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# **ECONOMIC PERFORMANCES OF DAIRY INDUSTRY IN BOSNIA AND HERZEGOVINA IN TRANSITION**

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## Abstract

Research within this paper was aimed to give picture of economic performance of the dairy industry based upon commonly used indicators calculated for each dairy plant in Bosnia and Herzegovina. In order to understand state of sector transition micro-level analysis was conducted on the basis of balance sheet and income statement, two main financial records, of all dairies in Bosnia and Herzegovina. Documents were obtained from agencies in charge of collecting annual financial reports of both entities in order to assure reliable data for analysis. Research was conducted for three years period (2009-2011). Analysis encompassed horizontal and vertical analysis of balance sheet and income statement. Indicators of financial stability (liquidity and indebtedness ratios) and operating successfulness (efficiency, activity, productivity and profitability ratios) were calculated as well. All dairies were classified and analysed by entity and size. The analysis shown that BH dairies operate under very hard circumstances that negatively affects their operating performances. Low liquidity and profitability indicates both financial instability and poor business success. Situation is unsatisfactory in the whole countries, although slightly better in FBH than in RS. So, sector transition is far from completion, and its future characteristic will strongly depend on entrepreneurship (spirit and skills) as well as on ability to change and re-develop institutions both formal and informal (values, culture etc).

**Key words:** economic performance, dairy industry, Bosnia and Herzegovina

## 1. Introduction

Being defined as development priority in all strategic documents done in Bosnia and Herzegovina in post-war period, agriculture and food sector was subject of interest of numerous researchers and professionals. Besides, a lots of development projects, internationally and nationally financed, have been implemented in the sector. In majority of those analysis and papers dairy sub-sector was pointed out as one of the most important one within agriculture. Dairy sector suffered severe war damages in terms of livestock fund, agricultural machinery and processing capacities. Milk production and processing was dramatically reduced thus contributing to very negative food trade balance of Bosnia and Herzegovina. Yet, since the end of the war, dairy sector can be characterized as very dynamic and even more very vital one. Old dairies established before the war were privatized and numerous others have been established different in terms of assortment and size. It became even export leader within agribusiness (Nikolić et al., 2011, Bećirević et al., 2011). Regardless importance of dairy sector and interest of scientists and researchers, majority of papers related to dairy sector were more or less detailed sector analysis, while only few papers dealt with sector analysis based upon overall analysis at micro level of milk processors. Besides, over the past two decades, formerly state owned dairies were objects of interest of foreign investors so many changes took places in dairy sector in terms of property. So, it can be a good example of on-going transition process within BH agribusiness. Importance of dairy sector as the market outlet for domestic milk production, together with its great contribution to negative foreign trade balance of food commodities provides space for many improvements at all levels. In addition to this, authors of this paper have chosen dairy industry for the object of the research as a potentially powerful driver for development of domestic milk production thus contributing to poverty reduction, raise of competitiveness of BH agro industry and whole economy

## 2. Methodology

Micro-level analysis was conducted on the basis of two main financial records, balance sheet and income statement, of dairies in Bosnia and Herzegovina. Documents were obtained from agencies in charge of both entities<sup>6</sup> in order to assure reliable data for analysis. The sample encompassed all

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<sup>6</sup> AFIP (Agency for and Financial, Informatics and Mediatory Services of FBH) and APIF (Agency for and Financial, Informatics and Mediatory Services of RS)

dairies in the country that were operating over the 2009-2011 period and that submitted their financial reports to the Agencies (which is compulsory for all legal entities). Thus, 18 dairies (out of 20) from FBH<sup>7</sup> and 9 (out of 13) from RS were included into sample. According to Loza (2011), the share of selected dairies in total milk processing was 86% in FBH, respectively 92% in RS, therefore they provide full picture of the sector.

Economic performance of dairy sector was first determined on the basis of horizontal and vertical analysis of balance sheet and income statement. Afterwards, financial safety and business successfulness based upon commonly used indicators (Žager, 1999, Walsh, 1999) for dairy plants in both Federation of Bosnia and Herzegovina (FBH) were calculated and analysed. Indicators were calculated for purpose of analysing: a) liquidity c) indebtedness; d) activity e) productivity f) efficiency and profitability of dairies.

Analysis encompassed 2009-2011 period. Indicators were first calculated for each dairy, and then were grouped on the basis of entity and scale, so economic performances of dairies in both entities and BH as a whole could be discussed, as well as changes over the concerned period.

All dairies in terms of the size, according to OECD definition, were classified into following four groups:

- micro enterprises (1-4 employees)
- very small enterprises ( 5-19 employees);
- small enterprises (20-99 employees);
- medium enterprises (99-500 employees).

