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FINANCIAL AND NON-FINANCIAL FACTORS AFFECTING SOLVENCY: A THEORY REVIEW

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Abstract. Researchers have developed various models for predicting insolvency as well as analysed dozens of various financial ratios; however, a universal model and set of ratios have not been found. Each country has its own tax policy and national economic indicators that influence the respective business environment. Besides, such factors as business managers' competence and appropriate adoption of decisions can also influence sustainable operation of businesses. In the review of scientific literature on the development of models for forecasting insolvency, the author has created her own theoretical model based on the analysis of financial and non-financial factors. The aim of the research is to analyse the financial and non-financial factors mentioned in the research and choose the ones that will be used in further research about Latvian agriculture companies with regard to the available data. The literature review shows that research defines 4 directions of finance that analyse liquidity, turnover, profit and liabilities based on the data from balance sheets and profit and loss accounts. It is more complicated to establish the non-financial factors due to the unavailability of information; however, it is still possible to analyse such factors as company's age, size and payment behaviour. The author also mentions tax liabilities as an additional non-financial factor that should be analysed in further research.

Key words: financial factors, cash flow, non-financial factors, solvency.
JEL code: G20, G30, G33

Introduction

Insolvency of company has been studied since 1960s. The term 'insolvency' describes the financial situation of a company when it is capable of a sufficiently successful performance for meeting all its liabilities (Sneidere R., 2009). Companies, to provide for their sustainability, perform operational financial analysis that deliver timely warning about solvency problems and possible risks by mainly analysing the company's liquidity, its creditability and financial stability. As to 9 January 2017, in Latvia 12 insolvency cases have been filed for legal entities. In 2016, there were 656 such cases, in 2015 – 802 cases and 960 cases in 2014 (Lursoft data base, 2017). The figures suggest a positive trend – decreasing in the number of cases, which means that companies have to assess their solvency to prevent the filing of such cases. The assessment would in due time inform about problems and enable companies prevent company's failure.

Research has been conducted in various fields to adjust the insolvency prediction models to the businesses of various shapes and sizes (e.g. joint-stock companies, private companies). The Author focuses on agriculture as an industry that has been of historic importance to Latvia. The development of agriculture companies and their ability to survive under changing economic conditions depend on various factors – both on the national agriculture development guidelines as well as global trends in the demand for agriculture products and such financial factors as the availability of credit resources and stability of cash flow.

There have been innumerable studies regarding predicting the solvency of businesses and financial indicators to be used in the process. (Beaver W.H., 1966; Altman E.I, 1968, 2005, 2006, 2010; Ooghe H., 2008; Sneidere R., 2009). In their calculations, researchers use both financial and non-financial factors that allow for early identification of solvency issues. In studies, more attention is paid to the financial ratios calculated based on financial reports rather than non-financial factors, such as management skills or company age.

The research object is financial and non-financial factors affecting solvency.

The aim of the paper is, based on the analysis of the financial and non-financial factors for solvency prediction examined in scientific literature, to define the factors by which the

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author will further perform the financial analysis of Latvian agriculture businesses.

The aim implies the following tasks: 1) to analyse and assess the theoretical basis provided by scientific literature regarding the factors influencing solvency; 2) to consolidate the data of previous research on the significance of factors; 3) to define the facts the calculation of which would allow to the prediction of solvency in Latvian agriculture enterprises.

Research results and discussion
1. Review of literature on financial indicators

In literature, the models for forecasting solvency are mainly based on the analysis of financial ratios. One of the first researchers addressing the issue in 1968 was Altman E.I. who in his paper "Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy" introduced the Z-Score model, based on 5 variables calculated based on the company's balance sheet and income statement data: *working capital and total assets, retained earnings, earnings before interest and taxes, market value of equity, total liabilities and sales* (Altman E.I., 1968). According to this model, the minimum result suggesting the possibility of avoiding failure is 1.8; however, for a company to be in a safe zone, the result has to be from 3.0 upwards. In further research, Altman E.I. enlarged the number of the indicators to be considered. He divided the ratios in 5 accounting ratio categories: leverage, liquidity, profitability, coverage and activity, which are calculated based on 10 financial ratios, thus increasing the number of the significant financial ratios defined by him as follows: *short term debt/equity, liabilities/total assets, cash/total assets, working capital/total assets, EBITDA (earnings before interest, taxes, depreciation and amortization)/total assets, retained earnings/total assets, EBITDA/interest expenses, EBIT (earnings before interest and taxes), sales/total assets, account receivable/liabilities* (Altman E.I, 2010). *However, in the study "Financial and non-financial variables as long-horizon predictors of bankruptcy"* (2015), there are the following 8 efficient solvency problem predictors highlighted: *total assets, equity ratio, growth in total assets, return on assets ratio, cash and other liquid assets to short-term debt, short term debt to total assets ratio, change in short-term debt to total assets ratio, cash flows to total assets ratio* (2015). This research features cash flow ratio analysis the author believes to be very significant because the presence of profit in business does not necessarily indicate the sufficiency of financial resources. In agriculture, cash flow sometimes plays the decisive role as the business may be affected by its seasonality. Consequently, in her further research the author will pay attention not only to equity, liquidity and profitability ratios but also cash flow ratios.

