

W kierunku umiędzynarodowienia / Towards internationalization

The informative role of financial reporting in risk detection

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Abstract

Purpose: The purpose of the article is to show the possibility of risk detection in financial statements by stakeholders using analytical indicators that have predictive (prognostic) value (power), which are also known as early warning indicators or predictors. The purpose is related to the problem of insufficient disclosure of information about risk in the area of accounting, as companies are reluctant to share risk information, although they should disclose it in their reports in accordance with accounting's overarching principle of presenting the true and fair view of the company.

Methodology/approach: The article is part of research on positive accounting theory. The research uses an appropriate set of indicators – predictors – and financial statements as the data source to calculate, analyze, and interpret them to detect a potential risk. The detection of risk using this method is illustrated based on data from the financial statements of automotive companies listed on the Warsaw Stock Exchange for 2014–2018.

Limitations: The article is limited by the small number of companies analyzed, but it covers all automotive companies listed on the WSE, which are strongly related to foreign capital.

Findings: The use of financial statements to calculate and interpret appropriately selected predictive indicators made it possible to detect potential risks in automotive companies.

Originality/value: The article's originality is that it shows how to detect risk in financial statements using analytical predictive indicators. The author's contribution is the deliberate selection of such indicators, preceded by case studies of each of the companies. The article confirms the informative role of financial reporting in detecting risk, thus contributing to the science and practice of accounting and risk management.

Keywords: financial statements, risk detection, predictive analytical indicators (predictors), automotive companies.

Streszczenie

Informacyjna rola sprawozdawczości finansowej w wykrywaniu ryzyka

Cel: Celem artykułu jest pokazanie możliwości wykrywania ryzyka w sprawozdaniach finansowych przez interesariuszy za pomocą wskaźników analitycznych mających wartość (moc) predykcyjną (prognostyczną),

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znanych też jako wskaźniki wczesnego ostrzegania lub predyktory. Cel wiąże się z problemem niedostatecznego ujawniania informacji o ryzyku działalności w obszarze rachunkowości, gdyż przedsiębiorstwa nie są skłonne dzielić się informacjami o ryzyku, chociaż powinny je ujawniać w swoich sprawozdaniach zgodnie z nadrzędną zasadą rachunkowości prezentowania prawdziwego i rzetelnego obrazu firmy.

Metodyka/podejście: Artykuł wpisuje się w nurt badań pozytywnej teorii rachunkowości. Metodą badawczą jest zastosowanie odpowiedniego zestawu wskaźników – predyktorów oraz wykorzystanie sprawozdań finansowych jako źródła danych do ich obliczenia, analizy oraz interpretacji pod kątem wykrycia potencjalnego ryzyka. Wykrywanie ryzyka tą metodą zostało zilustrowane na podstawie danych ze sprawozdań finansowych spółek motoryzacyjnych notowanych na Giełdzie Papierów Wartościowych (GPW) w Warszawie za lata 2014–2018.

Ograniczenia: Ograniczeniem artykułu jest niewielka liczba spółek, lecz są to wszystkie spółki motoryzacyjne notowane na GPW i silnie powiązane z kapitałem zagranicznym.

Wyniki: Wykorzystanie sprawozdań finansowych do obliczenia i zinterpretowania odpowiednio dobranych wskaźników predykcyjnych pozwoliło wykryć możliwe typy ryzyka w spółkach motoryzacyjnych.

Oryginalność/wartość: Oryginalnością artykułu jest pokazanie sposobu wykrywania ryzyka w sprawozdaniach finansowych przy użyciu predykcyjnych wskaźników analitycznych. Wkładem autorki jest celowy dobór takich wskaźników, poprzedzony studiami przypadków każdej ze spółek. Artykuł potwierdza informacyjną rolę sprawozdawczości finansowej w wykrywaniu ryzyka, przez co wnosi wkład do nauki i praktyki rachunkowości oraz zarządzania ryzykiem.

Keywords: sprawozdania finansowe, wykrywanie ryzyka, predykcyjne wskaźniki analityczne (predyktory), spółki motoryzacyjne.

Introduction

Financial reporting is a source of risk information contained in annual financial reports that are published for a wide audience. Risk information can be read from the data disclosed in the financial statements, such as the balance sheet, the income statement, or the cash flow statement. It can also be detected using indicators with a predictive value calculated based on financial statements. Information about the risks that can be read from financial statements is of a non-financial nature; only the fulfillment of any risk usually entails financial consequences. Risk means the likelihood of an event of a threat or opportunity that will affect an enterprise. In conducting any business, risk is an inseparable element.

One of the conditions for the effective and efficient operation of managers is their ability to properly manage corporate risk and use it to create goodwill. Risk management is a critical factor for a company's finances, and accounting through financial statements, and analyzing them, plays an important informative role in the risk management process. Accounting makes it possible to measure the physical, financial, and human resources involved in the business. It is also possible to measure and evaluate the financial results as it has the appropriate tools.