The sample for the research within this paper included 27 enterprises that were, according to mentioned OECD criterion classified as: two micro, 12 very small, eight small and five as medium enterprises.

### 3. Basic Characteristics of primary milk production in Bosnia and Herzegovina

BH has not yet fully recovered from severe war damages of its entire livestock fund and following facilities so neither pre-war number of milk nor milk production has been reached.

**Table 1. Number of cows and milk production in Bosnia and Herzegovina**

| Year | Number of milked cows (000 heads) | Milk (000 litres) | Yield (l/cow) |
|------|-----------------------------------|-------------------|---------------|
| 1990 | 623                               | 875               | 1.410         |
| 2006 | 312                               | 662               | 2.118         |
| 2007 | 306                               | 724               | 2.360         |
| 2008 | 296                               | 737               | 2.485         |
| 2009 | 293                               | 733               | 2.503         |
| 2010 | 279                               | 693               | 2.483         |
| 2011 | 268                               | 665               | 2.491         |

: Agency for statistics of Bosnia and Herzegovina

Over the first decade of post-war recovery, cca 50% of cows fund was recovered, but cows number decreased slowly since 2006, so in 2011 it amounted only 43% of the pre-war number. Yet, milk production in 2011 reached 76% of the pre-war one, due to encouraging increase of milk yield by 76%. Milk yield increase is result, first of all, of improved breed composition. 50,6% of cows are in FBH, 48,6% in RS and 0,8% in Distrikt Brcko<sup>8</sup>. In total milk production FBH participates with 43,7%, RS with 55,2% and Brcko district with 1,1% which indicates lower yield per cow in FBH than in RS and DB.

<sup>7</sup> According to Dayton Constitution Bosnia and Herzegovina is consisted of two entities (Federation of BH and Repubika Srpska) and Brcko District.

<sup>8</sup> Loza, D. (2011): Mlijeke u BiH u periodu 2000-2010, Milkprocessing, d.o.o. Sarajevo

One of the key characteristic of dairy sector in whole BH, and one of the most serious obstacle is very low share of milk collected by dairies in total milk production. This share was just 12% in 1990 (Loza, 2011) and has been constantly increasing ever since, but it is still unsatisfactory reaching in 2011 31% in FBH, only 28% in RS and 34% in DB. Share of collected milk in total milk production in BH in 2011 was 29%. 46,5% of milk was collected in RS, 1,3% in DB and 52,2% in FBH. Low share of collected milk in total produced amount is consequence of many factors but most important ones among them common for the whole country are: very big number of very small and dispersed farms, poor physical infrastructure, lack of cooling storage capacities and lack of producers organization or intermediaries.

#### 4. Basic Characteristics of Dairy industry of Bosnia and Herzegovina

Total installed capacities of BH pre-war dairy industry are estimated at 165 million litres and in 2003 at cca 430 million litres out of which FB participated with 67% and RS with 33% (Ognjenović, 2009). Average size of dairies in FBH expressed in annual capacity amounted 8,2 million litres and 6,4 million litres in RS. Average annual capacity for BH in 2003 was 7,5 million litres. This is only 50% of average pre-war capacity of dairies which indicated that post-war development in the sector was directed towards fragmentation of capacities, e.g. establishment of bigger number of smaller dairies. The number of dairies changed significantly over last 20 years.

**Table 2. The number of dairies in BH**

| Year    | FBH | RS | BH  |
|---------|-----|----|-----|
| 1992    | 9   | 2  | 11  |
| 2003    | 35  | 22 | 57  |
| 2006.   | 26  | 18 | 44  |
| 2007.   | 24  | 14 | 38. |
| 2010/11 | 20  | 13 | 33  |

Source: Ognjenovic (2009), Loza (2011)

Characteristic of the last decade as far as dairy sector is concerned can be summarized as follows: (i)slow improvement in terms of product assortment diversification (introduction of low-fat dairy products, feta cheese, spread cheeses, proboscis etc, but still main products are UHT/pasteurised milk, yogurt), (ii)expansion of dairy export (mainly UHT milk), (iii)involvement of foreign dairy companies and taking over significant portion of dairy capacities, and (iv)reduction of dairies number by closing certain number of, mainly small scale dairies that were established without proper and detailed business planning and consequently could not stand market competition.

