Recent years’ agri-policy developments have brought in structural changes in investment and financing in agriculture. The purpose of the paper is to examine the developments in agricultural firms’ financial structure, analysing trends in financing structure of Estonian agricultural firms in 1996–2008. The problem is, if sector’s higher debt level causes higher leverage on farm level, and does debt ratio having influence on farm profitability. The analysis is based on data of Estonian Statistics, and uses the method of financial ratio trend analysis. The results are presented on average enterprise basis. Results show that debt levels have increased gradually, without causing specific changes in debt-to-equity ratios. Net income is very floating and the volatility of the return on equity is high. In such a risky situation the agricultural firms should be careful in attracting additional debt capital.

**Key words:** agricultural firms, agricultural finance, financial structure.

**JEL codes:** Q320; Q140.

**Introduction**

Recent years structural changes have lead Estonian agriculture to increasing agricultural investments. Investments need to be financed, and the result of external financing is increasing debt levels (figure 1). The financial structure of agriculture is relevant for agricultural firms, lenders, and policy analysts. All of them need information about financial structure of agricultural enterprises in order to make justified decisions about farm viability. Over the last decade the issues of financial structure of agricultural firms have become important as the sector is more and more business-oriented, neglecting the traditional importance of rural life style. The present paper focuses on agricultural firms with focus on financing structure with regard to be competitive. On sector level, politicians view financial position of agriculture as it relates to rural life sustainability.

The need of keeping under control financial structure is essential, as agricultural firms have been influenced by such factors as expected net income and risk level, interest expenditure, attitudes of entrepreneurs and lenders towards risk as well as the structural specialities of agricultural firms. Financial theories claim that debt use brings about an increase in the return on equity and its variability.

The current article is based on empirical study, and examines financial structure of Estonian agricultural firms over the period of 1996–2008, giving an overview of debt levels, asset and capital structure, and farm profitability. The problem is, if sector’s higher debt level causes higher leverage on farm level, and does debt ratio having influence on farm profitability. The analysis of financial structure is based on the assumption that the more fluctuations there and are in the relative...
importance of loans in firm financial structure the more changes there are in the return on equity but also in the return on assets.

Successful farm business performance is characterized by significant growth over time in agricultural firm’s equity capital. Such growth directly reflects the accumulation of wealth, enhancement of solvency positions expanded credit capacity, and strengthening of future income-generating capacity.

Financial leverage in agricultural firms is affected by such factors as expeditious profit and risk level, interest charges, the attitude of entrepreneurs and lenders towards risk as well as the structural peculiarities of agricultural firms. (Hardaker, 1997) Pursuant to the financial theory, in the above-mentioned circumstances financial leverage increases the return-on-equity and its variability. A well-known fact – the more unstable the relative importance of loans in the firm’s capital structure, the more changes there are in the return-on-equity as well as in the gross estate – forms the basis for this analysis of financial leverage.

Previous papers concerning agricultural firm size and capital structure empirical studies are dealing with Latvian agricultural companies using FADN data (Jakušonoka, 2007), Canadian Farm Petroleum and Animal Feed Co-operatives. (Hailu, 2007). Recent studies about optimal capital structure, equity capital markets, entry into production agriculture by young and beginning farmers, and tax issues, remain important as policy changes and research techniques evolve. (Featherstone, 2005). J. Zhao (2008) develop model for both conceptual and empirical implications of the pecking order, trade-off, and signalling theories on farm business financing, investment, and expansion process.

Analysis on financial structure is not just computing the ratios, but also the complex of problems of risk-return relationship, agency theory, and owner’s wealth maximization. The farm owner needs to be fully aware of the relationship
between financing decisions, profitability, and risk. Farm income variability is relatively high, in spite of governmental support.

**Data and method**

This analysis utilizes time-series data set of Estonian farms, 1996–2008, representing 1600 Estonian agriculture sector enterprises. The results are presented on average enterprise basis. The source of the data is Statistic Estonia. Statistics Estonia is a government agency at the area of administration of the Ministry of Finance. Official statistics is in compliance with international classifications and methods. Official statistics is in accordance with the principles of impartiality, reliability, relevancy, profitability, confidentiality and transparency. In producing statistics, Statistics Estonia is guided by the Official Statistics Act.

Income statements and balance sheets constitute the framework for analysis of agricultural firm financial structure. The method of analysis for this study is the use of financial ratios representing investment and financial structure which include: asset structure, debt-to-equity ratio, return on equity. These ratios are presented below. The aim is to establish the responsiveness of debt-to-equity as performance indicator to financial structure to return on equity as a measure of profitability. Return on equity is net income divided by equity capital.