Risk management is a process of assessing and counteracting the effects of risk, and it is part of an entire enterprise's management process. Accounting, which provides relevant information, is very important in risk management. Risk can be considered in

the context of information generated by the financial accounting and management accounting system (including business budgeting). It can also be considered in the contexts of the accounting policy, and organizing and operating internal control and internal audit, which are based on agency theory and the use of an ERM (Enterprise Risk Management) model known as COSO II.¹

The problem of risk analysis and risk management applies to both the private and public sectors. In the public sector in Poland, risk management has become a goal of controlling public finances, because since 2010, after the new Public Finance Act came into force, risk management has become part of management control.² Information about risk is possible to read not only from enterprises' annual financial statements but also from reports published by socially responsible enterprises, i.e., CSR reports or integrated reports, which are examples of sustainability reporting. Such a reporting practice has existed in Poland for several years in large enterprises. There is also a wide literature on this subject, both foreign and Polish (Babuška, 2018, pp. 219–234). However, these two topics are beyond the scope of this article.

The article deals with the problem of detecting information about the risk in the area of accounting. The problem stems from the fact that companies are reluctant to share risk information, although they should disclose it in their reports to truly and fairly present their property and financial situation and the result of their operations. The aim of the article is to present the possibility of risk detection in financial statements by stakeholders using analytical indicators that have predictive (prognostic) value (power). These indicators are also known as early warning indicators or predictors. The article is part of research on positive accounting theory, which requires making and verifying hypotheses based on empirical data. The research uses a specific set of these indicators-predictors, and it uses financial statements as the data source to calculate, analyze, and interpret them in terms of detecting a given risk.

Detecting risk using the above-mentioned method is illustrated based on data from the financial statements of automotive companies listed on the Warsaw Stock Exchange for 2014–2018. The use of financial statements such as the balance sheet, profit and loss account, and cash flow statement to calculate and interpret the appropriate indicators made it possible to detect potential types of risk in automotive companies. The article is limited by the small number of automotive companies analyzed, but it covers all automotive companies listed on the Warsaw Stock Exchange. The originality of the

¹ Currently, the COSO-ERM model (also called COSO II) is the leading model on which the management of economic risk can rest. It consists of eight components: internal control environment, goal setting, event identification, risk assessment, risk response, control activities, information and communication, monitoring (<http://www.pikw.pl> and <http://www.coso.org> and *Enterprise Risk Management – Integrated Framework, Executive summary*, September 2004, Committee of Sponsoring Organizations of the Treadway Commission).

² See the author's earlier publications on this topic.

article is that it shows how to detect risk in financial statements using analytical indicators with predictive power. The author's contribution is the deliberate selection of such indicators. The article confirms the informative role of financial reporting in detecting risk, and it thus contributes to the science and practice of accounting and risk management.

1. Empirical literature and examples of research

The subject of the article includes literature on risk in accounting, especially in financial reporting, and in the field of analytical early warning indicators. The risk literature is very extensive and concerns mainly risk assessment in internal audit and also risk management in the enterprise using the ERM model. Risk issues are still important and studied by academics and business management practitioners; thus, in recent years, risk in accounting has been analyzed, in particular, with regard to the information on risk included in corporate reporting.³ The references to risk in the financial statements are confirmed by the examples of research of some foreign authors described chronologically below.

Many foreign authors have addressed the topic of risk in financial statements. Among others, in 2003, Cabedo and Tirado stated that the information in financial statements is insufficient for making decisions and forecasting actions, as information on risk is needed for this. Therefore, the authors presented a risk typology, i.e., they showed all types of risk to which companies are exposed and proposed a model to quantify each one. In 2012, Ryan dedicated his article to the quality of risk reporting. He analyzed empirical research on the usefulness of information from enterprises' financial statements for risk assessment. He identified four methods to improve the quality of risk reporting that companies should use. These methods relate to comprehensive income disclosure, verifying accrual estimates and their changes, a tabular form of disclosure of information about risk, and special procedures for disclosing model-dependent risk.

In 2014, Khlif and Hussainey wanted to understand the determinants of corporate risk disclosure, as previous studies showed inconclusive results. They looked at the relationships between risk reporting and company features, including company size, leverage ratio, profitability, and risk factors. They analyzed the results of 42 empirical studies on the subject using a meta-analysis and checked whether the differences in outcomes arose due to random error or legal systems, the avoidance of uncertainty, disclosure rules (mandatory/voluntary), types of industries, and intermediaries used to

³ The aim of the article is not to present all the publications concerning risks recognizable in the financial statements, but only some of those publications that sufficiently illustrate the topicality, importance and interest of researchers in the problem of risk in accounting.

measure company characteristics. They found that all characteristics are positively related to risk disclosure. They discussed the implications of their findings and made suggestions for future research.

In October 2014, the ACCA (the Association of Chartered Certified Accountants) report on risk reporting was published. It offered research on the status, quality, and value of risk reporting to improve reports. It described what was wrong with risk reporting, what a report should look like, and what the future of risk reporting should be. It contained a review of the current practice in risk reporting, barriers to its improvement, users' wishes, and the anxieties of preparers. The report called for continued research into risk reporting.

In 2016, Allini et al. presented the role of the board in disclosing risk. This was an exploratory study of publicly listed Italian State-Owned Enterprises (SOEs). They undertook the study because the risk disclosure determinants in the annual reports of these companies had not been thoroughly studied. They analyzed the possible impact of the composition of the board of directors and other specific corporate characteristics on risk disclosure levels and stated that the presence of women on the board and the age of board members had a significant impact on risk disclosure. In addition, CEOs with accounting or finance or business qualifications had a negative impact on risk disclosure, while the company's size and online visibility had a positive impact. Although the study looked at Italian SOEs, its results can be used by practitioners, policymakers, and standard setters worldwide.

