42% tightness, which is attributed to the central tightness of the pairwise correlations. Average coefficient of determination also remains low. The proportion of variance profit for the period I of 9.25% was attributed to changes in equity. When evaluating point correlation of tightness of equity and profit I realized the 39.00% tightness of the median, which is higher than the tightness of the mean. Determinant of correlation is with 15.21% very low and means that only 15.21% of the variance share profit for the period can be attributed to changes in equity. Low development of tightness of equity and profit for the period may be due to the volume of equity used to finance assets. These are essentially wrongly timed investments in tangible and intangible assets in the form of changes in the amount of depreciation that affect profit or loss for the period. Further reason is the development of the share of foreign capital on the total capital of the company in the form of loans from which interests are paid, which also affects the amount of profit or loss for the period.

CONCLUSION

The aim of the paper is to evaluate the return on equity of furniture production in the Czech Republic. Return on equity is one way of measuring economic efficiency of production. The ability to generate return on investment is the main reason for the owners, shareholders or investors to invest their own capital into the company. There was a significant decrease of ROE of the selected furniture businesses compared with previous years. It was caused by the economic crisis, which reduced demand for furniture products. The drop in demand created pressure on competing manufacturers, which resulted in the reduction of prices and therefore profit margins. Production capacities are not fully utilized and the share of sales per unit of assets has decreased. Same values as in 2012 and a slight growth in following year is to be expected based on the observed values. Unfortunately, ROE is based on historical data of corporate finances and is not able to react flexibly to the current market situation and doesn´t solve the proportion of foreign capital. A more appropriate way to evaluate efficiency for owners, shareholders or investors would be to use the decomposition of profitability (DuPont analysis, dynamic analysis of ROE) or market indicators of value added (MVA) and economic value added (EVA), which reflect better the ability of the profitability of the company. Despite this ROE has long been used as one of the leading indicators of economic efficiency for the management of the company, since its interpretation is simple, understandable, and the re-evaluation of the company is more accurate when using additional indicators of financial analysis.

SUMMARY

Using the proposed methodology, descriptive statistics and correlation analysis, the paper reviewed the development of return on equity in the period 2006–2011 for furniture industry in the Czech Republic in businesses with more than 50 employees. The target audience of this paper are owners, investors, shareholders and expert public that can get an overview of how to measure the profitability using ROE in medium and large furniture manufacturing businesses in the Czech republic. According to the proposed methodology a basic sample of businesses was created, which included 1,950 businesses with at least one employee. From this sample 107 companies with more than 50 employees were chosen. After removing businesses with both negative equity and profit for given period, refined sample was created. The next step consisted in the application of descriptive statistics on the results of ROE: the arithmetic mean, geometric mean, harmonic mean, quadratic mean, median, variance, standard deviation, minimum, maximum, lower quartile, upper quartile, basic index, the chain index and correlation analysis. Following results were obtained: the sample ROE in 2011 decreased compared to the base year 2007, which was the peak of the economic boom, the arithmetic average decreased by 74.68% to 3.54% and the median by 63.7% to 3.30%. The largest growth of basic index average was in 2007, when ROE of the sample increased by 43.4% compared to 14,14% in 2006. The largest growth in median values of basic index was recorded in 2008, when the sample ROE in 2008 increased by 18% compared to 9.10% in 2007. Manufacturing industry and furniture industry sample of the Czech Republic had an almost identical decline in the development of a linear trend of the ROE in contrast to the furniture industry in the Czech Republic. Manufacturing industry of the Czech Republic reached ROE of 13.69% in 2011, and the furniture industry of the Czech Republic reached the value of ROE of 13.22%. The point characteristics of tightness of equity and profit for the period, which are components of ROE, were obtained using the proposed methodology. The tightness of the arithmetic average from 2006 to 2011 was 30.42% and the tightness of the median 39.00%.

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