Beaver W. is to be mentioned as the second among the scholars laying foundations to the analysis of financial ratios by testing 30 ratios in his research "Financial Ratios As Predictors of Failure" (1966) where the ratios were split into 6 groups. A ratio was chosen from each of the groups the changes of which indicate the possible presence of solvency problems: *cash flow/total debt, net income/total assets, total debt/total assets, working capital/total assets, current ratio, and no credit interval.* In this research, cash flow is analysed in relation with other ratios being similar to the ones defined by Altman E.I.

Low cash flow, increase of expenses, weak profitability, *low financial independence (equity/total balance)* are the first indicators of possible solvency problems according to Ooghe H. (2008). The author believes that the increase of expenses at a constant turnover may serve as an indicator of financial problems and lack of professional competence in adopting decisions arising from non-financial factors (management competence).

Linag D. (2016) in his research "Financial ratios and corporate governance indicators in bankruptcy prediction: a comprehensive study"

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has conducted a significant in-depth survey and has selected 95 ratios and split them into the following categories: *solvency, capital structure ratios, profitability, turnover ratios, cash flow ratios, growth,* where solvency and profitability ratios are pointed out as the most significant indicators in predicting solvency which has also been suggested by researchers before this survey. The author does not see the necessity for performing the ratio analysis of such a large scale as part of the ratios is derived from the key ratios.

When studying accounting and non-accounting determinants, Bhimani A. (2010) has arrived at 11 financial variables: *days in payables, days in receivables, financial coverage, asset coverage, interest costs, investment ratio, return on equity, return on investment, solidity, var.gross income, working capital/total assets*. Days in payables and days in receivables determine the payment behaviour of both debtors and creditors, and the author has chosen to add these indicators to her model of analysis.

Profit before taxes/current liabilities, current assets/total liabilities, current liabilities/total assets, no credit interval are the key ratios selected for failure prediction in Al-Kassar T. research (2014). The results of the research show that for the first, second and third ratio the following is true: the bigger the ratio the lower the risk of insolvency; however; what applies regarding the fourth ratio is: the lower the ratio of current liabilities/ total assets, the higher the risk of insolvency.

Mironiuc M. (2015) in studying "The significance of financial and non-financial information in insolvency risk detection" has selected 9 financial ratios, i.e. *current assets ratio, financial leverage, quick liquidity ratio, financial expenses ratio, operating profit margin, average collection period, average payment period, employees expenses ratio, return on assets,* of which the *return on assets, operating profit margin, financial expenses ratio and average payment period* are highlighted as statistically significant in predicting solvency. This researcher has also chosen the factors previously mentioned by the classics, which just proves for another time that the results of these ratios have been confirmed by research as providing precise information about the financial condition of a company. Sneidere R. (2009) in her review of scientific literature on forecasting insolvency advises that in analysing solvency of Latvian companies, apart from the liquidity factors, other ratios like financial balance (liabilities/equity), proportion of liabilities in the balance sheet (liabilities/total assets), weight of equity in the balance sheet (equity/assets) should be considered. Excessive dependence on borrowed equity presents a risk for company's existence; therefore, when analysing the financial data of agriculture companies, particular attention should be paid to liability and equity ratios.

In Latvia, cash flow ratios have been studied in the paper by Steinberga Dz. and Millere I. (2016) "Use of cash flow statement in evaluation of company's financial situation using data from operating and liquidated companies in the Republic of Latvia", which defines 11 financial ratios from cash flow statements, 6 of which represent cash flow from operations, 3 ratios describe cash flow from investing activities and 2 represent cash flow from financing activities, one of the most significant conclusions being that "the higher the operating cash flow ratio value, the lower the chance of financial problems". The author already indicated the significance of cash flow ratios above and has added them to her model of analysis. Financial factors are not the only factors indicating problems in the company operation, there might also be non-financial factors which will be discussed in the next section.

2. Review of literature on non-financial indicators

There may be factors affecting business that do not depend on the company itself, such as –

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legislation, national tax policy, inflation, lending rates and national foreign policy. A company is not able to influence these factors, but can try to adapt to them or diversify its business to prevent the risk of insolvency. However, there are also relevant non-financial factors determined, which can be changed, influenced, controlled as they depend on the decisions of the company's management.

Managerial incompetence is the most pervasive reason for a firm's distress and possible failure (Altman E.I., 2006). Poor company administration as one of the causes of a company failure is also mentioned by Sneidere R. (2009). Wrong management decisions and management incompetence result in the insolvency of start-ups (Ooghe H., 2008). The insolvency of companies may be the result of incompetent management decisions, concerning for example, investments, expenses, or excessive risk.