The purpose of the 2017 study by Yang et al. was to introduce a modern text mining approach to assess the risk of companies using unstructured disclosure of text from annual reports. The authors used Natural Language Processing techniques to extract risks identified by companies, including financial, strategic, and operational risks, and threats based on the ERM framework. They investigated the relationship between these four risk measures and auditing fees. The results showed that audit fees are significantly and positively related to the financial, strategic, and operational risks specific to the company, which indicates the informativeness of textual risk information disclosed by the corporation. This study supported the US regulatory reporting requirement to add a new section on risk factors to the annual corporate reports.

Huang and Mazouz (2018) examined the impact of excess cash on liquidity risk to which investors are exposed and the required liquidity premium. They showed that excess cash improves trade continuity and reduces the risk of liquidity and the cost of equity. They also studied the impact of excess cash on firm value. They stated that the indirect impact of liquidity on firm value is significantly positive, which indicates that investors are less likely to sanction (or even reward) illiquid companies for maintaining excess cash.

Accounting standards for financial instruments issued by the FASB and the IASB dominate in the literature. In 2019, Tahat et al. reviewed the literature on risk disclosure in reports. The reason for their critical analysis was the growing number of studies on

financial instruments in recent years, while the results of those studies were inconsistent. The need to review the research was due to the increased use of risky financial instruments, jointly with the financial collapses that this use has caused. The authors discussed the most important conclusions from the review and defined research programs in this area. They indicated significant omissions and deficiencies in the literature regarding risk reporting.

In an article in 2020, Demina and Dombrovskaya investigate the topic of creating financial risk-based reports. They pointed out that there are no clear requirements in this respect in either national or international regulations. According to the risk-based approach, financial reports should be created in line with international financial reporting standards, with an emphasis on positions with the highest risk exposure. Financial statements prepared on the basis of risk are transparent and contain the most information for decision-makers about the financial situation and results of operations of an enterprise. The authors discussed the regulations regarding the application of the risk-based approach to the preparation of financial reports.

These examples of research confirm the importance and timeliness of the problems of risk in financial reporting and the interest of foreign researchers in this subject. The research provides an appropriate background, basis, and context for the considerations of risk in this article, but some content and aspects of the research are not always directly related to it. On the Polish publishing market, there are two well-known books on risk in accounting, edited by the renowned authors Karmańska (2008) and Nowak (2010). There is also a great deal of research and many publications available in the publishing market in the field of financial analysis, but when it comes to the literature on indicators that have a predictive value and using them to detect risks in financial statements, it is difficult to find any useful studies.

The financial analysis provides general information about indicators, but no information is available about how these indicators are related to risk detection in financial statements. The only books available in Poland dedicated to financial indicators are by Tyran (2005) and Wędzki (2015). By contrast, there are many books on financial analysis, including ratio analysis, the most read of which include the books by Bednarski et al. (1998), Dudycz and Wrzosek (2000), Bednarski (2002), Sierpińska and Jachna (2004), Walczak (ed. 2007), Micherda (ed. 2011), Waśniewski and Skoczylas (2012), and Nowak (2017).

There is no helpful literature on early warning indicators and their use to detect risks in corporate financial statements. Therefore, as there is no relevant literature on this subject, the method proposed in the article to use these indicators to detect risks in financial statements should be emphasized. Analytical indicators with predictive power make it possible to detect a specific risk in financial statements. Such a risk, in the form of a threat or an opportunity, may actually occur in an enterprise; therefore, both stakeholders and management should conduct an in-depth risk analysis in advance and make appropriate decisions regarding the possibility of a given risk materializing.

Data disclosed in financial statements should have the qualities of useful financial information as defined in the Conceptual Framework for International Financial Reporting Standards (IFRS). There are two fundamental features of such information: usefulness and true presentation. Only if that requirement is met may these disclosures give a true and fair view of a company. For a long time, and especially since the great financial implosions at the beginning of this century, accounting has been questioned as a scientific discipline (Demski, 2007). Accordingly, the accounting profession must restore its reputation (Smith, 2003). In this context, the articles by Dobija (including 2010, pp. 25–40 and 2016, pp. 9–28) and his monograph from 2014 on accounting theory are of significant importance. The monograph presents the latest achievements in the field of capital theory in the broad context of accounting theory and economics.

Financial statements are also permanently criticized as a source of not entirely reliable information for stakeholders, especially investors. Recently, such criticism was made by Lev (2018), who points to general dissatisfaction on the part of investors and management regarding the adequacy and relevance of the information contained in the financial statements. This state of affairs is confirmed by large studies that show the rising gap between capital market indicators and financial information. This is especially true for reported earnings, which do not reflect the performance of most companies. He lists the areas of accounting where the usefulness of financial information has deteriorated and proposes changes to restore it for investors.

The review of exemplary empirical literature presented above makes it possible to identify the research gap and link it with the research hypotheses. In view of the deteriorating quality of financial information and attempts to improve this, a research gap has been identified about the risks that can be detected from financial statements using early warning indicators (i.e., indicators with predictive value, predictive power, or predictors).

Research hypotheses have been formulated in the form of questions: What types of risk can be identified in the financial statements using appropriately selected early warning indicators? In other words: How can risk be detected using analytical indicators, and how can one interpret these indicators in terms of risk? These research hypotheses have been verified based on the empirical data of listed companies from the automotive industry in Poland for the period 2014–2018.