**Table 3. Milk processing in BH**

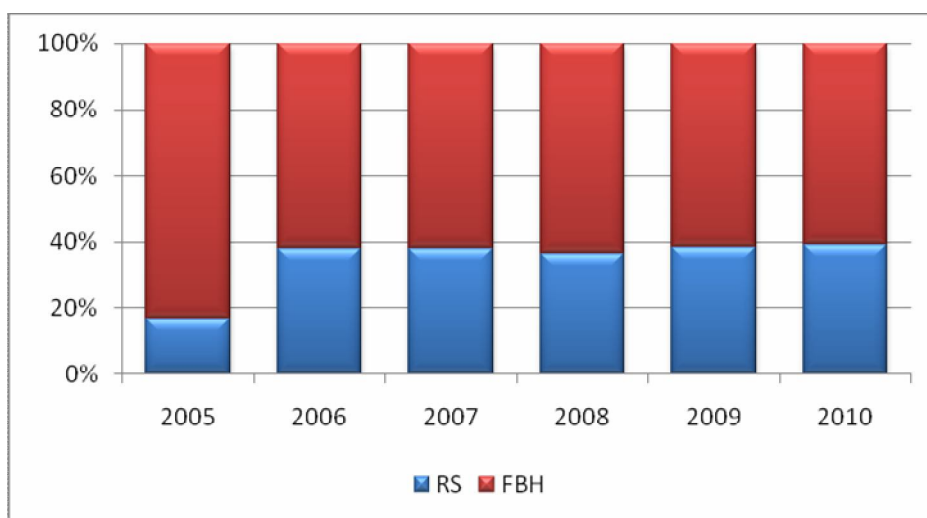
| Year  | Milk processing (000 litres) |        |         |
|-------|------------------------------|--------|---------|
|       | FBH                          | RS     | BH      |
| 2005. | 105.794                      | 21.500 | 170.951 |
| 2006. | 107.797                      | 66.157 | 178.710 |
| 2007. | 115.485                      | 71.113 | 199.198 |
| 2008. | 145.398                      | 83.713 | 235.345 |
| 2009. | 143.041                      | 89.947 | 229.513 |
| 2010. | 133.505                      | 86.472 | 225.646 |

Source: Loza (2011)

Milk processing was increasing until 2009 when a drop by 2,5% has been recorded, while in 2010 it additionally decreased by 1.8%. This is consequence of reduction of cows number and milk production consequently.

With 225.646.000 litres of processed milk BH dairy industry employed 53.7% of its total capacities which is still unsatisfactory, but represents remarkable improvement if compared with previous years. As the quantity of processed milk exceed quantity of collected milk it is obvious that dairies, apart from collecting milk from domestic sources meet a certain portion of their needs from milk powder bought from domestic producers or imported from abroad.

Thanks to the stronger and faster increase in milk production and processing in RS than in FBH, RS almost doubled its share in total milk processing over the 2005-2011 period. Although certain quantity of milk was and still is being collected in Brcko District, it was only collected there and forwarded for processing to either RS or FBH.



Source: Loza (2011)

Figure 1. The share of FBH and RS in total milk processing in Bosnia and Herzegovina

## 5. Economic performances of BH Dairies

Vertical and horizontal analysis of both balance sheet and income statement prior to calculation of economic indicators as it influences indicators and can offer explanation for changes and deviations of relevant indicators

### a. Balance Sheet Characteristics

**Table 4. Summary Balance Sheet of Dairies in Bosnia and Herzegovina**

(BAM<sup>9</sup>)

| Entity/ year                      | Fixed assets | Current assets | Capital    | Long-term liabilities | Current liabilities |
|-----------------------------------|--------------|----------------|------------|-----------------------|---------------------|
| <b>BH</b>                         |              |                |            |                       |                     |
| <b>2009</b>                       | 133.456.537  | 58.085.381     | 64.416.022 | 54.740.563            | 78.421.886          |
| <b>2010</b>                       | 149.723.265  | 62.010.537     | 71.343.238 | 52.923.349            | 94.326.592          |
| <b>2011</b>                       | 147.680.333  | 78.535.062     | 72.679.533 | 51.846.767            | 109.188.158         |
| <b>Average</b>                    | 143.620.045  | 66.210.327     | 69.479.598 | 53.170.226            | 93.978.879          |
| <b>Index</b>                      | 110,66       | 135,21         | 112,83     | 94,71                 | 139,23              |
| <b>Entity average (2009-2011)</b> |              |                |            |                       |                     |
| <b>FBH</b>                        | 70.088.103   | 39.944.001     | 57.819.963 | 13.572.721            | 39.316.297          |
| <b>RS</b>                         | 73.531.942   | 26.266.326     | 11.659.635 | 39.597.505            | 54.662.581          |
| <b>BiH</b>                        | 143.620.045  | 66.210.327     | 69.479.598 | 53.170.226            | 93.978.879          |

Source: AFIP and APIF

Current assets increased by 35,21%, and fixed assets by 10,66% over the three years period. This increment was accompanied with increment of current liabilities by 39,23%, and capital by 12,83%, while long-term liabilities decreased by 5,3%. Thus, positive trend of changing total assets structure in favour of current assets was abolished by increase of current liabilities on detrimental of long-term liabilities, contributing further to poor balance sheet picture. On the average, only FB had surplus of current assets over current liabilities, while BH over the period and RS did not have it, e.g. BH and RS shown the lack of working capital that indicates severe liquidity and financial stability problems.

