VILNIUS UNIVERSITY
BUSINESS SCHOOL

SUSTAINABLE CORPORATE FINANCE AND INVESTMENTS

Valdemar Verbicki

MASTER THESIS

ĮMONĖS „AUGA GROUP“ KREDITO REITINGO SUDARYMAS	**CORPORATE CREDIT RATING ASSESSMENT OF AUGA GROUP**

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Supervisor _____
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Name, surname, and scientific degree of the supervisor

Vilnius, 2024

SUMMARY

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CORPORATE CREDIT RATING ASSESSMENT OF AUGA GROUP

Supervisor – Doc. Dr. Antanas Laurinavičius

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This research investigates the role of credit ratings in financial markets, focusing on smaller or geographically centralized companies. It applies Moody's Investors Service credit rating assessment methodologies to Auga Group which is listed on the Nasdaq Baltic Stock, providing a unique perspective on Baltic companies and their global positioning. The study emphasizes the need for financial analysis of smaller-size companies to guide policymakers, create business development opportunities, and attract investors. This research offers a novel perspective, as credit rating assessments for smaller corporations have not been extensively analyzed. The objective is to provide a comprehensive evaluation of Auga Group's performance using credit rating assessment methodologies and techniques, which incorporate various qualitative and quantitative factors. The study concludes that agricultural company "Auga Group" falls within the lower end of the speculative ratings group, reflecting its increased vulnerability to default. It is found that Auga Group's financial performance aligns with industry standards for smaller-scale companies. However, its qualitative performance in terms of market share and earnings stability is lower. It is suggested that Auga Group implements a debt management strategy and maintains its current product profile and exporting strategy. The research also recommends policymakers provide financial and regulatory support to corporations practicing environmentally-friendly organic agriculture. Finally, the research proposes that future studies should incorporate more qualitative factors in corporate credit rating assessments.

SANTRAUKA

VILNIAUS UNIVERSITETO VERSLO MOKYKLA
TVARŪS VERSLO FINANSAI IR INVESTICIJOS
VALDEMAR VERBICKI

ĮMONĖS „AUGA GROUP“ KREDITO REITINGO SUDARYMAS

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Šis tyrimas nagrinėja kredito reitingų vaidmenį finansų rinkose, daugiausia dėmesio skirdamas mažesnėms arba geografiškai koncentruotoms įmonėms. Atliktame tyrime pritaikomos „Moody’s Investors Service“ kredito reitingų vertinimo metodikos vienai iš Nasdaq Baltic vertybinių popierių biržoje listinguojamų bendrovių „Auga Group“, suteikiant unikalią Baltijos šalių įmonių ir jų pozicionavimo pasaulyje perspektyvą. Tyrime pabrėžiamas mažesnių įmonių finansinės analizės poreikis, siekiant teikti orientyrus politikos formuotojams, sukurti verslo plėtros galimybes ir pritraukti investuotojus. Šis tyrimas siūlo naują perspektyvą, kadangi mažesnių bendrovių kredito reitingų vertinimai nebuvo išsamiai išanalizuoti anksčiau. Darbo tikslas yra pateikti išsamų „Auga Group“ veiklos įvertinimą, naudojant kredito reitingų vertinimo metodikas ir metodus, kurie apima įvairius kokybinius ir kiekybinius faktorius. Atliktame tyrime daroma išvada, kad žemės ūkio bendrovė „Auga Group“ patenka į žemesnę spekuliacinių reitingų grupę, kas atskleidžia padidėjusį įmonės pažeidžiamumą dėl įsipareigojimų nevykdymo. Nustatyta, kad „Auga Group“ finansiniai rezultatai atitinka mažesnių įmonių industrijos standartus. Tačiau šios įmonės kokybiniai rodikliai yra prastesni rinkos dalies ir pajamų stabilumo atžvilgiu. Siūloma, kad „Auga Group“ įgyvendintų skolų valdymo strategiją ir išlaikytų esamą produktų profilį bei eksporto strategiją. Taip pat šiame tyrime pateikiamos rekomendacijos politikos formuotojams teikti finansinę ir reguliacinę paramą bendrovėms, užsiimančioms aplinkai nekenksmingu bei ekologišku žemės ūkiu. Galiausiai, šiame darbe siūloma, kad ateityje atliekamuose tyrimuose į įmonių kredito reitingų vertinimus būtų įtraukta daugiau kokybinių veiksnių.

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CAP	Common Agricultural Policy
CFO	Cash Flows from Operations
CRA	Credit Rating Agencies
EBITDA	Earnings Before Interest, Taxes, Depreciation, And Amortization
ESG	Environmental, Social and Governance
EU	European Union
FAO	Food And Agriculture Organization of The United Nations
FMCG	Fast-Moving Consumer Goods
GAAP	Generally Accepted Accounting Principles
GDP	Gross Domestic Product
IFRS	International Financial Reporting Standards
IOSCO	International Organization of Securities Commissions
LTM	Last Twelve Months
M&A	Mergers And Acquisitions
MA	Moody's Analytics
MIS	Moody's Investors Service
MOA	Ministry Of Agriculture of The Republic of Lithuania
NBSE	Nasdaq Baltic Stock Exchange
OECD	Organization For Economic Cooperation and Development
S&P	Standard And Poor's
SGL	Speculative Grade Liquidity
SIO	Scorecard Indicated Outcome
USD	United States Dollar

INTRODUCTION

Relevance of the research. In the era of uncertainty and instability in the financial markets, credit ratings serve a very important purpose of providing necessary coherence and clarity to the market participants. Unfortunately, credit ratings frequently tend to be limited to large global corporations, placing smaller or geographically centralized companies at a disadvantage, and subjecting them to an additional set of borrowing constraints. For countries that have evolving financial markets, such as those in the Baltic region, it is essential to help those local enterprises overcome the aforementioned borrowing constraints as they tremendously contribute to economic growth. While most companies listed on Nasdaq Baltic Stock Exchange (NBSE) are large enterprises, their market capitalization is relatively small due to the size of the Baltic economies (OECD, 2017). Therefore, this thesis aims to apply credit rating assessment methodology for a company listed on NBSE. It can give a distinctive perspective on companies operating in the Baltic region and present how well-positioned they are against global peers. In addition, financial analysis of smaller companies based on credit rating methodologies can give noteworthy guidance for policymakers, provide business development opportunities, improve access to capital, and increase appeal for investors, among others.

The novelty of the research. This thesis endeavors to offer a novel and significant perspective, providing a distinctive and invaluable insight into the research topic. So far, credit rating assessments based on publicly available credit rating methodologies have not been extensively analyzed, due to mere complexity and extensive field-knowledge requirements. Recently, researchers have been mostly focusing on technical analysis of credit ratings, for example by Sun (2019) and Wallis et al. (2019), or usefulness, influence, and reliability of credit ratings, such as by DeHaan et al. (2023), Goldstein and Huang (2017), and Smyth et al. (2020). Therefore, assessments of credit ratings based on credit rating methodologies, especially for small corporations, can significantly contribute to the overall research which has been made in the field of credit ratings.

Research problem. Credit ratings are rarely obtained by smaller companies from the main credit rating agencies, and this issue has not been extensively researched.

Subject matter. Corporate credit rating.

Research objective. The objective of the thesis is to offer a comprehensive and multidimensional evaluation of Auga Group's overall performance using methodological credit rating assessment techniques.

Research tasks:

1. Conduct a comprehensive review of existing literature and resources to understand the landscape of credit rating agencies and the dynamics of corporate credit ratings.
2. Identify and analyze the key factors that can significantly influence a company's credit rating.
3. Compile a detailed profile of the Auga Group, including an overview of its industry.
4. Evaluate the methodologies employed in credit rating assessments.
5. Analyze and interpret the Auga Group's credit rating, providing a thorough discussion of the findings.
6. Enhance the understanding of the Auga Group's rating by performing a comparative analysis with industry peers.

Structure of the work. The subsequent chapters will delve deeper into the findings and analyses made in the field, followed by an analysis of relevant methodologies and their application for a credit rating assessment. The work is concluded with closing remarks and recommendations.

Research methods. The research applies Moody's Investors Service protein and agriculture sector credit rating assessment methodology as well as other essential cross-sector methodologies, including financial statement adjustments in the analysis of non-financial corporations, general principles of liquidity risk assessment and assessing the impact of sovereign credit quality on other ratings.

Limitations of the research. The credit rating assessment is only an approximation since a true rating assigned by a credit rating agency would include other undisclosed considerations.

1. THEORETICAL OVERVIEW OF CREDIT ANALYSIS

1.1. Credit ratings and credit rating agencies

Credit ratings are the determinants of creditworthiness and credit risk for a wide spectrum of institutions, and they are assessed by institutional credit rating agencies (CRA). The biggest three credit rating agencies, also known as the "big three", are Moody's Investors Service (MIS, a branch of Moody's Corporation), Standard and Poor's (S&P), and Fitch Ratings. These for-profit agencies apply their own developed and industry specific rating methodologies, which are a set of analytical frameworks and tools used in the credit rating assessment process. These methodologies, which in some cases are similar between rating agencies, take into account qualitative as well as quantitative factors. Once assessment is done, a credit rating is assigned, which is only an opinion of the rating agency rather than a de facto financial health of the issuer (Verster et. al., 2019).

All three biggest CRAs were formed in the early 20th century, and the first credit rating was assigned in 1909 by Moody's Investors Service founder John Moody, who at the time rated railroad bonds. Later, the rating industry was joined by Poor's Publishing Company and Standard Statistics Company (which later merged and formed Standard and Poor's in 1941) as well as Fitch Publishing Company (now - Fitch Ratings). All three agencies apply the issuer-pay model and can charge issuers thousands, hundreds of thousands or even millions of dollars depending on the rating type, rating scope and complexity (Livingston and Zhou, 2020).

Credit ratings themselves can be of various types, with, for example, Moody's Investors Service providing ratings for long-term and short-term debt, national scale, probability of default, bond fund, and equity fund among others, including sub-categories within (Moody's Investors Service, 2023a). These rating types attain specific type of symbols, which correspond the particular levels of the probability of default, with the highest rating of triple-A having the highest credit quality and the lowest probability of default. As rating scores go each notch down, credit quality decreases and the likelihood of default increases. Often, these ratings are complimented by outlooks or reviews, which provide additional insights about the positionings of these ratings. (Livingston and Zhou, 2020). The overall rating symbols and definitions vary between rating agencies, however international long-term and short-term credit rating scores are aligned and presented in the following tables 1 and 2.

Table 1

Long-term investment and speculative grade ratings

	Moody's	**Fitch and S&P**	**Interpretation**
Investment-Grade Ratings	Aaa	AAA	Highest Quality
	Aa1	AA+	High Quality
	Aa2	AA	
	Aa3	AA−	
	A1	A+	Strong Payment Capacity
	A2	A	
	A3	A−	
	Baa1	BBB+	Adequate Payment Capacity
	Baa2	BBB	
	Baa3	BBB−	
Speculative or Junk Ratings	Ba1	BB+	Likely to Fulfill Obligations; Ongoing Uncertainty
	Ba2	BB	
	Ba3	BB−	
	B1	B+	High-Risk Obligations
	B2	B	
	B3	B−	
	Caa1	CCC+	Current Vulnerability to Default
	Caa2	CCC	
	Caa3	CCC−	
	Ca	CC	In Bankruptcy or Default or Other
	C	C	
		D	In Default

Source: compiled by the author, based on Livingston and Zhou, 2020.