2. Research methodology

Part of the research on positive accounting theory considers risk in the area of accounting, and in particular, identifying and detecting risk based on analyzing financial statements. Positive research theories are contrasted with normative research theories. A fundamental work that distinguishes between normative and positive research theories is Milton Friedman's 1966 work. Positive theories describe specific phenomena; they usually result from empirical research, and they answer the questions "how

is it?” and “why is it so?” They do not, however, include value judgments. Normative theories have their source in specific goals, which make the theory area-specific. They indicate “how it should be”, contain assessment norms, and are the result of deductive research in accounting science. The division into positive and normative theories is based on the type of research question posed and whether they include or reject value judgments. Both theories coexist in the science of accounting for the benefit of practice and policy, pointing to the evolutionary nature of the development of accounting science (Szychta, 2010, pp. 245–265; 2013, pp. 246–251; Callen, 2013, pp. 1–11).

The division into normative (prescriptive) theories and positive (descriptive) theories, based on both inductive and deductive methods, was made from the point of view of the theory as a record. In creating the accounting theory, none of the methods listed is used in its pure form (Hendriksen, van Breda, 2002, pp. 37–44).

In the last 40 years, mainstream research in accounting has been dominated in the world by a positivist approach, which focused on the way accounting works in practice, while largely abandoning the normative approach to research. This resulted in the dominance of the positivist approach in mainstream research in accounting, so the research was identified with positive theories. Positivist research methodology requires that hypotheses be made and verified based on empirical data (Coetsee, 2010, pp. 1–2; Scrimnger-Christian, Musvoto, 2011, pp. 59–68). The article is an example of positivist research methodology, which involves formulating and empirically testing hypotheses. The basic research method involves selecting indicators with predictive value and using financial statements as a data source to calculate them. The selection of indicators was preceded by a case study for each automotive company. As part of the case study, basic data that characterized each company in the period 2014–2018 were analyzed in detail, including:

- its subject of activity according to the European Classification of Activities (EKD);
- the date it started operations and the amount of share capital;
- the shareholding structure, the number of shares broken down into registered shares, bearer shares, and preference shares, the nominal value of shares, quotations, the number of shares in trading, and earnings per share;
- sales revenues and operating profit/loss, and also depreciation and other major cost items;
- balance sheet total and the structure of assets broken down into fixed and current assets;
- the structure of liabilities broken down into the equity of the entity’s shareholders and liabilities, including long-term and short-term liabilities;
- operating, investment, and financial flows;
- financial ratios broken down into liquidity ratios (static and dynamic), turnover ratios (turnover of receivables, inventories, liabilities and expressed in days or times), profitability ratios (ROS, ROA, ROE), and debt ratios.

The average collective indicators for all companies in each year were also calculated and compared with the indicators achieved by individual companies, and a set of indicators-predictors was selected on this basis. Such a procedure could apply to any other industry. Presenting the full results of these studies exceeds the scope of the article, but the case study method made it possible to select the appropriate indicators-predictors for the automotive industry. Assets and capital structure ratios, turnover ratios, and static and dynamic liquidity ratios were recognized as the most important indicators.

Assets and capital structure ratios were calculated based on the data from the balance sheets of automotive companies. These ratios made it possible to indicate the potential risk that results from the balance sheet structure, namely from the share of fixed and current assets in total assets as well as from the share of own equity and external capital in liabilities. Turnover ratios were calculated based on the data from the balance sheets and profit and loss accounts. These ratios include receivables turnover in days, commitment turnover in days, inventory turnover in days, as well as ROA and ROS. They may indicate the companies' operational risk. Static liquidity ratios were calculated based on data from the balance sheet, and dynamic liquidity ratios were based on cash flow data. Both groups of ratios may indicate the potential liquidity risk of companies.

3. Risks identifiable based on the reports of Polish automotive companies

Companies are usually exposed to two types of risk: non-financial and financial. Non-financial risks are not directly related to monetary assets and liabilities; although they affect future cash flow losses, they are a business risk and a strategic risk. Financial risks have a direct impact on the impairment of monetary assets and liabilities, and they include market risk, credit risk, liquidity risk, and operational and legal risk (Cabedo, Tirado, 2003, pp. 185–186). The practical part of this paper presents some types of risk that it is possible to determine based on the financial statements of seven automotive companies listed on the Warsaw Stock Exchange. These companies are AC SA AutoGaz (ACG), Auto Partner SA (APR), Inter Cars SA (CAR), Firma Oponiarska Dębica SA (DBC), Groclin SA (GCN), Sanok Rubber Company SA (SNK), and Wielton SA (WLT). The choice of the automotive industry was determined by its significant risk exposure due to the provision of risk-prone transport services and the propensity to risk (the so-called risk appetite) due to the technical and technological progress in the automotive field. To this end, Table 1 was prepared with indicators that provide information about risks based on data from these companies' balance sheets, profit and loss accounts, and cash flows, for 2014–2018.