**Table 5. The structure of Balance Sheet of Dairies in Bosnia and Herzegovina**

(%)

| Entity/ year                         | Assets       |                | Liabilities |                       |                     |
|--------------------------------------|--------------|----------------|-------------|-----------------------|---------------------|
|                                      | Fixed assets | Current assets | Capital     | Long-term liabilities | Current liabilities |
| <b>BH 2009</b>                       | 69,67        | 30,33          | 32,60       | 27,71                 | 39,69               |
| <b>BH 2010</b>                       | 70,71        | 29,29          | 32,64       | 24,21                 | 43,15               |
| <b>BH 2011</b>                       | 65,28        | 34,72          | 31,10       | 22,18                 | 46,72               |
| <b>Average</b>                       | 68,45        | 31,55          | 32,07       | 24,54                 | 43,38               |
| <b>Average according to Entities</b> |              |                |             |                       |                     |
| <b>FBIH</b>                          | 63,70        | 36,30          | 52,23       | 12,26                 | 35,51               |
| <b>RS</b>                            | 73,68        | 26,32          | 11,01       | 37,38                 | 51,61               |
| <b>BIH</b>                           | 68,45        | 31,55          | 32,07       | 24,54                 | 43,38               |

<sup>9</sup> 1€ = 1.9558 BAM

| Average according to dairy size |       |       |       |       |       |
|---------------------------------|-------|-------|-------|-------|-------|
| <b>Micro</b>                    | 85,63 | 14,37 | 27,01 | 40,33 | 32,66 |
| <b>Very small</b>               | 80,83 | 19,17 | 17,15 | 31,02 | 51,83 |
| <b>Small</b>                    | 69,69 | 30,31 | 40,21 | 25,00 | 34,79 |
| <b>Medium</b>                   | 62,15 | 37,85 | 33,59 | 23,45 | 42,95 |

Source: Authors calculation on the basis of APIF and AFIP data

Horizontal analysis of summary balance sheets indicates domination of fixed over current assets over observed period in BH as a whole and its both entities which makes the picture of balance sheet structure unfavourable if preferred and recommended cca 50:50 is taken into account. This is one of the consequences of low capacities utilisation in dairy sector in the countries. Yet, three years period has shown slight improvement of such situation as the share of current assets, although still insufficient, has recorded slight increase. As far as the scale of the enterprises is concerned, the bigger the enterprise is the higher is the share of current assets in total assets. The best assets structure is recorded in FBH (64:37) and in medium enterprises (62:38). Previously stated lack of working capital is obvious here as well, as only FBH has current assets/current liabilities ratio 36,3:35,5. Particularly poor situation was recorded in RS (26,32:51,61) and in micro (14,37:32:66) and very small dairies (19,17:51,83) regardless entity position.

**Table 6. The share of SME and entities in positions of Balance Sheet in dairies in BH**

| Entity/ year              | Fixed assets  | Current assets | Capital       | Long-term liabilities | Current liabilities |
|---------------------------|---------------|----------------|---------------|-----------------------|---------------------|
| <b>Average Micro</b>      | 1,29          | 0,52           | 0,90          | 1,68                  | 0,83                |
| <b>Average Very small</b> | 21,96         | 12,65          | 11,35         | 25,67                 | 26,29               |
| <b>Average Small</b>      | 32,85         | 34,69          | 41,32         | 32,13                 | 27,40               |
| <b>Average Medium</b>     | 43,90         | 52,14          | 46,43         | 40,52                 | 45,48               |
| <b>Total BH</b>           | <b>100,00</b> | <b>100,00</b>  | <b>100,00</b> | <b>100,00</b>         | <b>100,00</b>       |
|                           |               |                |               |                       |                     |
| <b>Average FBH</b>        | 48,80         | 60,33          | 83,22         | 25,53                 | 41,84               |
| <b>Average RS</b>         | 51,20         | 39,67          | 16,78         | 74,47                 | 58,16               |
| <b>Average BH</b>         | <b>100,00</b> | <b>100,00</b>  | <b>100,00</b> | <b>100,00</b>         | <b>100,00</b>       |

Source: Authors calculation on the basis of APIF and AFIP data

As it can be observed in table 6, 51,20% of total BH dairies' fixed assets is in RS, and 48,8% in FBH. But, in total dairies' capital FBH contributes with 83,22% and RS with only 16,78% which indicates financial instability of dairy sector in this entity.