Table 2

Short-term prime and non-prime ratings

	Moody's	**S&P**	**Fitch**	**Interpretation**
Prime Ratings	P-1	A-1	F-1	Superior ability to repay short-term debt obligations
	P-2	A-2	F-2	Strong ability to re pay short-term debt obligations
	P-3	A-3	F-3	Acceptable ability to repay short-term debt obligations
Non-Prime Ratings	NP	B	B	Major ongoing uncertainty
		C	C	Currently vulnerable to nonpayment
		D	D	In default

Source: compiled by the author, based on Livingston and Zhou, 2020

Long-term investment and speculative grade ratings evaluate creditworthiness of the company over the long-time horizon. Due to this factor, they are more frequently used by investors when the long-term investment decisions are made. Short-term prime and non-prime ratings on the other hand serve a more near-term purpose and are used in the context of short-terms borrowings and liquidity.

1.1.1. Credibility of credit rating agencies

Competition. As mentioned previously, the biggest three credit rating agencies make up the majority of the credit rating market share. In fact, according to European Securities and Markets Authority (ESMA, 2022), nearly 93% of the credit rating market in the European Union belongs to the "big three" credit rating agencies, with S&P Global Ratings holding 50.1% of the market share while Moody's Investors Service and Fitch Ratings maintain 32.8% and 10.0% of the market respectively. In a 2010 report published by the OECD, after a hearing held by the Competition Committee on competition and credit rating agencies, the most recently known global market share trends of credit rating agencies were laid out. Similarly, as in the EU, the "big three" credit rating agencies accounted for over 94% of the global market, with Moody's Investors Service and S&P Global Ratings each constituting around 40% of the market share while Fitch Ratings maintaining 14 percent (OECD, 2010). Moreover, according to the United States Securities and Exchange Commission (2020), the biggest three credit rating agencies have issued 95.1 and 95.4 percent of global outstanding bond ratings in 2019 and 2018 respectively. This makes the market of credit ratings a natural oligopoly and raises concerns about limited competition. Consequently, some regulations in the US, the EU, and elsewhere globally try to increase the market share of smaller credit rating agencies. However, some argue that the regulatory burden has actually helped to maintain oligopoly due to additional regulatory burden for the smaller credit rating agencies aiming at entering the market (Partnoy, 2017). On the other hand, the same OECD report mentioned above has concluded, that more competition would not necessarily benefit financial the markets. New entrants in the industry could try attracting businesses by inflating ratings and providing overly optimistic outlooks. Therefore, while increased competition could theoretically disrupt concentration of the market share, the risk of new entrants inflating ratings to attract business underscores the complexity of the issue. Thus, the balance between competition and market stability remains a key challenge in the credit rating industry.

Regulatory Oversight and Accountability. The earlier mentioned OECD hearing was held and a subsequential report was published as a result of the 2008-2009 global financial crisis, which brought attention to the role of credit rating agencies in the financial markets. As described by Bush (2022) the conflict of interest, caused by the 'issuer-pay' model in the credit rating industry, constituted a major failure of rating agencies in their role as financial intermediaries and financial gatekeepers. At the time, credit rating agencies were assigning excessively positive and highly inflated ratings, especially for the structured-finance products. Since a big amount of financial products in the structured financial market were controlled by a small number of issuers, credit rating agencies were highly motivated by issuer retention. For this reason, many structured finance products, especially collateralized debt obligations were overrated, with for example, many triple-B tranches (MIS "Baa" equivalent) being rated as triple-A despite often being composed of subprime mortgage-backed securities. The complexity and ambiguity of overrated mortgage-backed securities has led many banks and other investors to take on the risk that was not fully understood, nor manageable. As house prices started to rise in 2008, a period also known as the "housing bubble", many homeowners started to default, which in turn resulted in many collateralized debt obligations being drastically downgraded many notches down by the same credit rating agencies. Remarkably rapid drop in the value and ratings of collateralized debt obligations was considered the primary cause of the 2008-2009 global financial crisis (Khani and Neisy, 2022).

In the aftermath of the global financial crisis, different laws and regulations around the world were enacted to increase oversight and control over credit rating agencies. In the US, for example, the ''Dodd-Frank Wall Street Reform and Consumer Protection Act'' (also known as the Dodd-Frank Act) was passed on July 21^{st,} 2010. As laid out in Subtitle C, section 931 of the law: "because of the systemic importance of credit ratings and the reliance placed on credit ratings by individual and institutional investors and financial regulators, the activities and performances of credit rating agencies, including nationally recognized statistical rating organizations, are matters of national public interest" (The US Public Law 111–203, 2010). The Dodd-Frank Act aimed at increased regulatory oversight, accountability, and transparency of credit rating agencies through the Securities and Exchange Commission. However, the impact of the act is inconclusive with some arguing that the law improved credit rating market, while others argue that it actually made the market worse. For example, research by Toscano (2020) found that S&P ratings post Dodd-Frank Act have improved significantly in their accuracy, despite the issuer-pay model. In fact, the research argues that the issuer-pay model is beneficial as it encourages credit rating agencies to prioritize timeliness and reputation. On

the other hand, however, research by Dimitrov et al. (2014) finds that instead of improving accuracy and informativeness, the Dodd-Frank Act has led CRAs to issue lower ratings, more false warnings, and less informative downgrades, as they become more protective of their reputation post the act. These effects are particularly pronounced in industries where Moody's and Standard & Poor's have a dominant market share. The research concludes that raising the legal and regulatory costs for the credit rating agencies may negatively impact the quality of credit ratings.

In another example, on September 16th, 2009, the European Parliament and the Council of The European Union passed regulation Number 1060/2009 on the credit rating agencies. Similarly to Dodd-Frank Act in the US, the law aimed at increased regulation of activities of CRAs, their independence, and integrity as well as better protection for consumers and investors. The law argued that there was a need to regulate credit rating agencies more stringently, to ensure transparency, manage conflicts of interest, and enhance the quality and reliability of their ratings in order to safeguard financial markets. Later in 2011 The European Securities and Markets Authority (ESMA), the EU's securities markets regulator, was handed over with the task to fulfill the requirements stated in the law. However, a decade later research by Malewska (2020) concluded, that the EU law number 1060/2009 failed to reduce the oligopolistic dominance of the "big three" due to a combination of factors. Firstly, the credit ratings market inherently leans towards oligopoly due to high entry barriers. Secondly, the regulations, despite their intent, may not have been sufficiently rigorous or effective to stimulate competition. Lastly, the entrenched power dynamics within the international financial market and the reliance of numerous countries on the "big three" credit rating agencies for credit ratings further fortified their dominance. Consequently, the "big three" continue to dominate the European market, despite its pro-competition environment and extensive regulatory oversight. This argument is balanced by Bush (2022), who by comparing Dodd-Frank Act and The EU regulation 1060/2009 concluded, that the EU law is overall more effective since it focuses on reducing the conflicts of interest and increasing competition in a much more comprehensive and stricter way. However, by analyzing both laws overall, he concludes, that they "demonstrate a dilemma in dealing with the 'disease' while avoiding the adoption of a harsh "cure", which can have a pervasive effect on the rating industry" (Buch, 2022). In conclusion, the effectiveness of regulatory responses to conflicts of interest in credit rating agencies remains a contentious issue. Despite efforts to enhance competition and transparency, the "big three" still dominate the market.

Timeliness, Procyclicality, and Disclosure Dependency. Despite the implementation of additional regulations following the global financial crisis, the credit rating agencies continued to be criticized. Over the past few years credit rating agencies have once again been under increased credibility pressure. At the beginning of the COVID-19 pandemic, credit rating agencies downgraded many bonds and loans at unprecedented levels in terms of speed. On March 5th, 2020, Standard and Poor's have had downgraded or put on negative watch a fifth of the corporate and sovereign issuers, and three-fifths of significantly pandemic-impacted sector issuers (The Economist, 2020). According to the IOSCO report (2021), while government support measures have helped to alleviate the downward pressure on credit ratings during the first year of the pandemic, concerns about the implications of large-scale downgrades by credit rating agencies, especially over the short term, were raised. However, in contrast, Tran et al. (2021) found that credit rating agencies were actually too slow to take action, particularly when it came to sovereign ratings. As argued, due to the pandemic global GDP decreased by 3.5% in 2020 alone, while only 0.1% of the reduction was seen during the 2008 global financial crisis, which, however, is not appropriately reflected in the negative rating actions on sovereigns. With, for example, S&P downgrading only 16% of its sovereign portfolio in the six months leading from February 2020, when compared to downgrading 25% of its sovereign portfolio in the six months following the collapse of Lehman Brothers in September of 2008. Sovereign ratings can impact large number of institutions which have rating in the country, therefore their downgrades have significant effect on the nation's domestic market. The research details, that this in part could explain the reluctancy of credit rating agencies to act urgently. Credit rating agencies seek to avoid unintended and immense market reactions.

COVID-19 pandemic was not the only instance where credit rating agencies were criticized for a slow reaction time. In a similar case during the 1997 East Asia crisis, CRAs also acted slowly to address the early warnings coming from the market about the sovereign creditworthiness, followed by delayed and multiple-notch downgrades during a single day in some instances (Ryan, 2012). Delayed responses by credit rating agencies highlights a possible tendency for procyclicality, which once again challenged their credibility. A delayed or improper responses by credit rating agencies include a heavy reliance on the disclosures of the rated issuers themselves. This, for example, was evident in the Enron bankruptcy case back in 2001. At the time, the "big three" credit rating agencies rated Enron as "investment grade" even until a few days before it filed for bankruptcy. While this can be mostly attributed to the accounting malpractices on the side of Enron to inflate the company's profitability and hide true levels of debt, credit rating agencies were criticized by the US government for not doing

proper due diligence and seeking answers to important questions about Enron's financial solvency (Khan et al., 2022).

In conclusion, the recurring criticisms of credit rating agencies, highlighted during the COVID-19 pandemic, the 1997 East Asia crisis, and the Enron bankruptcy, underscore the agencies' persistent struggles with timeliness, procyclicality, and dependency on issuer disclosures. These issues, despite regulatory efforts, continue to challenge the credibility of the agencies and raise questions about their effectiveness and the appropriateness of their responses during crises. Credit rating agencies have to balance the speed and timeliness of credit rating actions, needs and expectations of investors and credit rating users, as well as fiduciary duty to its shareholders, while maintaining their role as financial gatekeepers.