Table 1. Risk indicators based on the analysis of balance sheets and profit and loss accounts and cash flow of automotive companies in 2014–2018

Years	Types of risk, indicators-predictors																							
	Risk arising from the balance sheet structure				Operational risk				Liquidity risk (static ratios)			Liquidity risk – CF-based ratios (dynamic ratios)												
	Share of fixed assets in total assets	Share of current assets in total assets	Share of equity in liabilities	Debt rate	Receivables turnover in days	Commitment turnover in days	Inventory turnover in days	Return on assets (ROA)	Return on sales (ROS)	Current liquidity ratio	Quick liquidity ratio	Cash liquidity ratio (increased ratio)	Asset cash performance ratio	Operating cash adequacy ratio for total liabilities repayment	Operating cash adequacy ratio for the purchase of fixed assets and intangible assets	Debt service ratio								
																	In %				In %			
																	In %				In %			
AC AUTO GAZ																								
2014	54.96	45.04	77.98	22.02	21.5	30.6	76.6	20.57	15.04	3.80	1.78	0.71	21.42	97.27	–298.84	636.66								
2015	48.97	51.03	76.00	24.00	20.6	37.3	89.6	21.70	17.16	3.29	1.65	0.83	24.49	102.03	–792.54	330.72								
2016	54.74	45.26	68.55	31.45	19.8	39.6	88.4	22.41	16.34	2.00	0.76	0.11	28.43	90.40	–469.81	1483.83								
2017	49.16	50.84	64.22	35.78	23.5	62.2	83.4	21.83	15.79	1.81	0.98	0.42	20.99	58.68	–305.86	34.46								
2018	54.02	45.98	67.18	32.82	23.2	65.7	83.0	24.65	16.43	1.80	0.61	0.11	30.46	92.80	–234.40	168.66								
AUTOPARTNER																								
2014	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–								
2015	19.70	80.30	33.31	66.69	11.9	16.8	55.1	6.43	2.98	2.36	0.52	0.11	2.47	–3.70	159.18	3.61								
2016	20.46	79.54	48.06	51.94	18.4	29.0	103.6	12.40	5.16	2.79	0.47	0.10	–10.59	–20.38	694.21	5.39								
2017	17.06	82.94	50.17	49.83	22.9	28.4	118.9	8.90	4.23	2.03	0.45	0.07	–14.92	–29.94	632.09	5.80								
2018	15.44	84.56	51.85	48.15	28.1	30.8	125.9	10.38	5.19	2.84	0.66	0.10	3.59	7.46	–470.52	10.34								

cont. tab. 1

Years	Types of risk, indicators-predictors															
	Risk arising from the balance sheet structure				Operational risk				Liquidity risk (static ratios)			Liquidity risk – CF-based ratios (dynamic ratios)				
	Share of fixed assets in total assets	Share of current assets in total assets	Share of equity in liabilities	Debt rate	Receivables turnover in days	Commitment turnover in days	Inventory turnover in days	Return on assets (ROA)	Return on sales (ROS)	Current liquidity ratio	Quick liquidity ratio	Cash liquidity ratio (increased ratio)	Asset cash performance ratio	Operating cash adequacy ratio for the purchase of fixed assets and intangible assets	Debt service ratio	
																In %
GROCLIN																
2014	78.13	21.87	50.89	49.11	79.8	79.2	37.4	-40.67	-79.31	1.14	0.74	0.00	-2.31	-4.71	74.97	0.00
2015	80.00	20.00	43.38	56.62	64.4	68.9	45.2	-15.12	-24.44	0.42	0.23	0.05	1.01	1.79	-45.58	-0.33
2016	78.33	21.67	38.01	61.99	45.8	64.5	42.2	1.29	1.72	1.04	0.68	0.13	1.39	2.24	-38.79	2.37
2017	76.68	23.32	18.69	81.31	57.0	82.0	40.4	-25.14	-36.32	0.46	0.30	0.01	2.42	2.98	-57.37	0.04
2018	73.73	15.15	16.20	83.80	49.3	75.8	37.2	-8.94	-13.05	0.55	0.29	0.00	-7.35	-9.15	851.36	0.52

Source: authors' own elaboration based on automotive companies' balance sheets, profit and loss accounts, and cash flows between 2014 and 2.

Table 1 lists three types of risk: risk arising from the balance sheet structure, operational risk, and liquidity risk. These risks have been described using indicators with a predictive value.⁴ These indicators were selected based on an analysis of the research and practical recommendations on the needs of investors and other stakeholders interested in the property, the financial situation of the companies and their financial results, and the needs of the management boards, who wish to increase the company's value in the long term. The most important predictor indicators are the assets and capital structure ratios, the turnover ratios, and the static and dynamic liquidity ratios.

The risk resulting from the balance sheet structure is described using four indicators:

- 1) the share of fixed assets in total assets,
- 2) the share of current assets in total assets,
- 3) the share of equity in liabilities,
- 4) debt rates.

The share of fixed and current assets in total assets is complementary to 100% in certain proportions, which result from the nature of the business. Within five years, these ratios in each company were at a similar level that changed very little, which proves their adopted and determined share in total assets. Such indicators do not indicate the risk that both groups of assets incorrectly participate in total assets. Groclin SA has the highest share of fixed assets in total assets of all companies, which may indicate a risk of immobilizing assets and limiting cash flow. This ratio was lowest in 2018 (74%) and highest (80%) in 2015. Equity and debt ratios are also 100% complementary. Both Dębica SA 66% and ACAutoGaz SA 67% recorded the highest share of equity in liabilities in 2018, while the lowest was in Groclin SA (it fell from 51% in 2014 to 16% in 2018). Such a big decrease in the share of equity in the balance sheet total may signal the risk of the company's high indebtedness. Operational risk was characterized by five indicators:

- 1) receivables turnover in days,
- 2) liability turnover in days,
- 3) inventory turnover in days,
- 4) return on assets (ROA),
- 5) return on sales (ROS).