#### *b. Income statement analysis*

For the purpose of analysis key elements based on the data from income statement were calculated and summarized in the Table below.



**Table 7. Summary Income statement of BH Dairies**

(BAM)

| Entity/ year              | Operative profit/loss | Financial profit/loss | Other profit/loss | PBIT             | Net profit/loss  |
|---------------------------|-----------------------|-----------------------|-------------------|------------------|------------------|
| <b>BH 2009</b>            | 2.745.388             | -2.397.377            | 2.123.113         | 5.035.025        | 2.224.012        |
| <b>BH 2010</b>            | 3.258.647             | -3.484.636            | 5.235.692         | 8.618.052        | 4.508.733        |
| <b>BH 2011</b>            | 5.156.411             | -4.883.938            | 1.061.818         | 6.995.081        | 1.200.862        |
| <b>Average</b>            | <b>3.720.149</b>      | <b>-3.588.650</b>     | <b>2.806.874</b>  | <b>6.882.719</b> | <b>2.644.535</b> |
| <b>Average FBH</b>        | 1.962.511             | -238.342              | 1.744.423         | 4.054.931        | 3.121.733        |
| <b>Average RS</b>         | 1.757.637             | -3.350.308            | 1.062.452         | 2.827.788        | -477.197         |
| <b>Average BH</b>         | 3.720.149             | -3.588.650            | 2.806.874         | 6.882.719        | 2.644.535        |
| <b>Average Micro</b>      | -130.748              | -340                  | 258.541           | 127.830          | 114.709          |
| <b>Average Very small</b> | -677.344              | -306.686              | 324.694           | -322.095         | -593.403         |
| <b>Average Small</b>      | 1.030.545             | -123.052              | 559.759           | 1.690.573        | 1.320.527        |
| <b>Average Medium</b>     | 920.309               | -1.811.882            | 1.500.465         | 2.488.299        | 548.004          |

Source: Authors calculation on the basis of APIF and AFIP data

On the average, BH dairies in both entities had profitable operative activity, and profit from operative activity increased over three years. On the contrary, financial activities have shown increasing loss over the period in whole Bosnia and Herzegovina. Loss from financial activity was particularly high in RS and medium enterprises.

Most of dairies in BH, apart from processing milk have other business activities, mainly reselling commodities in order to improve their business financial results. Moreover for most of dairies activities out of operative one had decisive influence on the final business result.

Due to very high share of interest in total expenses, profit before interest and taxes (PBIH) is achieved in all observed categories and BH as the whole (except in very small enterprises). Due to all this, net profit for three observed years was highly dependent on trends of financial loss and other activities profit of dairies. Thus, it was the highest in 2010 and then dropped in 2011 due to raise of financial loss and decrease of other activities profit. Dairies in FBH had profitable business activities, such as BH as the whole, while dairies in RS, had unprofitable average total activity with an average loss 477.197 BAM.

**Table 8. The share of entities in positions of Income Statement in dairies in BH**

| Entity/ year       | Operative profit/loss | Financial profit/loss | Other profit/loss | PBIT          |
|--------------------|-----------------------|-----------------------|-------------------|---------------|
| <b>Average FBH</b> | 52,75                 | 6,64                  | 62,15             | 58,91         |
| <b>Average RS</b>  | 47,25                 | 93,36                 | 37,85             | 41,09         |
| <b>Average BIH</b> | <b>100,00</b>         | <b>100,00</b>         | <b>100,00</b>     | <b>100,00</b> |

Source: Authors calculation on the basis of APIF and AFIP data

Over the observed 2009-2011 period the share of FBH participated with 52,75% in operative profit, with 6,64% in financial loss, with 62,15% in profit from other activities, and with 58,91% in PBIT. RS participated with 93,36% in financial loss, with 47,25% in operative profit and with 41,09% in PBIT. Due to very high financial loss, RS reduced average net profit of all BH dairies by -477.197 BAM.

### c. Analysis of Financial Safety

Financial safety of BH dairy industry was analysed by means of liquidity and indebtedness analysis.