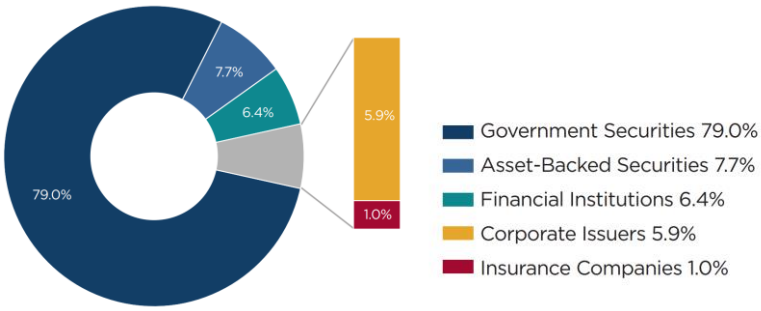
1.1.2. Moody's Investors Service ratings and research

History of Moody's Corporation. Moody's Corporation was founded in the United States over 100 years ago by an American financial analyst John Moody, who published a "Moody's manual of industrial and miscellaneous securities" (Moody's Investors Service, 2023b, 2023c). Later, a bond rating pioneer published updated editions of the book, as well as other publications within the area of investments and credit. As bond markets developed in the US, Moody's Corporation rapidly grew. In 1970, twelve years since the passing of the company's founders, Moody's assigned its first Eurobond rating. In 1985 the company opened its office in Tokyo, followed by an office in Paris in 1987 and Sydney in 1988. By the year 2000, Moody's Corporation was formed and became a listed company on New York Stock Exchange with the ticker symbol "MCO". After many significant acquisitions in the following years, the company expanded its focus to real estate, cyber security and ESG expertise. Today Moody's Corporation is the holding company of its subsidiaries Moody's Investors Service (MIS), which focuses on traditional credit rating business and relevant research, and Moody's Analytics (MA), which provides services of financial analysis. Both MIS and MA, while under one holding company, are separate and independent entities. Due to credit rating business being pursued by MIS, the following parts of the research will focus on this particular subsidiary. Overall, as of writing this thesis Moody's Corporation employs over 14 thousand employees in more than 40 countries around the world, including Lithuania. Mission of Moody's corporation is to deliver reliable knowledge and benchmarks that empower those making decisions to proceed with certainty.

Moody's Investors Service Credit Ratings. While various research pieces are part of Moody's Investors Service revenue-generating business model, its core business is credit ratings, which are based on its own-developed credit rating methodologies. As of year 2023, MIS has 171 rating methodologies for sectors such as corporates, financial institutions, funds & asset management, infrastructure & project finance, insurance, sovereign & supranational, structured finance, sub-sovereign, and US public finance. Methodologies, depending on various circumstances, are regularly updated, created, or removed, and while majority of rating methodologies are global, some apply only to certain regions. Moody's rating methodologies are a set of analytical frameworks which are used by rating committees when assigning a rating. According to the United States Securities and Exchange Commission (2023) Moody's has issued nearly 700 thousand credit ratings, with majority of them being for government securities. This is typical for credit rating agencies, as presented in the figure 1 below.

Figure 1

Breakdown of ratings by rating category



Source: The United States Securities and Exchange Commission, 2023. December 31, 2021.

Early research by Kliger and Sarig (2000) analyzed how valuable are Moody's (MIS) ratings. By analyzing bonds, stocks, and option prices they found that Moody's rating information is valuable as it has direct impact on those financial instruments, with a greater impact for high-leverage firms than for low-leverage ones. A later analysis by Livingston et al. (2010) not only confirmed the significant effect of Moody's ratings but also compared that effectiveness with its biggest competitor – Standard & Poor's (S&P). According to the research, many perceive that the same grade rating from Moody's and S&P, for example, Baa3 and BBB-, are equivalent. This, however, is not the case, because Moody's as a rating agency is more conservative. The testing-based analysis has shown that when bond rating is split, meaning both rating agencies give different ratings to the same issuer, bonds with the higher Moody's ratings have lower yields, while similar bonds with the higher S&P rating – do not. This signifies that there is a differential market response to ratings from Moody's compared to those from S&P.

Conservativeness for rating agencies is very important since it improves their reputation and overall attractiveness for investors. However, being more conservative in terms of ratings could also have adverse outcomes as issuers, justifiably, seek to obtain higher ratings. A more recent study by Caridad, et al. (2020) delved into a more detailed examination of the rating split by Moody's and S&P and found that while more than half of the ratings between years 2014-2018 were grade-equivalent by both rating agencies, Moody's ratings tended to be lower (more conservative). The study also found that ratings tend to be similar also depending on the sector, with consumers and energy firms having alike ratings more frequently than those in other sectors. While credit rating agencies have different methodologies for the assessment of credit risk, the majority of ratings remain very similar or equivalent, while in most cases when there is a rating split – Moody's remains a more conservative credit rating agency, despite the issuer-pay model. Given this observation, the research will employ the rating methodologies of Moody's Investor Service in an effort to produce more dependable outcomes. The conservative nature of this approach is intended to enhance the reliability of the results.

1.2. Factors influencing a company's credit profile

Quantitative factors. Probably the most significant factors which influence a company's credit quality and therefore rating are quantitative, mostly derived from financial statements. The main advantage of quantitative factors is their precision and objectivity, which is pivotal for an accurate assessment of company's creditworthiness. While specific quantitative factors, which influence credit rating, vary from one methodology to the other, often they include simple one-line numerical items from financial statements, such as revenue, or ratios derived from those values, such as leverage. Both numerical items and ratios have different levels of importance concerning credit quality, and that is determined in credit rating methodologies developed by credit rating agencies for each sector specifically. For example, a comparison between MIS methodology for corporations operating within manufacturing sector and the sector for business and consumer services can be made. According to the MIS manufacturing methodology, which is applied to the companies primarily engaging in the manufacturing of product components, finished products or capital goods, the overall quantitative factors determine 60% of the overall credit score (Berge et al., 2021). This combines 20% for the scale, 5% for profitability and 35% for leverage and coverage. In the methodology for the assessment of companies engaging in providing services to other businesses or consumers a different weight to the quantitative factors is given. There, quantitative factors determine 70% of the overall credit score, which incorporates 20% for the

scale, 10% for the profitability and 50% for leverage and coverage (DeForest et al., 2021). This highlights, that in MIS opinion, the leverage and coverage as well as profitability pay a much more important role for the companies operating within business and consumer services industry. This difference is explained by MIS methodologies, where for business and consumer service companies, these factors crucial as they indicate a business's competitive position, potential for reinvestment, and evidence of competitive advantages, as well as a company's financial flexibility, long-term viability and its adaptability to changes in the economic and business environment. For manufacturing companies these factors matter, because they reflect a company's competitive position, reinvestment capacity, and operational efficiency, in addition to measuring company's financial flexibility, risk tolerance, and its ability to innovate, adapt to market changes, and withstand industry cyclicality.

The disparity in emphasis on profitability, efficiency, leverage, and coverage between business and consumer services firms and manufacturing companies may be influenced by their unique operational dynamics and industry environments. Business and consumer services firms frequently engage in highly competitive markets with lower entry barriers, making profitability and efficiency paramount. These organizations must consistently innovate, adapt to evolving consumer tastes, and uphold superior service quality while managing costs to remain competitive. Additionally, these firms often entail fewer tangible assets, making their leverage and coverage ratios vital in assessing their debt service capacity and resilience to financial turbulence. Consequentially, manufacturing companies function within an industry marked by high capital intensity and extended cash conversion cycles. Although profitability, efficiency, leverage, and coverage are important, other aspects such as liquidity, asset management, and operational efficiency might hold more relevance for these firms.

Overall, for other methodologies quantitative factors can vary, with one-line numerical items from financial statements being gross assets or property, plant and equipment, or ratios, focusing on a variety of categories such as activity, solvency, liquidity, profitability, and valuation. As discussed by Hasanaj and Kuqi (2019) analysis of company's financial statements and the quantitative data it provides is the best way to assess the actual state of the company's financial health. By analyzing the company's financial statements over multiple years it can be evaluated how much, for example, company's liquidity position, profitability, efficiency, and leverage has improved. For the credit rating agencies this is a fundamental analysis for assigning or changing a rating or its outlook. For this reason quantitative factors make-up the majority of the weight in MIS methodologies for assessing the credit risk of corporations.

Qualitative factors. Other significant factors when considering company's credit risk are qualitative, most often derived from the company's annual reports, legal documentation, and other sources. Main advantage of qualitative factors is their ability to provide important additional insights and context about the company's financial risk. Similarly, as for the quantitative factors, MIS methodologies for evaluating company's qualitative factors vary depending on the industry. For the same two sectors discussed earlier, manufacturing and business and consumer service, MIS employs different qualitative factors as well as their relative weight for the credit rating. The qualitative factor of business profile for manufacturing companies is based on company's market position, stability of its end markets, diversity of its products, as well as the company's cost structure, while for business and consumer service companies this factor focuses on demand characteristics and competitive profile. Business profile factor for manufacturing and business and consumer service weights 25 and 20 percent respectively. Another qualitative factor if financial policy. This factor, similar for both methodologies, centers around company's financial risk tolerance, history of mergers and acquisitions, and dividend payout policies. The financial policy factor for manufacturing credit rating assessment has a weight of 15 percent, while for business and consumer service - 10 percent.

Overall, qualitative factors make up 40% of the overall credit score for manufacturing companies - 10 % more than for business and consumer service companies. This indicates that, at least according to Moody's, credit risk for manufacturing companies much more significantly derives from the qualitative factors. That most likely can be explained by mere diversity and dynamics of manufacturing sector, including reliance on management's strategy for mitigating supply chain risks, ensuring efficiency and development, and accountment for economic uncertainties. This has been more broadly discussed by Yadav et al. (2019), where the importance of good governance of manufacturing companies has been recapitulated. Through quality improvement systems, such as "lean manufacturing, six sigma, sustainable manufacturing, and circular economy concepts, approaches and technologies" the manufacturing companies aim or should aim at reducing "negative corporate environmental impacts while enhancing their financial strength and positive societal benefit". In other words, the higher emphasis on qualitative factors for manufacturing companies may be due to the industry's inherent operational complexities and risks.

Other qualitative factors. While business profile and financial policy capture many of the important qualitative factors, other ones are gaining an increasing level of significance, such as corporate governance quality, environmental and social responsibility, innovation

capacity, management quality, brand reputation and cyber security. The latter, as an example, provides information about company's positioning regarding potential cyber-attacks, which pose a critical threat to corporate sustainability and viability, with the potential to significantly disrupt operational continuity, compromise data integrity, and erode stakeholder trust. Currently, Moody's methodologies do not explicitly include company's cyber security posture as a part of the credit risk assessment. However, a major cyber-attack, such as distributed denial of service (DDoS), malware, ransomware and other attacks, including both intentional and unintentional data breaches, can have a significant negative effect not only to the company's reputation, but also its financial performance, and therefore credit. Companies should employ cybersecurity measures, such as preventative, response, and aftermath, in order to circumvent any losses, as has been extensively discussed in an analysis by Bederna and Szádeczky (2023). In addition, research by Uddin et al. (2020) found that there is an elevated cybersecurity risk for industries conducting operations in a virtual environment, especially financial institutions. In conclusion, while current credit risk assessment methodologies may not explicitly consider a company's cybersecurity posture, evidence suggests that cyber threats, if unmitigated, have the potential to significantly negatively impact both company's reputation and financial performance.

