Evaluation of Factors Affecting Companies Value of Lithuanian Dairy Industry

Mantas Markauskas\(^a\)*, Asta Saboniene\(^b\)

\(^a,b\)Kaunas University of Technology, K. Donelaicio str. 73, Kaunas 44029, Lithuania

**Abstract**

The main purpose of the paper is to analyze the economic situation of Lithuanian dairy sector and to evaluate the factors affecting values of Economic Value Added indicator for largest companies in Lithuanian dairy industry. The main economic factors as gross profit margin, prime cost of purchased raw milk, productivity per employee, export, interest rates and market share were employed in evaluation of companies value. The empirical study was performed using data of four largest dairy companies of Lithuania. Linear regression analysis showed that gross profit margin and interest rates had most significant effect on Economic Value Added, while change in prime cost of purchased milk and productivity per employee did not affect any of four dairy company’s economic value. The trend line function showed that during 2013-2015 all four company’s economic value should rise as economic situation in Lithuania and other dairy importing countries improves.

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**Keywords:** Economic Value Added; Dairy industry; Gross profit margin; Balance sheet; Economic crisis.

**Introduction**

Economic crisis, which reached Lithuania in late 2008, showed that underestimation of risk and mismanagement of resources can have dire consequences for company’s performance. Standard financial ratios aren’t enough to value state of a company. That’s why different measures of valuation are required. One of these measures is called Economic Value Added, and it evaluates not only the return of investment, but also it’s cost.

Purpose of this paper is to present the economic situation of Lithuanian dairy sector during the years of 2005-

* Corresponding author. Tel.: NA.

E-mail address: mantas.markauskas@ktu.edu
2012 and analyze values of Economic Value Added indicator for four largest companies in Lithuanian dairy industry: AB “Pieno Zvaigždės”, AB “Rokiskio suris”, AB “Vilkyskiu pienine” and AB “Zemaitijos pienas”. This research study is directed to answer the question, which factors have the largest impact to economic values of Lithuanian dairy industry?

There are many different methods, which can be used to assess company’s value. Pablo Fernandez (2002) distinguishes several of them, which are frequently used: balance sheet method, income statement method, discounted cash flow method and value creation method.

Dictionary of financial and business terms defines company’s book value as assets minus intangible assets and liabilities, such as debt. Balance sheet valuation method consists of market price per share to book value per share (P/B), market price per share to equity per share (P/E) and other ratios (Stove, 2002). P/B ratio out of all the book value ratios is preferred by analysts because this ratio is more stable, than earning per share ratio. When earnings are negative, P/B presents company’s value in a more appropriate manner, than P/E ratio. Other measure, which is used by managers and analytics, is book rate of return (Brealey, Meyers, 2003). It is calculated by dividing company’s book income by company’s book value of assets. Biggest problem with balance sheet valuation methods is that nominal (purchase) values of assets are represented in balance sheets. Because of that some analysts adjust balance sheets: nominal asset values are substituted with current market values. The disadvantage is that immense amount of effort and data collecting is required to assess market value.

Income statement demonstrates company’s income, expenses and profit for a set period of time. Problem analyzing income statement is that companies can manipulate data in such a way, which could lead to exaggeration of economical situation (Fabozzi, 2003). On the other hand, accounting regulations authorize companies managers to present information in an unrealistic manner (Palepu, Healey, Bernard, 2007; Grant, 2002). For example, research and development expenses need to be represented in income statement as current period expenses, although R&D benefit mostly lasts for a longer period, than one year. For this reason R&D expenses should be presented as investment and be depreciated.

One of the most widely used methods of valuation is discounted cash flow. It is calculated by dividing company’s cash flows by rate of return, which can be earned from investments in capital markets. This method has it’s own flaws. The precision of this method depends on forecast of company’s cash flows and when assumptions are adjusted by new expectations, company’s value can change drastically (Brearly, Meyers, 2003). Despite that, this method presents time value of company’s money, which is one of the most important concepts in finances (Ehrhardt, Brigham, 2006).

Economic value added method helps to minimize negative effects of most of the discussed valuation models (Grant, 2002). Economic value added is calculated using the following formula:

$$\text{EVA} = \text{NOPAT} - \$ \text{Cost of Capital}$$

In the 1 formula NOPAT is net operating profit after taxes. Economic value does not only measure profitability of a company, but also evaluate capital expenses, which were used to reach the level of profitability. Besides that, investors can adjust values in profit/loss account a balance sheet in order to eliminate subjectivity of managers and remove negative impact of accounting legislation.