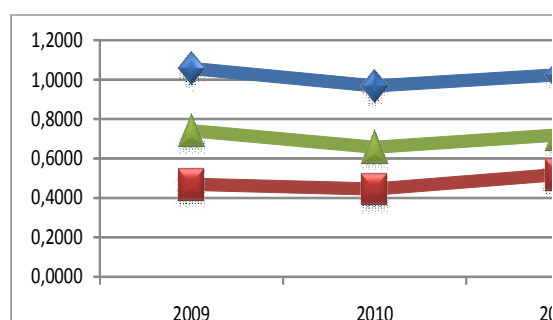


Figure 2. Current liquidity of BH dairies

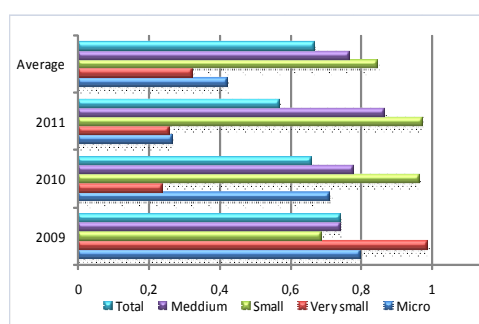


Figure 3. Current liquidity of SME in dairy industry in Bosnia nad Herzegovina

As expected from the structure of balance sheet, current liquidity is unsatisfactory in both BH entities and BH as the whole. Moreover it has been deteriorating thus indicating severe liquidity problems in the sector. Only FBH and only in 2009, had current liquidity over 1. If contemporary and more strict requirements for current liquidity to be over 2 were applied, the whole picture of liquidity of the sector would be even worse, as not even half of this requirement has been met by BH dairies. Situation is slightly better in FBH than in RS, but still far from being satisfactory.

Indebtedness of BH dairy industry was estimated on the basis of following indicators: debt coefficient (total liabilities : total assets), capital coefficient (capital : total assets), debt to capital (total liabilities : capital), interest coverage (profit before interest and tax : interest), and long-term liabilities+capital : fixxed assets.<sup>10</sup>

Table 9. Indicators of indebtedness of dairies in BH

| Entity/ year       | Debt coeff. | Capital coeff. | Debt to Capital | Interest coverage | Long-term liabilities+capital/Fixed assets |
|--------------------|-------------|----------------|-----------------|-------------------|--|
| BH 2009            | 0,67        | 0,33           | 2,07            | 1,96              | 0,89                                       |
| BH 2010            | 0,67        | 0,33           | 2,06            | 2,39              | 0,83                                       |
| BH 2011            | 0,69        | 0,31           | 2,22            | 1,24              | 0,84                                       |
| Average            | 0,68        | 0,32           | 2,12            | 1,74              | 0,85                                       |
| Average FBH        | 0,48        | 0,52           | 0,91            | 6,92              | 1,02                                       |
| Average RS         | 0,89        | 0,11           | 8,08            | 0,84              | 0,70                                       |
| Average Micro      | 0,73        | 0,27           | 2,70            | 339,97            | 0,82                                       |
| Average Very small | 0,83        | 0,17           | 4,83            | -0,96             | 0,69                                       |
| Average Small      | 0,60        | 0,40           | 1,49            | 7,57              | 0,96                                       |
| Average Medium     | 0,66        | 0,34           | 1,98            | 1,32              | 0,85                                       |

Source: Authors calculation on the basis of APIF and AFIP data

According to debt and capital coefficient values for all three years the share of capital and liabilities in total assets financing in BH over three years was pretty stable with approximate ratio of cca 67%:33% which is poor taking into account that preferable ratio is 50%:50% or if

<sup>10</sup> Žager, Katarina, Žager, L. (1999): „Analiza finansijskih izvještaja“, Masmedia, Zagreb.

compared with debt coefficient in food sector in SAD (50%), EU (45%), UK (50%) and Japan (43%)<sup>11</sup> This preferable ratio is achieved in FBH while three year average for RS 89%:11% shows serious indebtedness that was indicated in previous analysis as well.

As for SMEs, the bigger the enterprises are, the more favourable debt to capital ratio is. Other indicators of indebtedness lead to similar conclusions. According to all of them, dairies in RS are more indebted than those in FBH, while smaller enterprises are more indebted than bigger ones. Ratio between long-term liabilities and fixed assets has value below 1 in all cases, except for FBH average. This means that there is no surplus of long-term sources over fixed assets that could serve for current assets. In other words, the lack of working capital is shown once more.

#### *d. Efficiency analysis*

Most commonly used indicators: assets turnover, fixed assets turnover, duration of payments from debtors and duration of payment to suppliers are used to evaluate and illustrate efficiency of dairy sector in Bosnia and Herzegovina.