The qualitative factor encompassing corporate governance, environmental, and social (ESG) components has also been receiving an increasingly significant level of attention. While the concept of ESG was already introduced a couple of decades ago, it gained wide-spread popularity relatively recently, when issues such as corporate social responsibility and socially responsible investing started to gain an increasing public interest, as explained in a study by Almeyda and Darmansyah (2019). Many investors are beginning to perceive ESG as a risk faced by the firms, and many subsequential polls highlight such view. In the same study, which analyzed the relationship between ESG disclosures and real estate firm's financial performance, it was found that good ESG disclosures had a positive effect on a company's financial performance, as measured by ROA and ROC. This once again reiterated that investors evaluate companies based not only on quantitative, but also qualitative factors.

On the other hand, however, arguments about the ambiguity, significance, and subjectivity of ESG evaluation have balanced the pro-ESG reasoning. Recently, many rating agencies have emerged which evaluate and assess corporate ESG performance scores, including the "big three" credit rating agencies. ESG scores or ratings help transform qualitative aspects of ESG to quantitative, making them simple and comparable. However, some studies, such as by Linnenluecke (2021) have found that ESG scores are subject to

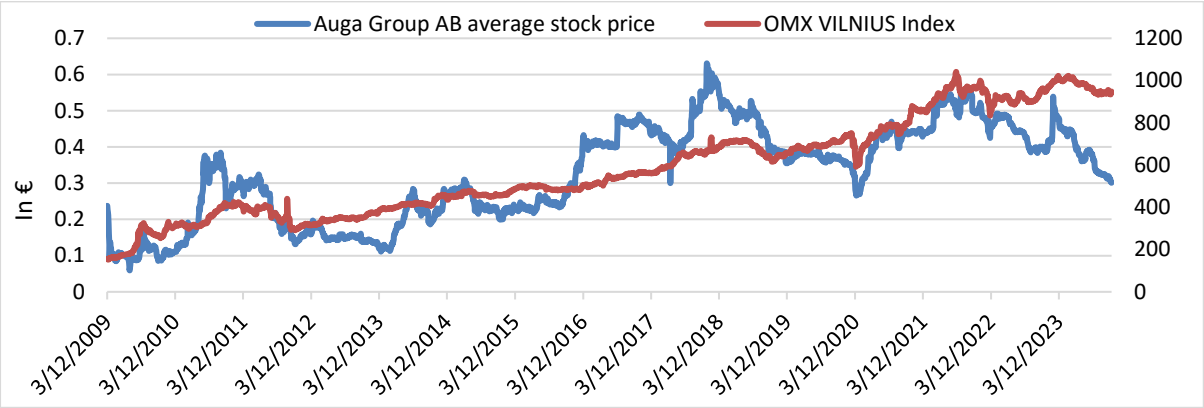
methodological biases. Later, as analyzed by Landi et al. (2022), it was also concluded that ESG ratings can actually increase systemic risk and uncertainty for investors as they could be perceived as not serving the interest of the shareholders. In addition, research by Huang (2021) has found that there is actually a very modest positive relationship between the ESG activity and corporate financial performance. Currently, in many of the MIS credit rating assessment methodologies the ESG factors are considered and can potentially affect the final ratings of the issuers. However, this research will omit ESG considerations, due to subjectivity and potential methodological biases inherent in ESG evaluations, posing a significant challenge for incorporating these metrics into research, which can lead to ambiguity in the results.

1.3. Auga Group and agriculture sector

1.3.1. Overview of Auga Group AB

Established in June 2003 and headquartered in Lithuania, Auga Group AB is an organic food producer with its core business being organic farming. According to the company's latest full year annual report (Auga Group, 2023a), Auga group AB is the largest vertically integrated organic food producer in Europe, operating in four main business segments, such as crop growing, dairy, mushroom growing and fast-moving consumer goods (FMCG). The group also announced a new segment of technologies for sustainable agriculture (AgTech), which will be included in the group's full year 2023 report and onwards. Through a sustainable farming model, the company operates more than 38,500 hectares of arable land across Lithuania (the company itself owns 12.6% of the land) while exporting products globally to around 35 countries (66% of all sales). It had revenues of around 80,1 million euros for the year 2022, with gross profit of 15,2 and a net loss of 5,4 million euros. The company employs more than 1200 people and is listed on Nasdaq Baltic Stock Exchange (NBSE) since 2018. It was also listed on Warsaw Stock Exchange but has been excluded since April 7th, 2022, as per the group's own request. In December of 2019, it became the first listed private company in the Baltics to issue a bond, with an issue size of 20 million euros, tenor of five years, and fixed coupon rate of 6%. Therefore, Auga group is among the largest and fastest-growing enterprises in Lithuania. According to NBSE (2023), the company has a market capitalization of around 100 million, and its stock value is growing at a faster pace as compared to the Nasdaq OMX Vilnius index, which includes all the shares listed on Vilnius Stock Exchange.

Figure 2
Average stock price of Auga Group AB



Source: compiled by the author, based on Nasdaq Baltic Stock Exchange, 2023.

As presented in the figure 2 above, Auga group's average stock price has remained at around 0.38 euros per share. This is higher by 0.09 euros than registered shares with a par value of 0.29 euros in the group's articles of association (Auga group, 2023b). The stock price of the group has displayed a trend that is similar to the Nasdaq OMX Vilnius index, exhibiting a downward trajectory in recent years.

According to the latest full year annual report (Auga Group, 2023a), the group's three largest shareholders include UAB Baltic Champs Group with a 55.15% of shares, European Bank for Reconstruction and Development with 8.62% of shares, and Žilvinas Marcinkevičius with 6.93% of shares. The remaining 29.3% of shares are held by the minority shareholders, of which 3.41% are owned by the employees through a Share Option Programme, designed to increase employee motivation.

Due to the group's size, name recognition, and availability of financial data Auga group has been quite extensively analyzed in the literature across multiple topics. One research analyzed how the merger between Auga group AB and Baltic Champs AB in 2014 has impacted group's financial performance. It was concluded that one year after the merge, the company's revenue, profitability, turnover and overall enterprise value increased, while overall costs and liquidity position deteriorated (Žvirblytė, 2020). Another research by Kemeklytė (2021), who analyzed the relationship between marketing communication, corporate image, and consumer intentions in the context of sustainable consumption, with a focus on socially responsible corporates, has found that Auga group exhibits high levels of commitment to sustainability and utilize effective marketing communication. This was further supported by Balaboskina (2023), who analyzed the impact of environmental disclosure to Auga group's value. It was determined that the group's disclosure of becoming a more sustainably

responsible company through the utilization of more environmentally friendly agriculture practices has increased its stock price. Lastly, one research applied a brand equity valuation model to determine Auga Group's brand value and concluded, that Auga group has a strong brand value which is more than one and a half times higher than its 2020 revenue of 83 million euros (Bieliauskas, 2022). The existing body of research on Auga group provides a robust foundation, covering aspects like financial performance post-merger, commitment to sustainability, the impact of environmental disclosure on the group's value, and its strong brand value. This research will build upon this by assessing the credit rating of the Auga group, thereby adding a new dimension to the understanding of the group's financial health and risk profile. This will not only enhance the depth of the existing literature but also provide a more comprehensive view of the group's financial positioning.

Currently, Auga group does not have a credit rating from any of the "big three" credit rating agencies. However, the group has had analytical coverage by four large international analytical companies, the "LHV bank", "Enlight Research", "WOOD & company", and "CICERO Shades of Green". The analytical coverage by LHV bank, with the most recent being as of September 2nd, 2022, highlighted mixed group's segment's performance and sensitivity of group's profitability due to additional debt financing (LHV bank, 2022). However, it provided an overall positive outlook for the group, stating that performance was in line with expectations. It also highlighted that the group's primary segment, crop growing, has shown substantial improvements. The analytical coverage of Auga group by Enlight Research (2023) also offers an optimistic outlook despite mixed financial results. The analysis highlights group's transformation with a future introduction of technologies for sustainable agriculture (AgTech) segment, which overall should strengthen group's balance sheet. The share price is justified by existing segments, with innovation projects adding potential value. However, the transformation will take years, with financial expenses leading to projected net losses until year 2025. The base case valuation, considering a 30% success rate for innovation projects, is 0.53 euros per share. Main risks highlighted for the group include the transformation process, high energy prices, weather, harvest quality, economic downturn, EU subsidies, livestock diseases, and interest rates.

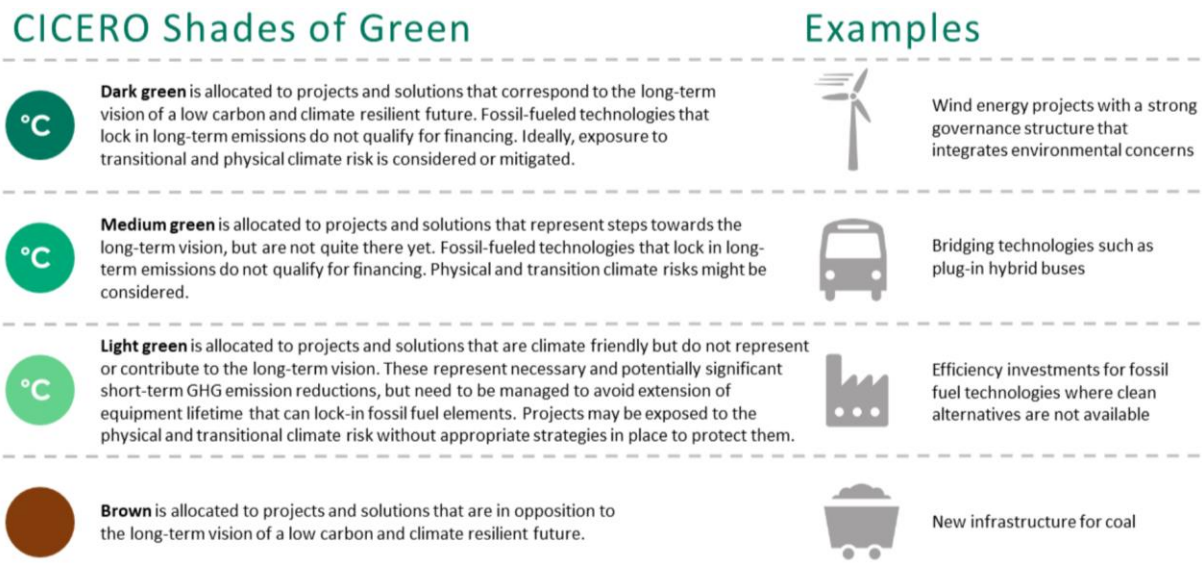
A similar conclusion was also done by WOOD & Company (2023). The research presented the optimistic view about the Auga group as well, maintaining a "buy" rating with a 12-month price target of EUR 0.49/share, indicating a 27% potential upside. It also highlights the value for the group based on its decision to focus on sustainable agriculture technology, which should benefit its core business. While the analysis broadly confirms the group's

potential for growth and enhanced profitability, it underscores that the group's present trading values are below its historical averages, and emphasizes that risks such as weather conditions, plan execution, inflation, COVID-19, and regulatory changes remain significant.