The receivables turnover ratio in days in nearly all companies increased in the analyzed period. The exception is Groclin SA, where the ratio decreased from approximately 80 days in 2014 to approximately 49 days in 2018. However, in 2015, 2016, and 2017, the level of this indicator was also high and amounted to 64 days, 46 days, and 57 days, respectively. The increase in receivables turnover is generally assessed negatively

⁴ According to the Conceptual Assumptions for Financial Reporting of the International Financial Reporting Standards, financial information is predictive if it can be used to predict future results. To have a predictive value, financial information does not have to be a prediction or forecast. This financial information with a predictive value is used by users to make their own predictions (*Założenia koncepcyjne*, 2016, par. CJ8, p. 41).

as risky, as it means freezing funds in financing recipients for a longer time. This problem must be subject to deeper analysis, taking into account the specificity of the company's operations. AC SA, Auto Partner, and Wielton had the lowest receivables turnover ratios in the 2014–2018 period, not exceeding 30 days. The longest cycle of debt collection occurred in Inter Cars and Sanok, exceeding 55 days in all analyzed years. The highest increase in the receivables turnover ratio occurred in Dębica SA (from 6 days in 2016 to 62 days in 2018), and it seems to be highly risky.

The liabilities turnover ratio in days increased in all enterprises in the analyzed period. An increase in the ratio is the most desirable because it means a longer repayment period, and thus it allows companies to finance their activities with unpaid liabilities for a longer time. Auto Partner, Sanok, and Inter Cars are quickly paying off their debts. The liabilities turnover ratio in these companies in the last three years does not exceed 40 days, and the increase in this ratio is shorter than 4 days. The longest repayment period is in Dębica, Groclin, and Wielton. In AC SA, the liabilities turnover ratio also increased, from 31 days to 66 days. In nearly all companies except for Inter Cars and Sanok, between 2014 and 2018, the repayment period was longer than the period of inflow of receivables. The receivables and liabilities turnover ratios, regardless of whether they are favorable or not, depend on individual cases, management's motives, etc. Therefore, these ratios require an in-depth analysis related to recognizing the situation of the companies.

The inventory turnover cycle in days in AC SA and Groclin SA decreased between 2015 and 2018, while in other companies, it increased. The falling level of the ratio reduces operational risk. Shortening the inventory turnover cycle in days improves the unit's liquidity and profitability and lowers storage costs. In turn, the growing level of inventory rotation in days is a source of risk. Between 2016 and 2018, Dębica SA stored inventories for the shortest period, 17–20 days, while Auto Partner SA had the longest storage time, growing from 103 days to 126 days. Such an increase in the ratio level may increase the operational risk. In Inter Cars, the average inventory turnover ratio was 76 days between 2014 and 2018, while in Sanok SA and Wielton SA, it was, respectively, 58 and 66 days in 2018. The indicators in individual years fluctuate around the average level and do not indicate a risk.

The highest rate of return on assets was recorded in AC SA, where this ratio improved from 21% in 2014 to 25% in 2018 (in that year, PLN 100 of assets generated PLN 24.65 of net profit). In Sanok SA, the company with the second-highest return on assets, the ratio deteriorated at the same time. In 2016, PLN 100 of assets generated a net profit of PLN 18.50, but in 2018, only PLN 8.79. The decrease in the index level from year to year should be assessed as risky. The companies in third and fourth place (approx. 10% in 2018) are, respectively, Auto Partner SA and Wielton SA. Meanwhile, ROA in Dębica SA is, on average, 5.9%, and in Inter Cars SA, it is 5.0%; however, in 2018, it reached 7.1%. These ratios prove that there is no risk in return on assets. Groclin SA had the worst return on assets over the five years. Only in 2016 was it positive (PLN 100 of assets generated PLN 1.29 of net profit). In other years it was negative,

e.g., in 2018, PLN 100 of assets generated a loss of PLN 8.94 net. The company suffered losses in 2014, 2015, 2017, and 2018; therefore, it has a negative ROA value in these years.

The highest return on sales was recorded in AC SA (a five-year average of 16%) and Sanok Rubber Company SA (a four-year average of 14.4%). In AC SA, this ratio was quite high. In 2015, PLN 100 of sales revenues brought the company PLN 17.16 of net profit; in 2016 – PLN 16.34, and in 2017 and 2018 – PLN 15.79 and PLN 16.43, respectively. The level of these ratios does not indicate any risk in the profitability of sales. At Sanok Rubber Company SA in 2016, the ratio was also high. PLN 100 of sales revenues generated PLN 17.61 net profit, but in 2017 it was PLN 14.61, and in 2018, only PLN 9.68. The decrease in the ratio in the last two years should be assessed as information about risk. This indicator fell by almost half over the period.

Wielton SA can be considered the third company with high sales profitability. In 2018, the ROS ratio was the highest: PLN 100 of sales revenues generated PLN 7.42 of net profit. The remaining companies, i.e., Auto Partner SA, Inter Cars SA, and Dębica SA, showed lower profitability of sales in the analyzed period than the companies mentioned earlier. Groclin SA had the worst profitability of sales in the analyzed period. The exception was 2016, when PLN 100 of sales revenues brought the entity only PLN 1.72 of net profit. In the remaining four years, the company recorded a net loss; therefore, the ratios are negative. For example, in 2017, PLN 100 of sales revenues generated a net loss of PLN 36.32, and in 2018, a net loss of PLN 13.05. In the last two years, the company has not generated profits but incurred losses.