**Table 10. Indicators of efficiency of dairies in BH**

| Entity/ year              | Assets turnover | Fixed assets turnover | Payments from debtors – days | Payment to suppliers - days |
|---------------------------|-----------------|-----------------------|------------------------------|-----------------------------|
| <b>BH 2009</b>            | 1,22            | 1,80                  | 45,44                        | 71,82                       |
| <b>BH 2010</b>            | 1,14            | 1,66                  | 47,47                        | 95,17                       |
| <b>BH 2011</b>            | 1,08            | 1,72                  | 57,66                        | 109,4                       |
| <b>Average</b>            | 1,14            | 1,72                  | 50,32                        | 92,46                       |
|                           |                 |                       |                              |                             |
| <b>Average FBH</b>        | 1,4             | 2,21                  | 48,4                         | 69,73                       |
| <b>Average RS</b>         | 0,87            | 1,26                  | 53,57                        | 130,98                      |
| <b>Average</b>            | 1,14            | 1,72                  | 50,32                        | 92,46                       |
|                           |                 |                       |                              |                             |
| <b>Average Micro</b>      | 0,38            | 0,47                  | 111,99                       | 67,03                       |
| <b>Average Very small</b> | 0,25            | 0,36                  | 127,93                       | 396,81                      |
| <b>Average Small</b>      | 0,99            | 1,47                  | 55,21                        | 59,3                        |
| <b>Average Medium</b>     | 1,58            | 2,36                  | 39,24                        | 77,93                       |
| <b>Average</b>            | 1,14            | 1,72                  | 50,32                        | 92,46                       |

Source: Authors calculation on the basis of APIF and AFIP data

All used indicators of efficiency of dairies shows poor efficiency of dairy in utilizing employed assets that has been even deteriorating over observed three years period. All deviations already mentioned in balance sheet analysis are proven here. Due to unfavourable structure of assets, fixed assets turnover is not much higher than total assets turnover. Poor situation with liquidity and indebtedness is solved by dairies by postponing payment to suppliers as there is no interest penalty for this delay. Average duration of payments from debtors in food sector in USA is 30 days and in UK 45 days<sup>12</sup> which is shorter than in Bosnia and Herzegovina. Although duration of payments from debtors is among most commonly mentioned problems by dairies in BH, this duration is still much shorter than duration of payments by suppliers.

Thank to better balance sheet structure and liquidity dairies in FBH had better efficiency indicators that those from RS as well. On the other side, small and medium enterprises use assets more efficiently than micro and very small ones.

<sup>11</sup> Walsh, C. (2006): Key management ratios, Sinergija, Banja Luka

<sup>12</sup> Walsh, C. (2006): Key management ratios, Sinergija, Banja Luka

*e. Productivity analysis*

As balance sheet and income statements do not include any data on production volume and scope, productivity was analysed on the basis of financial results (income per employee, costs per employee, gross and net profit per employee).

**Table 11. Indicators of productivity of dairies in BH**

(BAM)

| Entity/ year              | No. of employees | Income/ employee | Costs/ employee | Gross profit/employee | Net profit/employee |
|---------------------------|------------------|------------------|-----------------|-----------------------|---------------------|
| <b>BH 2009</b>            | 1.156            | 208.280          | 206.142         | 2.138                 | 1.924               |
| <b>BH 2010</b>            | 1.208            | 205.418          | 201.271         | 4.147                 | 3.732               |
| <b>BH 2011</b>            | 1.233            | 205.534          | 204.452         | 1.082                 | 974                 |
| <b>BH average</b>         | 1.199            | 206.377          | 203.927         | 2.451                 | 2.206               |
| <b>Average FBH</b>        | 746              | 207.575          | 202.928         | 4.648                 | 4.183               |
| <b>Average RS</b>         | 453              | 204.403          | 205.574         | -1.171                | -1.054              |
| <b>Average BIH</b>        | 1.199            | 206.377          | 203.927         | 2.451                 | 2.206               |
| <b>Average Micro</b>      | 4                | 194.956          | 160.196         | 34.760                | 31.284              |
| <b>Average Very small</b> | 111              | 84.941           | 90.899          | -5.958                | -5.362              |
| <b>Average Small</b>      | 348              | 165.988          | 161.771         | 4.216                 | 3.795               |
| <b>Average Medium</b>     | 736              | 241.378          | 240.190         | 1.188                 | 1.069               |

Source: Authors calculation on the basis of APIF and AFIP data

Indicators of productivity reflected changes if rather financial results than change of employee number. Again, productivity was better in FBH than in RS according to all indicators. Medium enterprises had the best income per employee and micro enterprises the best net profit per employee among all. But, in order to avoid misleading conclusion it has to be stated that high indicators of productivity in micro enterprises is consequence of both small number of employees and high share of profit from non-operative activities in total enterprise' profit.

*f. Profitability analysis*

Analysis of profitability in dairies was conducted using two most commonly used and most important indicators: return on capital employed and return on employed assets.