Lastly, analytical coverage by the CICERO Shades of Green (2019), provides an assessment of the group's environmental strategies and policies, governance, and green bond framework. In the analysis, Auga group is recognized for its transition from traditional to organic farming during the years 2015 to 2018, with a long-term objective to have a neutral CO2 footprint throughout its core business segments. The group is also recognized for its innovative green initiatives, such as running machinery on self-produced biogas and reducing greenhouse gas emissions from its operations. However, the report also suggests improvements in robust impact measures for eligible project categories and encourages the group to publish the full methodology of any greenhouse gas emission reduction calculation. Overall, Auga group's green bond framework received a rating of "CICERO Medium Green". A full list of CICERO's "Shades of Green" ratings are provided in the figure 3 below.

Figure 3

CICERO "Shades of Green" ratings.



Source: CICERO Shades of Green, 2019.

The group was not able to attain a rating of "CICERO Dark Green" which would indicate a long-term vision of a low carbon and climate risk. This indicates a balanced approach towards sustainability, supported by a governance score of "Good". The report suggests that Auga should stay updated with research findings on the environmental impact of organic and sustainable agriculture and ensure transparent communication with investors. Overall, Auga Group's strategy is centered on sustainability and climate neutrality, focusing on reducing

greenhouse gas emissions and addressing food production challenges. Their aim is to improve efficiency, meet elevated food industry standards, and serve consumers emphasizing sustainability (Auga group, 2020b). They have audited plans to reduce their emissions by 2025 in line with a 1.5°C global warming limit (Auga Group, 2023a).

1.3.2. Agriculture sector overview

As global population, urbanization, and income levels grow at a faster pace each year, the agriculture sector plays an increasingly significant role in the global economy. Typically, low and middle-income countries tend to invest heavily and produce significantly in the agricultural sector, often contributing 25% or more to their gross domestic product (GDP). In contrast, on a global scale, the agricultural sector represents approximately 4% of the total GDP (World Bank, 2023). According to Migration Dialogue (2021), agriculture sector also employs a quarter of the world's workers as of year 2019. In Lithuania the agriculture sector, which includes forestry, fishery and food industry, represent 6.9% of GDP and utilizes 45% of the total country area as of year 2018, with 6.4% of working-age population being employed by the sector (MOA, 2019).

On the other hand, the agriculture sector is also responsible for about around 30% of the global greenhouse gas emissions. High-input and resource-intensive farming systems have caused deforestation, water scarcities, and soil depletion around the world, which makes sustainable food delivery and agricultural production increasingly challenging (FAO, 2017). This signifies, that while the agricultural sector plays a crucial role in the economies of low and middle-income countries and provides employment for a significant portion of the global workforce, it also poses considerable environmental challenges. Over time, a growing number of companies within the agriculture sector have begun to adopt and implement environmentally friendly agricultural practices more extensively, including Auga group. These practices however are not easily adoptable, as described by Rabadán et al. (2019), because companies operating in the agricultural food sector associate environmental protection with additional costs and hence lower profitability. These issues can be addressed by a better accessibility of financing for the companies operating in the agriculture sector. The fi-compass report from 2020, which examined the financial needs of the agriculture and agri-food sectors in Lithuania, identified a significant financing gap in the country's agriculture sector. This gap, estimated to be between 962 million and 2.2 billion euros, can largely be attributed to the farmers' limited financial management skills and lack of access to collateral. These challenges are particularly

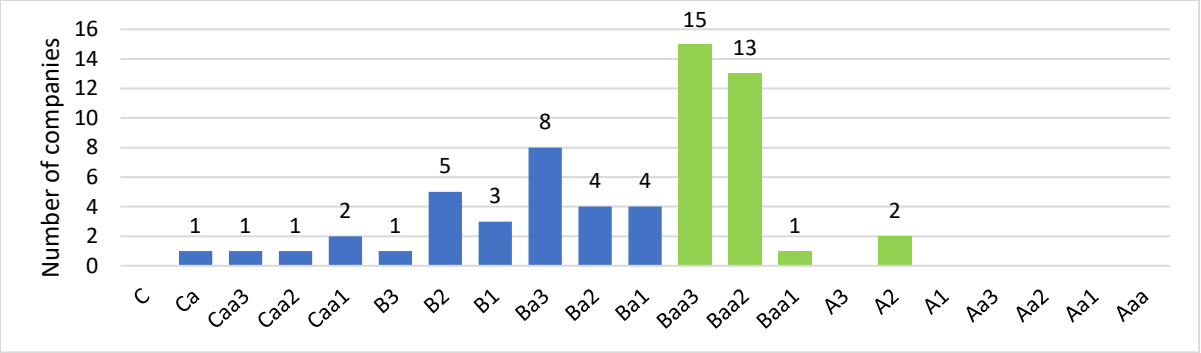
prevalent among young farmers and those new to the sector. The financial supply within the country is highly concentrated, with banks demonstrating a selective approach to their clientele and enforcing higher interest rates. Additionally, the banking sector has shown a tendency to avoid engagement with smaller farms, despite these making up 82% of all agricultural farms in Lithuania. To alleviate the financing gap, the European Union and Lithuanian government provide financial subsidies, which are essential for a profitability of the farms in the country. Research by Melnikienė et al. (2018), found that, for example, farms that primarily derive their income from milk had a net profitability of 5.2% in 2014, which if subsidies were to be excluded would actually amount to 46.9% of net loss. Auga group has been receiving substantial number of subsidies too, with direct subsidies representing 15.9% of total full year 2022 revenue (Auga Group, 2023a).

According to OECD-FAO (2023), the overall outlook for the agricultural sector globally is stable between the years 2023 and 2032, despite economic risks and high energy prices. A critical point of concern is the potential escalation in food prices, triggered by the upward trend in fertilizer costs. The report also anticipates an upward trajectory in global food consumption, although the pace of this increase is expected to decelerate. Lower-income countries are projected to have a swift expansion in livestock production, whereas wealthier regions will experience slower growth, primarily due to enhanced feed efficiency. However, the report also forecasts an increase in agricultural greenhouse gas emissions. In contrast, however, the outlook for the agriculture sector in the European Union specifically is defined by the uncertainty for the years between 2023 and 2035 (European Commission, 2023a). The outlook report highlights key issues such as climate change, consumer demand, and farming sector changes. It predicts slower productivity growth due to climate and resource challenges but expects larger farm sizes to counterbalance this. Despite reduced meat consumption and uncertainty from macroeconomic conditions, the EU is projected to remain a net food exporter. The Common Agricultural Policy's (CAP) role in promoting sustainable farming is emphasized. Land-use shifts, and technological improvements are expected to maintain yields despite climate change and input constraints. The report also anticipates a decline in animal feed demand, EU sugar consumption, and biofuel demand. While the dairy sector is projected to perform well, environmental policies may reduce the dairy herd and slightly decrease milk production by 2035. To address these challenges faced by agriculture sector, Lithuania has prepared a CAP strategic plan, which aims at increasing income of smaller-scale farmers, improving competition, and increasing sustainability (European Commission, 2023b).

From a corporate credit rating perspective, as of June 2023, there are only 61 public credit ratings globally for the corporations rated under MIS protein and agriculture sector methodology, as presented in the figure 4 (Moody's Investors Service, 2023f).

Figure 4

Global rating distribution of protein and agriculture sector companies



Source: compiled by the author, based on Moody's Investors Service, 2023f.

This represents less than one percent of all MIS-rated corporations. 31 out of 61 companies are investment grade, with remaining 16 of 30 companies being speculative grade but likely to fulfill obligations. This indicates that companies within the protein and agriculture sector which decide to obtain MIS rating already encompass a strong financial position in terms of credit risk. Most companies have a stable outlook (63%), while the remaining have a negative (27%) or positive (10%) outlook. Top-rated companies, Archer-Daniels-Midland and Cargill, have an A2 stable rating, denoting strong payment capacity. However, they're five notches below the highest "Aaa" rating, reflecting sector's inherent credit risk. Over a quarter of all rated companies have negative outlooks, signaling potential financial difficulties and possible rating downgrades.

In summary, credit ratings, provided by agencies like MIS, S&P, and Fitch, serve as critical indicators of creditworthiness and risk. Despite criticism for their roles in financial crises among other, these credit rating agencies maintain a significant market presence, as do the credit ratings. MIS, known for its conservative stance, maintains a role as a leading financial market intermediary, with its evolving credit rating methodologies well capturing many aspects of the credit risk analysis. Therefore, the forthcoming part of this research will delve into the specifics of these MIS methodologies, which are used at a later stage in the assessment of the credit rating score of Auga Group.

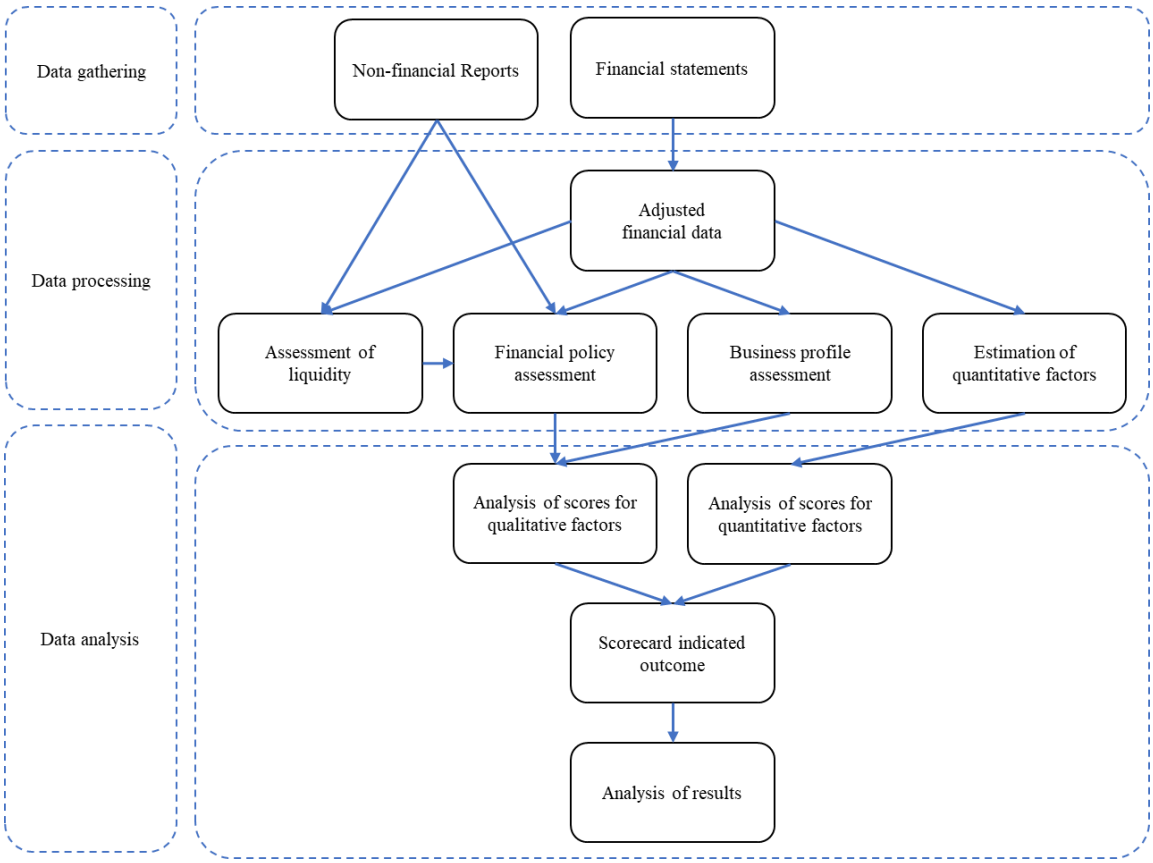
2. CREDIT RATING ASSESSMENT METHODOLOGIES

2.1. Credit rating compilation planning and proceeding

The process involving credit rating assessment for Auga Group includes three main steps – data gathering, data processing and lastly – data analysis. In the data gathering stage, a compilation of data from a broad array of sources will be conducted, which is necessary for Auga group's further credit analysis. This is followed by the data processing stage, where adjustments of financials will be made in order to eliminate discrepancies and ensure comparability. Finally, during the data analysis phase, the scores for qualitative and quantitative factors will be assessed, which will be used in the final assessment of the credit rating. An overview of the full credit rating assessment process is provided in the figure 5 below.