To understand and assess company’s economic value it is essential to evaluate factors, which could affect performance of a company. These factors can be divided into two groups: internal and external. External factors, which affect company’s value, are market price of the raw materials and final products (Temple, 2003), competition level in the market (Cypher, Dietz, 2004; Mankiw, 2009), borrowing interest rates (Ehrhardt, 2006). Internal factors are labor productivity (Mankiw, 2009), opportunity to expand to foreign markets (Dunn Jr., Mutti, 2000; Oliveira, Cadogan, Souchon, 2012), profitability of goods sold (Palepu et al. 2007).

### 1. Method

To find true economic value of a company, nominal values of assets in balance sheets should be changed with their market values. In spite of that, in this research balance sheet values were used for the following reasons: 1. In Lithuania security markets are not active and liquid. That is why not all assets are actively traded, their prices do not
represent true value. 2. Some of the assets are one of a kind and uniquely made to suit each company’s needs. Because of that there are no equivalent products sold in the market.

To calculate economic value some alterations of balance sheets were needed. The three main changes are required in order to calculate company’s economic value (Damodaran, 2012). Firstly, equipment leasing should be removed from assets in balance sheet and attributed to expenses. Secondly, research and development expenses should be evaluated as assets, not expenses: that means they should not be written off the same year as the expenses were incurred, but depreciated over the period of time the benefit for the company is felt. Lastly, short term, non-usual, capital alterations (expenses) should be removed.

All the information for calculation of economic value added and value affecting factors was taken from companies’ annual reports, Lithuanian Statistical Department and Lithuanian Central Bank databases.

To calculate companies labor productivity value of absolute annual income was divided by annual average number of workers; export income was calculated by subtracting income, generated in local Lithuanian market, from total annual income; profitability from production sold was calculated by dividing gross profit by sales income.

External factors were calculated in such a manner: company’s market share in Lithuanian dairy industry market was calculated as annual income divided by total turnover of the whole sector during a year; loan interest rates were calculated as weighted average of interest rates, granted in Litas and Euros; change in price of milk was assessed by evaluating growth rate milk purchase price index.

For the research linear multiple regression analysis was used to determine level of dependency between economic value added and factors, affecting companies values (Baltagi, 2008). To evaluate strength and direction of the dependency between economic value and factors affecting value Pearson correlation coefficient was used (Boguslauskas, Bliekienė, Grondskis, Maksvytis, 2009). To assess possible future changes in economic values of companies in Lithuanian dairy industry trend line analysis was performed.

2. Results

Economic value added rates were negative for all four largest Lithuanian dairy companies in 2008. By 2009 only AB “Rokiskio suris” had a negative economic value. AB “Vilkyskiu pienine” needed two years after economic slowdown, which occurred in second half of 2008, to reach pre-crisis operating level, AB “Pieno Zvaigzdes” and AB “Zemaitijos pienas” needed four years to recover and AB “Rokiskio suris” in 2013 had not yet reached pre-crisis level of economic value. Estimated economic value added values of analyzed companies are presented in Table 1.

Skewness coefficient of all four companies in Lithuanian dairy industry have a negative skew. That shows that economic values of biggest companies in dairy industry tend to drift further to the negative side from the average value. Economic values of AB “Vilkyskiu pienine” and AB “Rokiskio suris” have the highest Kurtosis coefficient significance out of all four examined companies. Economic values of these two companies tend to reach extreme minimum and maximum points more frequently.

<table>
<thead>
<tr>
<th>Year</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
</table>

Evaluating the correlational coefficient, there are two main factors, which have the highest level of linkage with dairy companies economic values: gross profit margin and loan interest rates. Gross profit margin has strong positive linear correlation with economic values of three out of four companies, performing in dairy industry. Loan interest rates have average strength negative linear correlation with all four examined companies. Correlation
coefficients of economic value added and factors, affecting economic value, are presented in Table 2.

To further establish the connection between economic values of companies operating in Lithuanian dairy industry and internal/external factors, multiple regression model was employed. Variables were inserted into presented regression equation:

$$Y_n = b_1 * x_{n1} + b_2 * x_{n2} + b_3 * x_{n3} + b_4 * x_{n4} + b_5 * x_{n5} + b_6 * x_{n6} \quad (2)$$

In the second equation $Y_n$ depicts each of the company’s economic value, $x_{n1}$ – labor productivity, $x_{n2}$ – income from exporting, $x_{n3}$ – gross profit margin, $x_{n4}$ – company’s share in Lithuanian dairy industry, $x_{n5}$ – loan interest rates, $x_{n6}$ – milk market price index yearly growth rate. $b_1$-$b_6$ are parameters of independent variables, which show how much changes in factors affect companies economic value.