Liquidity risk was identified by three indicators:

- 1) current liquidity ratio,
- 2) quick liquidity ratio,
- 3) increased liquidity ratio (cash ratio).

Between 2016 and 2018, the current liquidity ratio in AC SA, Inter Cars SA ranged from 1.2 to 2.0., while Dębica SA had such indicators throughout the period. The appropriate value of the ratios in these companies makes them able to regulate their liabilities on an ongoing basis. AC SA had an increased current liquidity ratio in 2014–2015, of 3.8 and 3.29, respectively. Similarly, Inter Cars SA had an increased ratio in 2014 of 2.81. In Auto Partner SA, only in 2017 was this ratio 2.03; in 2015, 2016, and 2018, it was significantly higher than the upper limit of the norm, i.e., 2.36, 2.79, and 2.84, respectively. This situation indicates the risk of these companies inappropriately using working capital and excess liquidity.

In Sanok SA, the ratio was normal, and in Wielton SA, it fell below the standard, and in 2015, 2017, and 2018, it was slightly above 1. This situation indicates the risk of a decrease in the company's liquidity. Between 2014 and 2018, the current liquidity ratio in Groclin SA was below the norm and decreased from 1.14 in 2014 to 0.55 in 2018, i.e., almost half. In 2015 and 2017, the indicator was even lower, amounting to 0.42 and 0.46, respectively. This level of the current liquidity ratio indicates a high risk

of liquidity, and Groclin SA may have problems with the timely payment of liabilities in the future.

The quick liquidity ratio in AC SA, Auto Partner SA, Inter Cars SA, and Wielton SA in the period 2014–2018 (with few exceptions) was lower than the valid standard 1–1.2. This may indicate a risk related to settling current liabilities. In these companies, there is a difference between the current and quick liquidity ratios, which indicates the large freezing of cash on inventories. However, only in Auto Partner SA did the fast ratio increase slightly, while in other companies, it decreased, which means a higher liquidity risk. Dębica SA showed a high level of the quick ratio between 2015 and 2018, and in Sanok SA, it was between 2015 and 2017. It exceeds the upper limit of the norm and indicates excess liquidity in these companies. In Groclin, the quick ratio in all analyzed years was below the norm. In 2014 and 2016, it was 0.74 and 0.68, respectively, but in 2015 and from 2017–2018, the value of the ratio dropped significantly to 0.23 and approx. 0.30. The deterioration of the quick ratio in Groclin SA shows the low ability of the company to timely repay short-term liabilities with assets with a high degree of liquidity.

The increased liquidity ratio (cash ratio) in AC SA in 2016 and 2018, and Auto Partner SA between 2015 and 2018, amounts to approximately 0.1 and is at the lower limit of the adopted standard of 0.1–0.2. Inter Cars SA, in all analyzed years, and Wielton SA between 2015 and 2018, showed the cash ratio at a significantly lower level than the norm. This indicates a high liquidity risk as these companies are likely to have difficulties paying off their liabilities immediately in the future. At Dębica SA, the cash ratio was within the designated range each year. The lowest cash ratio was recorded in Groclin SA. Only in 2016 did it amount to 0.13, while in the remaining years, it did not reach the lower limit or it amounted to zero. It can be seen that this company is losing financial liquidity and will have great difficulties with repaying its current liabilities in the future. The increased liquidity ratio in Sanok SA in the period 2015–2017 significantly exceeds the level of 0.2, but in 2018 it reached the correct level of 0.23. Liquidity ratios that signal difficulties in paying off current liabilities should be an incentive for stakeholders to take a closer look at the situation of a given company, because maintaining financial liquidity is the most important parameter for assessing the company's operations.

Accordingly, additional ratios based on cash flow were calculated. They are recognized as good predictors of business failure. CF-based indicators indicating liquidity risk are:

1. Asset cash performance ratio (cash flows from operating activities / total assets).
2. Operating cash adequacy ratio for total liabilities repayment (cash flows from operating activities/total liabilities).
3. Operating cash adequacy ratio for the purchase of fixed assets and intangible assets (operating cash flows/expenses for fixed assets and intangible assets).
4. Debt service ratio (operating cash flow/capital installment + interest).

When analyzing ratios based on cash flows, it can be generally noticed that in companies that have negative cash flows from operating activities in a given year, these ratios are also negative. In AC SA, negative values in all years are shown only by the operating cash adequacy ratio for the purchase of fixed assets and intangible assets. The same situation occurs every year in Dębica SA, Sanok SA, and Wielton SA, as well as in other companies, but not every year. This proves that the purchases of these asset groups are significantly higher than the cash generated from operating activities and may indicate the risk of excessive purchases leading to overinvestment in the activity.

However, AC SA has the highest levels of the asset cash performance index of any company, ranging from 20% to 30.5% in the analyzed years, and they do not indicate liquidity risk. The satisfactory level of this indicator is 30%–35% (Śnieżek, Wiatr, 2011, p. 192). Negative levels of the cash efficiency ratio of assets are present between 2016 and 2017 in Auto Partner SA, and they are the highest, from –10.5% to approx. –15% compared to other companies. Slightly lower negative indicators of cash efficiency of assets, from –5.51% to –6.08%, are present in Inter Cars SA in 2017 and 2018, and in Groclin SA, –7.35% in 2018. They report a liquidity risk, as the cash productivity of the assets is negative, i.e., the assets do not have the capacity to generate cash.