Figure 5

The credit rating assessment process



Source: compiled by the author, 2023.

Data gathering. In the first step, the data is collected, hence this part of the process deals with the data compilation part of the research. Since Auga group is one of the thirty-three companies listed on NBSE, its financial statements and other corporate information are

publicly available as per requirements for publicly listed companies. As of writing this thesis, company's historical annual and interim financial reports are available from 2007 up to 2022, including first and second quarter reports for 2023. Non-financial reports, such as sustainability reports are published annually by the company and are available for the period starting from 2006. The company has also started publishing yearbooks on an annual basis, which are available for the years 2020 to 2022 and include company's sustainability strategy report, green bond reports etc. Furthermore, an additional variety of sources including other research about the company and the industry, government directives, and data from various stakeholders will be investigated.

The scope of this research will mostly focus on material data published over the past five years, which should provide a sufficient view on the group's credit profile and its overall performance. To evaluate credit ratings, this research will consider only annual financial reports. These reports contain a more comprehensive set of data, providing an in-depth perspective necessary for a robust credit rating assessment. Interim reports, while useful, offer less information and are not sufficient for interim credit rating evaluations. Hence, going forward "company reports" will refer to these annual reports provided in the *bibliography and a list of references* part of this research: Auga group, AB, (2019a); (2020a); (2021a); (2022a); (2023a). The year used in the sources refers to the year the report was published, not the period the report covers. In addition, the financial data compilation is based on the MIS foundational definitions for credit statistics which detail the key financial metrics (Moody's Investors Service, 2023d). These definitions ensure data applicability in the subsequent methodologies employed in this research. A full list of these definitions can be found in Annex 1.

Data processing. A second step in the credit rating assessment process focuses on data processing. This includes adjustments of financial data for the purpose of assessing quantitative factors, such as scale, leverage and coverage, including assessment of company's liquidity. Adjusted financial data is also utilized to some extent in the assessment of company's financial policy and business profile. The adjustments are based on MIS cross-sector methodology for *the financial statement adjustments in the analysis of non-financial corporations*. This methodology was published on March 6th, 2023, and replaced an older version which was published in March, 2021. The methodology primarily deals with an issue of comparability since there are many different accounting standards and disclosure practices globally. While the methodology aims at the highest level of comparability at a global scale, it cannot be achieved to a full extent due to mentioned reporting variations. The adjustments can impact all three financial statements (balance sheet, income statement and cash flow statement).

Moreover, only adjustments relevant for the International Financial Reporting Standards (IFRS), under which Auga group is reporting, will be discussed. The adjustments fall under those of standard and non-standard and will only be applied when the adjustment is material. For the purpose of the research, the materiality of the adjustment is assumed to be at 1%, i.e., the adjustment is applied when the financial item changes at, or higher, degree than 1%. While standard adjustments are set of clear criteria and rules, those of non-standard are more subjective and event's driven and will be applied only when the result would yield a higher level of comparability. Examples of non-standard adjustment include debt-like reverse factoring arrangements, and income, or loss attributable to non-controlling interests (Moody's Investors Service, 2023e). The below table summarizes the list of standard adjustments and their applicability to the three main financial reporting systems, including IFRS.

Table 3

MIS application of standard adjustments

Standard Adjustment Application	IFRS	United States GAAP	Japanese GAAP
Defined benefit pension plans	x	x	x
Operating leases (off-balance sheet)	x	x	x
Leases (on-balance sheet)	x	x	-
Off-balance sheet finance leases	-	-	x
Restricted cash	x	x	x
Hybrid securities	x	x	x
Securitizations and factoring arrangements	x	x	x
Non-intangible asset amortization reported within funds from operations	x	x	x
Capitalized interest	x	x	x
Acquisition-related deferred and contingent consideration liabilities	x	x	x
Classification of on-balance sheet financial guarantees	x	x	x
Inventory reported on a LIFO cost basis	-	x	-
Consistent measurement of funds from operations	x	-	x
Cash flow presentation of interest and dividends	x	-	-
Capitalized development costs	x	-	-
Interest expense related to discounted long-term liabilities other than debt	x	-	-
Unusual and non-recurring items	x	x	x

Source: compiled by the author, based on Moody's Investors Service, 2023e.

These adjustments intend to cover all companies reporting not only under variety of financial reporting standards, but also different business schemes and practices. One such example could be defined benefit pension plans adjustment, which can be pre-funded, where companies are required, and unfunded, where companies are not required, to set aside assets to

fund future pension benefits. The main idea of this adjustment is that the unfunded defined benefit pension liabilities are reclassified as debt on the balance sheet due to their debt-like nature, and hence an interest expense is estimated for such debt. However, as stated in the methodology, these pension schemes in Europe are more common in countries such as Germany and Austria. In Lithuania, where Auga Group is based, a defined benefit pension (or a system mostly reflecting such scheme) is guaranteed through a first pillar pension system (Moody's Investors Service, 2023e). Based on a most recent law on Social Insurance Pensions, Law on Amendment of Republic of Lithuania Law No I-549, a person is guaranteed a "general part" of the pension which will be determined according to the amount of the "basic pension" and is funded from the state budget (Parliament of the Republic of Lithuania, 2016). While employer contributes to the social security of the employee through salary, an additional contribution to employee's pension is optional. As per Auga Group's annual reports, the company does not provide additional defined benefit (nor contribution) pension plans (Auga group AB, 2019a, 2020a, 2021a, 2022a, 2023a). Therefore, this adjustment is irrelevant for the company. Overall, all adjustments listed in the table 3 are examined in a similar way as provided in the example above. All adjustments which are applied for the Auga Group credit rating assessment are discussed in a greater detail in the part *3.1. Financial model formation and data overview*.

It is important to note, that while MIS methodology for financial statement adjustments provides comprehensive explanations and methods, the adjustments made in this research may not align with the actual adjustments MIS would implement if Auga Group were to attain an official credit rating. This limitation is primarily driven by substantial amount of subjective adjustments which are made when they are deemed to be valuable in the context of credit analysis, and this information remains MIS proprietary knowledge.

Data analysis. Lastly, the data analysis step is executed, where final scores for the qualitative and quantitative scorecard factors are finalized. These scores will yield scorecard indicated outcomes for the last five years. The credit rating assessment process is mostly based on the methodology for the protein and agriculture sector. However, additionally the *general principles of liquidity risk assessment* cross-sector methodology is utilized of a better understanding of the group's financial profile. Moreover, exceptionally good or weak liquidity can additionally increase or lower company's credit rating or its outlook. This part is concluded with a comprehensive discussion of yielded results. The cross-sector methodology for *assessing the impact of sovereign credit quality on other ratings* is also discussed.

2.2. Rating methodology for the protein and agriculture sector

The protein and agriculture rating methodology, published on November 12th, 2021, covers non-financial corporations "primarily engaged in producing and processing animal protein and agricultural products, including beef, pork, chicken, seafood, eggs, fluid milk, fresh fruit and vegetables, edible oils, beans, leaf tobacco, sugar and chocolate" (Henson et al., 2021). As discussed in the previous sections of this research, Auga group is primarily engaged in business activities of production and processing of agricultural and animal protein products, therefore deeming this methodology most appropriate for its credit risk assessment.

The framework of this methodology covers multiple layers in company's assessment, with qualitative and quantitative factors each representing 50% of the scorecard indicated outcome (SIO). Scorecard is a table with the final inputs (scores) of all factors which through methodology framework then derive an initial credit rating. The scorecard is made of four main factors: scale, business profile, leverage and coverage, and financial policy. Below is an illustration of Moody's protein and agriculture sector methodology framework. Definitions of quantitative factors are based on MIS definitions (Moody's Investors Service, 2023d).

Table 4

Protein and agriculture sector methodology framework

Scorecard Overview	Factor	Scale (10%)	Business Profile (35%)	Leverage and coverage (40%)	Financial Policy (15%)
	Sub-factors	Total Sales (USD Billions) (10%)	Geographic Diversification (5%)	Debt / EBITDA (10%)	No sub-factors
			Segment Diversification (5%)	CFO / Debt (10%)	
			Market Share (5%)	Debt / Book Capitalization (10%)	
			Product Portfolio Profile (10%)	EBITA / Interest Expense (10%)	
			Earnings Stability (10%)		
	Other considerations				

Source: compiled by the author, based on Henson et al., 2021. Moody's Investors Service.

1. ***Total Sales*** – total revenues in billions as reported in the group's consolidated income statements. Given Auga Group AB is reporting under currency of euro, an average exchange rate between euro and the United States dollar is used.
2. ***Debt*** – group's long term and short-term debt
3. ***EBITDA*** – pretax income plus interest expense, amortization of intangible assets, and depreciation expense.
4. ***EBITA*** – EBITDA minus depreciation expense.
5. ***CFO*** – cash flows from operations.
6. ***Book Capitalization*** – debt plus total equity per the balance sheet (including non-controlling interest), and non-current deferred income taxes.
7. ***Interest Expense*** - gross interest expense (related to debt).

Scorecard overview. The main outcome of protein and agriculture sector methodology is the scorecard overview, which provides a preliminary assessment of a company's rating. Each factor gives a specific score for the company, while that score is later weighted to derive a final score. For example, a scale score gives a triple-a (Aaa) score for companies with revenues equal to higher than 60 billion US dollars, double-a (Aa) score for companies with sales between 30 to 60 billion and so on. Each letters-based score, also referred to as an "alpha score", has a corresponding numerical score value. Once numerical score is derived for each factor, an aggregate weighted numeric score is calculated, which then points to the scorecard indicated outcome. Each score, from "Aaa" to "Ca" has a specific requirement to be attained by all qualitative and quantitative factors. A full list of scores for all protein and agriculture sector methodology factors and sub-factors can be found in the annex 2. As an example, all revenue alpha and numerical scores are provided below:

Table 5
Alpha and numeric scores for total sales

Alpha Score	Aaa	Aa	A	Baa	Ba	B	Caa	Ca
Numeric score	1	3	6	9	12	15	18	20
Total Sales 10% weight	≥$60	$30-$60	$15-$30	$7.5-$15	$3-$7.5	$1-$3	$0.25-$1	<$0.25

Source: compiled by the author, based on Henson et al., 2021. Moody's Investors Service.
Note: revenues in USD billions.