**Results**

**Changes in Agricultural assets.** Assets are economic resources of the firm. They constitute the present composition of invested capital. Advanced farming techniques require new investments in assets. The amount of assets both in nominal and real values has grown gradually through the period. The average nominal growth has been about 37% per year, and real growth about 20% per year throughout the period. The assets can be divided into current assets and fixed assets. Comparing to 1996, in 2008 the fixed assets had doubled (Figure 2).

![Figure 2. Agricultural assets, 1996-2008, thousands EEK](image)

The structure of assets of the agricultural firms has changed. Working assets have proportionally diminished comparing to fixed assets (Figure 3). We can clearly distinguish three periods: 1996–1999; 2000–2003, and 2004–2008. During the nineties agricultural assets deteriorated more than income. According to research made by K. Lemsalu (2001) the value of assets rose at an average annual
rate of about 12 percent, peaking at more than 4 billion Estonian kroons in 1988. Net sales increased twice in absolute figures, but it did not brought growth in real value. Since 1995 agricultural assets declined from 5,0 percent to 2,8 percent level of all sectors by the end of 1998. Agricultural firms were not able to invest (Lem-salu, 2001).

Early 2000-s were characterized by changed tax environment, agricultural policy changes, and increasing profit levels. This made investments in fixed assets more procurable to agricultural firms. Since 2004, becoming a member of EU, large-scale investment subsidies become available, and the effect can be clearly seen in growth of fixed assets.

Figure 3. Current assets and fixed assets 1996–2008, % of total assets

A firm’s external financing need depends on the magnitude of its internal cash flows relative to its investment opportunities. If the firm has sufficient market power or faces high demand, it may be able to generate sufficient cash flow to finance investment internally. Agricultural firms are more likely to grow at rates that require them to obtain long-term credit or equity. It is more and more common for them to raise long-term capital with financing investments by long-term external debt.

Changes in financial structure. Equity growth is influenced by a farm’s financial leverage position. The effect of financial structure decisions on equity growth is represented by the farm’s debt-to-asset ratio. (Figure 4). The importance of debt increased rapidly at the end of 90-s. With change in economic conditions D/A ratio have maintained relatively constant during the period of 2000–2008.

Figure 4. Debt-to-asset ratio and return on equity ratio 1996–2008
The more a firm borrows, the higher the financial leverage. As long as the business entity generates returns which exceed the cost of debt capital, leverages works in a positive manner. Intensive use of debt causes a higher probability of risk for the enterprises. Interest rates have been stipulated in the contract and the bulk of the loan and the interest should be paid back regardless of the fact whether the firm is making a profit or not. Debt level, i.e. both short-term liabilities and long-term liabilities has increased gradually (Figure 5).

Financially stressed farms often are associated with higher leverage positions than other well-performing farms. Successful farms are able to manage higher leverage ratios only when the returns generated from assets consistently exceed the cost of borrowing (Boessen, et.al.).

![Figure 5. Debt levels 1996-2008, thousands EEK](image)

Higher debt levels do not necessarily stimulate growth if they translate to serious financial stress. Increased use of debt capital and unpredictable changes in government support programs makes it more difficult to farmers to determine the best combinations of financial structure and business practices.

Following the idea that intensive use of debt causes a higher probability of risk for the firms, according to Mayer (1990):

1) retentions are the dominant source of financing in all firms;
2) average firm does not raise substantial amounts of financing from security markets in the form of short-term securities, bonds or equities;
3) majority of external financing comes from bank loans.

In general, agricultural firms attracted external financing in reasonable amount during the period of 2000–2008, and this gave the chance to maintain without any specific change their debt-to-equity ratio (Figure 6).
Changes in return on equity. It is generally agreed that economic welfare is related to annual net income and net worth relative to the financial needs of firm. In order to show how the growth in the return of equity would be affected by the changes in the return on assets, the return on equity in different years is expressed. (Figure 7) Return on equity is dependent on net income. The higher the net income, the higher the return on equity.

Results show that net income is very floating, that causes the volatility of the return on equity. In such a risky situation the agricultural firms should be careful in attracting extensively debt capital.

Conclusions

1. The analysis of changes in financial structure of agricultural firms is based on the assumption that the more fluctuations there are in the relative importance of loans in firm financial structure the more changes there are in the return on equity but also in the return on assets. Results show that the structure of assets of the agricultural firms has changed and the importance of fixed assets has risen. Working
assets have proportionally diminished comparing to fixed assets. Debt-to-asset ratio has maintained relatively constant levels during the period of 2000–2008.

2. Net income is very floating, that causes the volatility of the return on equity. In such a risky situation the agricultural firms should be careful in attracting extensively debt capital.

References