The cash adequacy ratio for total liabilities is considered to be an objective measure of a company's financial liquidity. Difficulties in paying off liabilities are mainly indicated by the negative levels of this ratio in Auto Partner SA (2015–2017), Inter Cars SA (2014 and 2017–2018), and Groclin SA (2014 and 2018). However, the desired level of this ratio is a value equal to or higher than 100%, which is not achieved by any of the companies apart from one exception of AC SA, at 102.03% in 2015. Therefore, the ratio of cash sufficient to repay liabilities in total indicates the liquidity risk in each of the companies.

The operating cash adequacy ratio for the purchase of fixed assets and intangible assets informs about the level of financing these expenses by cash flows from operating activities. In most car companies, this ratio is negative in analyzed years and proves that the operating cash is insufficient for the purchase of these assets. The exceptions were Auto Partner SA between 2015 and 2017, Inter Cars SA in 2014 and 2017–2018 and Groclin SA in 2014 and 2018.

The debt service coverage ratio with cash flows should not be lower than 1, because then there is a sufficiently large surplus of cash to pay the debt service (Wędzki, 2015, p. 272). Among the surveyed automotive companies, only the debt service ratio in Groclin SA does not meet this criterion in the analyzed years (except for one exception in 2015). Therefore, there is a risk in this company that it will not be able to pay the debt with cash generated from operating cash flows. Groclin SA is an example of a high-risk company. In contrast, AC SA Dębica SA and Sanok SA achieve good results and are not threatened with business risk. On the other hand, the remaining companies have average results and must consider the risk of running their business. All the analytical indicators presented above have a predictive value and indicate the possibility of a specific

risk occurring in enterprises' future operations. They are early warning indicators and are designed to draw the attention of stakeholders and management to emerging threats and encourage them to conduct an in-depth analysis of the company's situation.

Conclusions

The article presents and interprets identifiable risks in financial reports on the example of the automotive companies listed on the Warsaw Stock Exchange for the years 2014–2018. The choice of the automotive industry was dictated by its popularity and growing demand for automotive goods and services in Poland but primarily by its significant risk exposure due to the provision of risk-prone transport services and the propensity to risk (the so-called risk appetite) due to the technical and technological progress in the automotive field.⁵ A review of the automotive companies' websites did not reveal CSR or integrated reports in most of these companies.⁶ Therefore, from the theoretical side, the risks possible to read from the data contained in the financial reports were only characterized.

The research was conducted to identify risks in the balance sheet and in the profit and loss account, as well as in the cash flow statement. Then, the risks were addressed through selected analytical indicators with predictive value with which potential risks can be detected. The selection of indicators was guided by their predictive value. Due to the lack of literature on such indicators related to risk detection, their selection was based on the analysis of the research and practical indications on the needs of investors and other stakeholders interested in the property and financial situation of companies and their financial results, as well as the needs of management boards wishing to increase the company's value in the long term. This information was mainly obtained based on the case study method performed for each of the surveyed companies.

To select the indicators-predictors, the average collective indicators for all companies in each year were calculated. They were then compared to the indicators achieved by individual companies, and a set of indicators-predictors was selected on this basis. Such a procedure could apply to any other industry under study. The most important indicators-predictors were: assets and capital structure ratios, turnover ratios, and static and dynamic liquidity ratios. The author's main contribution is the choice of indicators that can be predictive in detecting risk. The use of financial statements and appropriate

⁵ The auto industry's vulnerability was confirmed during the recent Covid 19 economic crisis, which resulted in a decline in demand for automotive services and a decline in turnover as people and businesses closed.

⁶ Information on risks was found only in the non-financial reports of two companies, i.e., Inter Cars SA, in the report on the entity's activities for 2018 and 2019, and Groclin SA for 2017. Due to the lack of non-financial reports for all automotive companies, the risk was described based only on the financial report for the period 2014–2018. The risk-related examination of the content of these reports using the Jones and Shoemaker methodology from 1994 requires a separate article.

indicators allowed the detection of risks in all automotive companies listed on the Warsaw Stock Exchange. In this way, the research hypotheses assumed in the introduction has been positively verified. The important role of accounting in risk detection was highlighted, as well as its contribution to the risk management process.

As announced in the introduction, the scientific theory to which the article refers is the positive theory of accounting. The article presents the existing situation in terms of detecting risk in financial statements on the example automotive companies. The achievements of foreign literature from recent years are presented by discussing several significant items related to the topic of risk in accounting. The article's contribution to risk identification was articulated by analyzing financial statements using indicators with a predictive value. The importance of the informative role of accounting, including financial reporting, for assessing business risk was also proved.

The article is limited by relying on the financial statements of automotive companies. However, using predictive measures, risks can be detected in any other industry. Moreover, in accordance with the scientific methodology of accounting narratives, examining the content of non-financial reports in terms of disclosed risks may be proposed as a direction for further risk research in the area of accounting (if such reports are prepared by companies). The article can also be treated as a contribution to improving the perception of accounting as a scientific discipline and appreciating the informative role of financial statements, without which it would not be possible to obtain knowledge about basic data or calculate many different indicators that characterize enterprises.

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