Once numerical scores are derived for all scorecard factors and subfactors, the aggregate weighted score is calculated, as shown in the equation (1) below:

$$(1)\quad A = r_t * 0.1 + G_t * 0.05 + D_t * 0.05 + M_t * 0.05 + P_t * 0.1 + E_t * 0.1 + a_t * 0.1 + b_t * 0.1 + c_t * 0.1 + d_t * 0.1 + F_t * 0.15$$

where A - agregate score, t - corresponding year, r_t - revenue score, G_t - geographic diversification score, D_t - segment diversification score, M_t - market share score, P_t - product portfolio profile score, E_t - earnings stability score, a_t - debt to EBITDA ratio score, b_t - CFO to debt ratio score, c_t - debt to book capitalization ratio score, d_t - EBITA to interest expense ratio score, F_t - financial policy score.

The aggregate numeric score calculations do incorporate other considerations which MIS might incorporate in its final credit rating assessment. To maintain objectivity, this research will analyze other consideration but will not include them in the final rating as it is not known to what extent each additional consideration impacts credit rating. Once aggregate core is calculated it points out to a specific scorecard indicated outcome. Scorecard indicated outcome aggregate numeric scores are provided in the table 6.

Table 6
Scorecard indicated outcomes of aggregate numeric scores

Scorecard Indicated Outcome (SIO)	Aggregate numeric score
Aaa	$x \leq 1.5$
Aa1	$1.5 < x \leq 2.5$
Aa2	$2.5 < x \leq 3.5$
Aa3	$3.5 < x \leq 4.5$
A1	$4.5 < x \leq 5.5$
A2	$5.5 < x \leq 6.5$
A3	$6.5 < x \leq 7.5$
Baa1	$7.5 < x \leq 8.5$
Baa2	$8.5 < x \leq 9.5$
Baa3	$9.5 < x \leq 10.5$
Ba1	$10.5 < x \leq 11.5$
Ba2	$11.5 < x \leq 12.5$
Ba3	$12.5 < x \leq 13.5$
B1	$13.5 < x \leq 14.5$
B2	$14.5 < x \leq 15.5$
B3	$15.5 < x \leq 16.5$
Caa1	$16.5 < x \leq 17.5$
Caa2	$17.5 < x \leq 18.5$
Caa3	$18.5 < x \leq 19.5$
Ca	$19.5 < x \leq 20.5$
C	$x > 20.5$

Source: compiled by the author, based on Henson et al., 2021. Moody's Investors Service. *Note*: where "*x*" represents company's aggregate weighted numeric score.

In the analysis of Auga Group, theoretically the company can have any of the scorecard indicated outcomes, however the rating is constrained by the country ceiling. As described in the cross-sector methodology for *assessing the impact of sovereign credit quality on other ratings* by MIS, issuers across all sectors are subject to domicile country's rating ceiling, which represents the peak rating that can be given to the most financially robust commitments of issuers residing in that country (Gates et al., 2019). There can be exceptions, however this is rare, as it would require issuers to have a very unique and diversified credit profile. Currently Moody's rating for Lithuania is at A2, with a stable outlook. This, as written in the Lithuania's credit opinion, reflects country's "credit profile of small but flexible and diversified economy, as well as a high level of institutional strength" (Chemla et al., 2023). Therefore, the highest credit rating Auga group can attain is A2, or from 5.5 to 6.5 in aggregate numeric terms.

Other considerations. While company's credit rating is preliminary determined by the scorecard indicated outcome, there are an additional set of considerations which can additionally either positively or negatively affect the company's credit rating. In fact, many of the ratings assigned to the issuers are different from those indicated in the scorecard indicated outcome. One of these considerations include country ceiling discussed earlier. Other considerations, as per protein and agriculture sector methodology, include environmental, social and governance (ESG), liquidity, regulatory, financial controls, management strategy, excess cash balances, additional metrics, non-wholly owned subsidiaries, event risk, parental support, other institutional support, and sector cyclicality (Henson et al., 2021). While some considerations, such liquidity, have concisely structured methodologies, other factors are assessed holistically and subjectively. Therefore, the scope of other considerations in this research will mainly focus on liquidity positioning of the company. Other considerations, while theoretically could be material, will not be discussed due to ambiguity of their assessments. This is a potential constraint of the research, however, the premise is made that any significant effects from mentioned factors would manifest themselves in the company's financial or qualitative performance indicators which are considered in the scorecard. The following section discusses how liquidity will be assessed in this research.

2.3. General principles of liquidity risk assessment

One of the primary factors which is outside of the scope of the scorecard methodology is the assessment of a company's liquidity. While it falls under the considerations of the company's financial policy score and is to some extent reflected in the liquidity rations, the actual liquidity position of the company has the potential to additionally influence, either positively or negatively, the company's credit rating. MIS recently updated methodology of general principles for assessment of company's liquidity risk which was published on October 12th, 2023. This methodology is applicable to both speculative and investment grade companies, offering a perspective on the adequacy of cash resources compared to the cash requirements for operations, investments, debt service, and other corporate purposes over a typically short-term and rolling period (Verde et al., 2023). According to the methodology, the liquidity assessment is based on both quantitative and qualitative analysis. Quantitative analysis is done by estimating cash sources, such as cash on hand, short-term investments or committed credit facilities, and cash uses, such as investments, debt repayments or dividend payments, other the next one-two years. Qualitative analysis is then focused on evaluation as

to how these cash sources and uses would change, specifically increase, or decrease, in case of financial distress. Based on the methodology, the qualitative analysis is based on the following assumptions:

1. No access to markets over the next 12 months. This assumption is based on premise that a company will not be able to gain any additional source of cash other than internal (including committed external sources). While unlikely for many companies, this gives a better overview of company's position in terms of credit risk.

2. There can be alternative cash sources. The company can have more cash by selling some of its assets for example, but that depends on the industry and likelihood as well as manageability of doing so.

3. The reliability of borrowing agreements. It is important that the borrowing agreement has optimal conditions for the company. Some agreements may have covenants which then should be well met by the company, which would signal that the company would indeed be able to raise the cash in case of financial pressure.

These assumptions apply to both, investment-grade and speculative grade companies. However, speculative-grade companies undergo additional level of examination, and their overall liquidity position is given a score from one to four, or from "strongest" to "weakest" respectively. The table below explains each speculative grade liquidity score.

Table 7

Speculative-grade liquidity scores

Score	Liquidity position	Explanation
SGL-1	very good liquidity	These companies are most likely to have the capacity to meet obligations over the coming 12 months through internal resources without relying on external sources of committed financing.
SGL-2	good liquidity	These companies are likely to meet their obligations over the coming 12 months through internal resources but may rely on external sources of committed financing. The company's ability to access committed financing is highly likely based on Moody's evaluation of near-term covenant compliance.
SGL-3	adequate liquidity	These companies are expected to rely on external sources of committed financing. Based on Moody's evaluation of near-term covenant compliance, there is only a modest cushion and the company may require covenant relief in order to maintain orderly access to funding lines.
SGL-4	weak liquidity	These companies rely on external sources of financing, and the availability of that financing is highly uncertain in Moody's opinion.

Source: compiled by the author, based on Verde et al., 2023. Moody's Investors Service.

It is important to note, that while the credit rating in not yet assessed for Auga group, and it is not known what its scorecard indicated outcome might be, there is extremely low likelihood of its rating being investment-grade. Therefore, given the importance of liquidity assessment in the analysis of the company's financial profile, the liquidity of Auga group will be assessed though the speculative-grade liquidity assessment. This assumption is mostly supported by low scale of the company.

Each score described in *table 7* is derived from four main metrics: internal sources, external sources, covenant compliance and alternate liquidity. Each metric can attain score from one (very good) to four (weak). After a scores will be assigned to each metric, the aggregate liquidity score is calculated. As it is not clearly stated in the methodology about the weight of each factor, it will be assumed that each metric has the same weight to the total score. Hence, the simple average of all four scores is calculated and the final liquidity numeric score is rounded. In this case, the highest possible score of four will yield SGL-4 (weak liquidity), while lowest score of one would yield SGL-1 (very good liquidity). If liquidity score is for example 2.8 the rounding is done, which would yield a liquidity score of SGL-3 (adequate liquidity). The liquidity framework and a full list of scores for all four assessment metrics can be found in the annex 3. A calculation of the aggregate liquidity score is provided in the equation (2) below:

$$(2)\quad [SGL] = I_t * 0.25 + E_t * 0.25 + C_t * 0.25 + A_t * 0.25$$

where *SGL* - agregate liquidty score, I_t - internal sources score, E_t - external sources score, C_t - covenant compliance score, A_t - alternate liquidity score. *[SGL]* denotes an agregate liquidty score with decimal values rounded to the nearest whole number.

After liquidity analysis is completed and the final scorecard indicated outcome for Auga group is assessed, the discussion is results is made. The null and alternative hypotheses are tested, which are the following:

H₀: Given the correlation between corporate size and creditworthiness, it is hypothesized that Auga Group, due to its smaller size, may have a lower credit rating.

Hₐ: Despite its smaller size, Auga Group's adherence to sustainable business practices enables it to attain a high credit rating, challenging the common trends associated with corporate scale.

This is followed by an overview of the group's credit strengths and weaknesses, factors which could lead to rating uplift or downgrade, as well as forward-looking outlook. The analysis is concluded by the comparison with industry peers and well as conclusion and recommendations.

3. CREDIT RATING ASSEMENT OF AUGA GROUP

3.1. Financial model formation and data overview

The financial model for Auga Group AB's analysis was compiled in Microsoft Excel program, and contained data from the past five years starting from financial year 2018 until 2022, with all financial periods ending on December 31st of each respective year. Model was established based on the group's reporting currency and measuring standard of thousands of euros. A full Auga group's financial model can be found in annex 4.

Financial statements of the Auga Group were subject to the adjustments for the purpose of better credit analysis. As presented in the model (Annex 4, row 125), the adjusted debt of the company is higher that the reported debt in the years 2021 and 2022. This is due to the supplier financing arrangements the company entered during those years. As stated in the company's 2022 annual report, "supplier financing arrangement is a reverse factoring arrangement, where a financial institution (the factor) agrees to pay amounts the Group/Company owes to the suppliers and the Group/Company agrees to pay the financial institution at the same date as, or a date later than, suppliers are paid." (Auga Group, 2023a, p. 97.). This, according to the Moody's Investors Service (MIS) cross-sector methodology for the financial statement adjustments in the analysis of non-financial corporations is a non-standard adjustment, as it entails characteristics of a debt-like reverse factoring arrangement (Moody's Investors Service, 2023e). The impact of the adjustment was 6% to 7% increase in the group's total debt. The adjusted debt has also been used for the calculation of the company's total adjusted book capitalization. Furthermore, the increase in debt has an impact on the adjusted interest expense as presented in the model (Annex 6, row 134). The assumption has been made, that "other finance costs" are related to the borrowings of credit lines and supplier financing arrangements, since interest for these two borrowings is not included in the initial reported interest expense. The adjustment has increased company's interest expense by 4.3% on average. In addition, given the increase in the interest expense, the group's adjusted EBITDA has also increased by the same amount (Annex 4, row 143).