**Table 12. Indicators of profitability of dairies in BH**

| Entity/ year              | Return on capital - ROC(%) | Return on assets - ROA (%) |
|---------------------------|----------------------------|----------------------------|
| <b>BH 2009</b>            | 3,45                       | 2,42                       |
| <b>BH 2010</b>            | 6,32                       | 3,71                       |
| <b>BH 2011</b>            | 1,65                       | 2,94                       |
| <b>Average FBH</b>        | 5,4                        | 3,35                       |
| <b>Average RS</b>         | -4,09                      | 2,72                       |
| <b>Average BIH</b>        | 1,31                       | 3,18                       |
| <b>Average Micro</b>      | 22,57                      | 6,12                       |
| <b>Average Very small</b> | -9,25                      | -0,68                      |
| <b>Average Small</b>      | 5,65                       | 2,66                       |
| <b>Average Medium</b>     | 2,09                       | 3,11                       |

Source: Authors calculation on the basis of APIF and AFIP data

Return on capital was low ranging from 3,45 in 2009, 6,32 in 2010 and then dropped to 1,65 in 2011. Return on assets followed the same trend. Low ROC in 2011 is due to, first of all loss in RS as consequence of high financial loss. Although profitability indicators are not satisfactory, dairies managed to maintain their business profitable, thanks to, first of all reselling commodities, other activities or providing services. Yet, profitability is poor and instable particularly if compared to ROC and ROA for food sector in others counties (ROC = cca 17% in USA, 20% in UK, 11% in EU and 7% in Japan while ROA = 17% in USA, 12% in UK, 8% in Japan and 7% in EU countries)<sup>13</sup>

## 6. Conclusions

According to all analysed indicators dairy industry in Bosnia and Herzegovina has severe problems in market competition in terms of maintaining its business stable and profitable. Analysis of financial records indicates severe shortcomings in operative and financial management. This is particularly reflected in poor indicators of financial safety (liquidity and indebtedness) that together with unfavourable trends indicates financial instability on the long run. Global economic crisis contributed to deterioration of already hard position of dairy industry in BH. Apart from poor financial safety, dairy sector in BH has shown inefficient to use applied assets. Problems with inefficiency, liquidity and indebtedness' dairies solve by means of delaying payments of liabilities with no interest penalties (such as payment to suppliers) thus endangering economic position of farmers which can on a long run lead to problems with lack of raw material basis. Lack of knowledge in financial management can be noticed in the lack of use of financial leverage mechanism, so dairies are over indebted or finance assets with unnecessarily high capital employment which reduces return on capital.

Common problems of all dairies are lack of working capital. Most of dairies try to solve their financial problems with short time financial and nonfinancial liabilities which not only endanger working capital but total profit as well, as results in very high financial expenses. Profitability is generally low and unstable.

Over observed period dairies from FBH had better economic performances than those from RS, while small and medium were more successful than micro and very small one.

Although average and general picture is not bright at all, there are significant improvements in this sector. Increase of production, diversification of assortment and increase of export are among the most important among them. These improvements are achieved thanks to consolidation of few medium dairies and establishment of few new ones that are oriented to production of value added products, first of all cheeses of high quality that has already been recognized by consumers and those dairies managed to position themselves at domestic market. Further development of the sector will be highly dependant on development of milk production as dairies already act as competitors for raw milk on domestic market. Future of dairy sector will, probably, maintain the trend of enlargement to small or medium enterprises and micro and very small one will loose their market battle unless they change their orientation towards high value added specific or traditional dairy commodities.

According to Estrin & Mickiewicz (2010) many authors (drawing on the ideas of the Austrian economists e.g. Schumpeter, 1934; Kirzner, 1973), viewed the creation of numerous new firms as the principal mechanism whereby old socialistics industrialized structures would be transformed into a market oriented system for allocating resources (see Kornai,1990; Djankov and Murrell, 2002). Having that in mind one can conclude that transition of BH dairy sector has been started. Still poor skills regarding financial management suggest that sector still lack entrepreneurship skills and spirit. So, in order to get better insight into quality aspects of transition process the assessment of institutions, both formal (that is: rules. i.e. norms combined with explicit sanctions) and informal (that is: norms

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<sup>13</sup> Walsh, C. (2006): Key management ratios, Sinergija, Banja Luka.

and values) should be investigated. Having in mind that new ventures are more likely to be started by those who have already established themselves in business (Aidis *et al.*, 2008, recited by Estrin & Mickiewicz, 2010) it will be very important to investigate share of „baby business“ (business started by people younger than 35) in order to understand sector entrepreneurship capacity, which is crucial for sector sustainable development and full transition.

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