In the business environment, trust and payment behaviour between business partners are the factors that facilitate cooperation. *Payment behaviour* is another non-financial factor analysed by researchers. Back P. (2005) in his article "Explaining financial difficulties based on previous payment behaviour, management background variables and financial ratios" states that the indicator of payment delays is the statistically most important non-financial factor. The opinion is shared by Altman E.I, (2010, 2015) who has established the following criteria in his research of non-financial factors: *type and sector, size and age, reporting and compliance, management characteristics, payment behaviour, auditor reports.* Payment behaviour and auditor reports present the information the author considers relevant for her model of analysis as payment behaviour is a critical factor in an industry with irregular cash flow.

Ooghe H. (2008), when studying the causes of business failure, also mentions the *industry, size and age of a company*. The *company strategy and its investment policy* are directly related to the *management competence* and *decisions* taken by it as discussed above.

Wilson N. (2013) in his paper on family businesses agrees to divide companies by size and age and lists such non-financial factors as: *board size, age and experience, age of the firms, management quality and reliability, payment behaviour.*

Bhimani A. (2010) also selects the *company's size* and *age* as non-financial ratios in his research on accounting and non-accounting determinants. These ratios have been selected because they associate with a steadier cash flow. The researcher has further subdivided the selected companies by *region* and *industry*.

Non-financial ratios have been little exploited in predicting solvency, however, according to research, the combination of financial and non-financial factors provides for more accurate predictions (Altman E.I, 2015). The examined authors underline that non-financial indicators alone do not deliver sufficient information on solvency issues; therefore, they must be analysed together with financial ratios. The analysis performed within the research shows that non-financial ratios have not been sufficiently studied and need more attention.

The analysis of the non-financial factors of private businesses is very limited as the information is limited – provided exclusively by management reports, information in public media, and appearance of the company in non-payer registers. An additional solvency factor in Latvia might be regular failure to pay taxes. The information on the non-payers is available in the State Revenue Service website. If a company has regular and big tax liabilities, it might be a sign of insufficient financial resources; however, an in-depth studying of the factor is still needed.

3. Discussion

The analysis of company solvency is necessary not only for the company management and owners, but also its creditors, partners and

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auditors. Depending on the company form, size and the available information the ratios can be selected for assessing the solvency of the company. The analysis of scientific literature and assessment of the examined research has enabled the author to develop the theoretical model for analysing solvency that is based on financial and non-financial factors listed in **Table 1.**

Table 1

The author's theoretical model for analysing solvency

Financial	Non-financial
Cash flow from operations/net turnover	Size (Small, medium, large)
Cash flow from operations/total assets	Age (years)
Cash flow from operations/total liabilities	Payment behaviour – tax liabilities
Return on Sales	Auditor reports
Return on Assets	
Return on Equity	
Net income/total liabilities	
Short term liabilities/assets	
Long term liabilities/assets	
Total liabilities/assets	
Equity/assets	
Total liabilities/assets	
Cash/assets	
Working capital/assets	
Current assets/liabilities	
Long term assets-short term liabilities/cash flow from operations	
Days in payables	
Days in receivables	

Source: author's construction on selected factors from various literature sources

The model will be used in further research for analysing the solvency of Latvian agriculture companies. The criteria were selected based on the availability of information on such companies in Lursoft data base which publishes company annual reports. The model will analyse such factors as liquidity, equity, profitability, liabilities, cash flow and assets, by paying particular attention to cash flow ratios and payment behaviour. A particular feature of agricultural businesses is their inconsistent cash flow, which means that external funding must be raised. Consequently, apart from the factors mentioned above also the analysis of liability and liquidity indicators will allow for assessing the creditability of a company. The non-financial indicators are defined as follows: company age, size, and payment behaviour and audit reports. Tax liabilities – information delivered by the State Revenue Service on the frequency and amounts of debts. The author believes that this might be a significant factor that has not yet been analysed but it still has to be checked if the result provides qualitative and reliable information.

Conclusions and recommendations

1) The research found in scientific literature mainly focuses on solvency prediction based on financial factors. Less attention is devoted to non-financial factors where researchers admit that these factors are yet to be studied in order to determine their influence on a company solvency.
2) Balance sheet, income statement, cash flow statement as well as appendices to annual reports serve as a data source for analysing the factors affecting solvency.
3) The key factors of solvency are the financial ones. The non-financial factors alone do not deliver an accurate forecast for the appearance of insolvency.
4) The most significant financial factors are connected with the indicators of liquidity, profit, liabilities or solvency, activity as well as cash flow ratios.
5) The key non-financial factors are payment behaviour, size and age. Management competence is hard to calculate in Latvia due to the unavailability of reliable data. The analysis of auditor reports could be made based on the auditor reports available in annual reports.

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6) The author is designing a theoretical solvency assessment model based on financial and non-financial factors. Payment behaviour as tax liabilities represents a new factor to be analysed and assessed in further research.
7) The author recommends paying attention to the data on company tax payments available from the State Revenue Service and assessing in further research if this indicator provides reliable information regarding solvency issues.

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