Table 2. Correlation coefficients between Lithuanian dairy companies economic value added and value affecting factors.

<table>
<thead>
<tr>
<th>Factors</th>
<th>AB Zematijos pienas</th>
<th>RANK</th>
<th>AB Vilkyškiu pienine</th>
<th>RANK</th>
<th>AB Pieno zvaigždes</th>
<th>RANK</th>
<th>AB Rokiškio suris</th>
<th>RANK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor productivity</td>
<td>0.200329</td>
<td>4</td>
<td>0.396304</td>
<td>4</td>
<td>0.260048</td>
<td>5</td>
<td>-0.010488</td>
<td>6</td>
</tr>
<tr>
<td>Income from exporting</td>
<td>0.234169</td>
<td>3</td>
<td>0.309892</td>
<td>5</td>
<td>0.335813</td>
<td>3</td>
<td>0.173285</td>
<td>4</td>
</tr>
<tr>
<td>Gross profit margin</td>
<td>0.862734</td>
<td>1</td>
<td>0.871891</td>
<td>1</td>
<td>0.683671</td>
<td>1</td>
<td>0.799364</td>
<td>1</td>
</tr>
<tr>
<td>Local market share</td>
<td>-0.053674</td>
<td>6</td>
<td>0.455525</td>
<td>3</td>
<td>-0.158964</td>
<td>6</td>
<td>0.203462</td>
<td>3</td>
</tr>
<tr>
<td>Loan interest rates</td>
<td>-0.534662</td>
<td>2</td>
<td>-0.624211</td>
<td>2</td>
<td>-0.614805</td>
<td>2</td>
<td>-0.694678</td>
<td>2</td>
</tr>
<tr>
<td>Raw milk purchase price</td>
<td>0.086058</td>
<td>5</td>
<td>0.016528</td>
<td>6</td>
<td>0.282382</td>
<td>4</td>
<td>0.112868</td>
<td>5</td>
</tr>
</tbody>
</table>

Strongest impact to economic values of companies, operating in Lithuanian dairy industry have these factors: gross profit margin (is significant for all 4 companies) and loan interest rates (significant in 3 out of 4 cases). Companies’ market share (significant 2 out of 4 times) and income from export activities (significant 1 out of 4 times) have moderate significance. Milk purchase price in the market and labor productivity has no meaningful impact to any of four examined Lithuanian dairy producing companies’ economic value.

The evaluation of trend showed that economic values of all four biggest companies in Lithuanian dairy industry should rise during the years of 2014 and 2015 (see Fig.1).
Coefficient of determination for the trend function suggests that highest possibility of economic value growth exists for AB “Zemaitijos pienas” (coefficient of determination – 0,8686) and AB „Rokiskio suris“ (coefficient of determination – 0,8478), while AB “Vilkyskiu pienine“ (coefficient of determination – 0,6383) has the least tendency to growth in it’s economic value.

Conclusions

Because of big competition in local dairy market, profitability of companies in Lithuanian dairy industry is below average. That is the reason why companies in the sector generate most of the income from foreign markets. Only one out of four industry’s largest companies during the year of 2012 generated more than 50 percent of income in domestic market. Economic crisis, which originated in United States of America in 2007, affected local Lithuanian dairy market during the year of 2009, sector shrunk by 15 percent.

Lithuanian dairy industry is in a complex position. Largest companies of the industry were exporting more than 50% of produced goods to Russian and European Union markets. With slow growth in Europe and declining economic activity in Russia, it will be hard to find alternatives for lost sales in these markets. Besides that, Lithuanian market is too small for so many big companies in dairy industry. Despite all the difficulties, companies in industry have recovered from the crisis. Economic value of most of the companies have reached pre-crisis level and AB “Rokiskio suris” even surpassed this level.

Out of all the singled out factors, potentially affecting economic value, gross profit margin and loan interest rates have the most significant linear impact for largest companies in Lithuanian dairy industry. Market price of raw milk and labor productivity had no noticeable linear effect. Companies were not influenced by milk market prices because of large supply of milk and strong bargaining position. During the crisis labor productivity in four largest companies in Lithuanian dairy industry has not diminished, because lower production quantities were levered by declining number of workers.

With different determination coefficient results trend analysis indicates increase in economic value of all four largest companies, operating in Lithuanian dairy industry. Despite that, trend analysis doesn’t recognize worsening
situation in markets, where most of the production is being exported.

References