From the cash flow statement perspective, the changes were made in the calculation of the capital expenditures. As per MIS cross-sector methodology for the financial statement adjustments "to reflect our view that leases are similar to a purchase of property, we adjust cash outflows for capital expenditures. On the cash flow statement, we reclassify both operating lease depreciation expense (from operating activities) and lease principal repayments (from

financing activities) to capital expenditures (as an investing activity)" (Moody's Investors Service, 2023e). This adjustment is significant, since group's capital expenditures increased 1.5 times on average due to lease repayments (Annex 4, row 162). The adjustment of capital expenditures makes the group's adjusted free cash flows highly negative during most of the years. The table below provides items and their adjustments from the financial statements which are relevant for the protein and agriculture sector methodology (Henson et al., 2021).

Table 8

Main reported and adjusted financial items

AS REPORTED	**2018**	**2019**	**2020**	**2021**	**2022**
TOTAL DEBT	49,028	89,432	93,535	102,731	116,774
EBITDA	3,779	13,653	19,814	4,013	17,486
CFO	(11,486)	5,415	13,373	8,140	691
BOOK CAPITALIZATION	141,626	181,016	187,834	183,264	196,170
EBITA	(3,725)	875	6,540	(10,280)	2,763
INTEREST EXPENSE	(2,172)	(4,854)	(5,179)	(5,988)	(7,185)
AS ADJUSTED	**2018**	**2019**	**2020**	**2021**	**2022**
TOTAL DEBT	49,028	89,432	93,535	109,736	123,752
EBITDA	3,817	13,756	20,127	4,418	17,834
CFO	(11,486)	5,415	13,373	8,140	691
BOOK CAPITALIZATION	141,626	181,016	187,834	190,269	203,148
EBITA	(3,687)	978	6,853	(9,875)	3,111
INTEREST EXPENSE	(2,210)	(4,957)	(5,492)	(6,393)	(7,533)

Source: compiled by the author, based on Auga group, 2019a; 2020a; 2021a; 2022a; 2023a.

3.2. Assessment of scores for the quantitative factors

Scorecard quantitative data. As per Moody's protein and agriculture sector methodology there are five main quantitative factors in the scorecard framework which impact final rating outcome by 10% each, and by 50% jointly (Henson et al., 2021). The significance of quantitative factors signifies the importance of in-depth analysis and accuracy of these measures. The quantitative factors are categorized into two main types: one pertaining to scale (factor 1), and others relating to leverage and coverage (factor 3). As stated in the methodology, the scale factor matters because "scale is an important indicator of a company's revenue-generating capability and its resilience to shocks, such as sudden shifts in demand or rapid cost increases" while leverage and coverage factor is important since it reveals "company's

financial flexibility and long-term viability". The final output of these two factors and their respective sub-factors are presented in the tables 9 and 10 below.

Table 9

Output values of the quantitative factors.

Factor 1 : Scale (10%)	**FY2018**	**FY2019**	**FY2020**	**FY2021**	**FY2022**
a) Total Sales (USD Billion)*	$0.06	$0.08	$0.09	$0.08	$0.08
**EUR/USD exchange rate*	*1.181*	*1.120*	*1.142*	*1.183*	*1.054*
Factor3: Leverage &Coverage (40%)	**FY2018**	**FY2019**	**FY2020**	**FY2021**	**FY2022**
a) Debt / EBITDA	12.8x	6.5x	4.6x	24.8x	6.9x
b) CFO / Debt	(23.4%)	6.1%	14.3%	7.4%	0.6%
c) Debt / Book Capitalization	34.6%	49.4%	49.8%	57.7%	60.9%
d) EBITA / Interest Expense	-1.7x	0.2x	1.2x	-1.5x	0.4x

Source: author calculation. Exchange rates retrieved from www.ofx.com.

Table 10

Alpha and numeric score categories of the quantitative factors.

Factor 1 : Scale (10%)	**FY2018**	**FY2019**	**FY2020**	**FY2021**	**FY2022**
a) Total Sales (USD Billion)*	Ca (20)	Ca (20)	Ca (20)	Ca (20)	Ca (20)
Factor3: Leverage &Coverage (40%)	**FY2018**	**FY2019**	**FY2020**	**FY2021**	**FY2022**
a) Debt / EBITDA	Ca (20.5)	Caa (18)	B (15)	Ca (20.5)	Caa (18)
b) CFO / Debt	Ca (20.5)	Caa (18)	B (15)	Caa (18)	Ca (20)
c) Debt / Book Capitalization	A (6)	Ba (12)	Ba (12)	Ba (12)	B (15)
d) EBITA / Interest Expense	Ca (20.5)	Ca (20)	B (15)	Ca (20.5)	Ca (20)
Total sum of numeric scores	***87.5***	***88.0***	***77.0***	***91.0***	***93.0***

Source: author calculation. Exchange rates retrieved from www.ofx.com.

Total sales. For this sub-factor Auga Group attains the lowest possible score during all of the observed periods. The "Ca" score is given whenever the company's revenues are less than the 250 million United States dollars. Auga group has yet to cross a 100 million USD revenue threshold, hence signifying Group's risk in terms of its scale. While theoretically companies which are not large in scale can still exhibit a strong financial profile, Moody's Investors Service justifies large scale requirements mainly due to cost and influence benefits large scale offers. As explained in the methodology, "companies that are large in scale tend to have lower marginal costs, including those associated with manufacturing, sales force, distribution, and research and development", and "larger companies also tend to have more bargaining power with purchasing organizations, customers and suppliers". (Henson et al., 2021, p. 6). High scale requirements in part explain reasons for the absence of credit ratings between small and medium-sized enterprises.

Debt to EBITDA. Auga Group's leverage scores range between "Ca" and "B". This is due to high volatility in the ratio, which is mostly driven by inconsistency in the group's operating performance and constantly increasing borrowings year-over-year. However, the group also has an exceptional ability to make sudden and significant deleveraging, with for example leverage decreasing from 24.8 times to only 6.9 times between the years 2021 and 2022, when despite increase in the overall debt the group was able to increase its EBITDA approximately four times. As total debt increases year-over-year, the group will face higher debt servicing requirements. This underscores the need for improved profitability, which could be achieved through enhanced cost and risk management, particularly in relation to changes in the fair value of biological assets.

Cash flow from operations to debt. Due to volatility in the working capital, the group's cash flow from operations are prone to instability. For example, the CFO to debt ratio went from negative 23.4% to positive 14.3% in the years 2018 and 2020 respectively. As explained by the group in its 2022 annual report "as the group's business model requires high working capital, the production cycle in the crop segment is long, and the sales volume of crop products fluctuate during the year, the Group faces significant fluctuations in working capital needs". (Auga Group, 2023a. p.15). Given the relative stability of the group's funds from operations, effective management of working capital is crucial for meeting its escalating debt obligations. The CFO to debt ratio in 2022 of only 0.6% signifies major financial risks for the group and its ability to raise significant amount of additional borrowings, at least in the short term, is constrained.

Debt to book capitalization. Due to significant amount of equity in its book capitalization, Auga Group attains best quantitative scores for the debt-to-equity ratio in 2018. The group maintains a "Ba" score between the years 2019 and 2021 mostly due to substantial amount of deferred income taxes and some equity related to minority interest. However, due to increasing amounts of debt in 2022 the debt to book capitalization ratio is above 60% threshold, hence attaining a "B" score. A conclusion can be drawn, that group's increasing debt is not sufficiently covered by the equity, and group's management has an increasing risk tolerance.

EBITA to interest expense. The last quantitative score reveals group's challenges as it relates to interest coverage. From all leverage and coverage sub-factors this remains the weakest, with most years attaining a lowest "Ca" score. Apart from negative EBITA in 2018 and 2021, the group was barely able to cover interest expenses by one time. This highlights that increase in debt is not supported by sufficient profit generating abilities, hence the group

is not able to sufficiently meet its debt servicing costs. Less favorable borrowing environment exacerbated by recent rise in interest rates positions group unfavorably for the score in historical and near forward-looking term. This is due to the fact, that the group carries approximately 40 million euros in variable-rate debt, hence a rise in the Euribor could lead to higher interest costs.

Overall, the quantitative factors represent a significant financial risk profile of Auga group. Five output values out of all historical 25 quantitative subfactors were below "Ca" score threshold, hence had highest numerical scores of 20 additionally increased by 0.5 points as per footnotes to the protein and agriculture methodology scorecard framework (annex 2, p. 79) (Henson et al., 2021, p. 5). However, quantitative factors of the scorecard represent only one half of the overall score, hence can potentially be balanced by the qualitative factors analyzed in the following part of this research.

3.3. Assessment of scores for the qualitative factors

3.3.1. Business profile

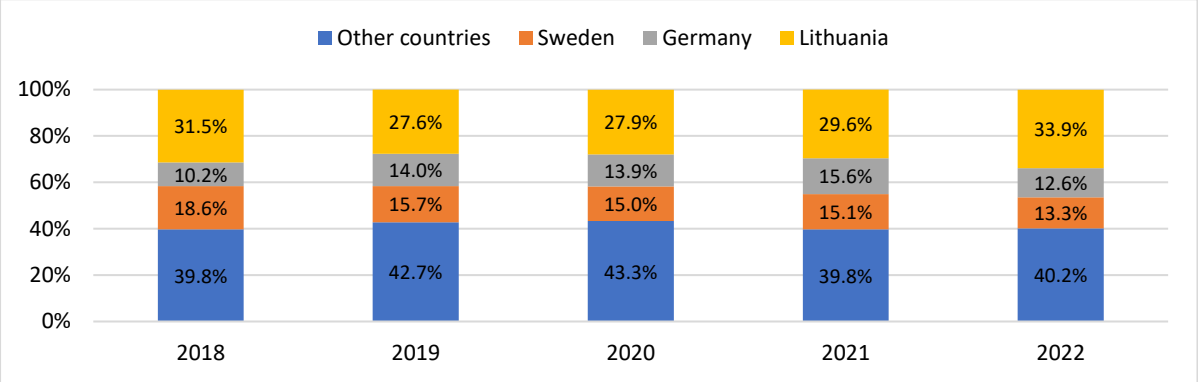
Business profile factor contributes more than one third to the overall credit rating, hence is very important factor. As stated in the methodology, "the business profile of a protein or agriculture company greatly influences its ability to generate sustainable earnings and operating cash flows" (Henson et al., 2021). This also signifies the importance of an accurate assessment of the company's business profile. As presented in the section *2.2. Rating Methodology for the Protein and Agriculture Sector*, there are five main business profile sub-factors within this methodology - the geographic diversification, segment diversification, market share, product portfolio profile, and earnings stability. In this section a discussion on Auga Group's scores will be provided, and main reasons identified for selected scores.

Geographic Diversification. As per Auga Group's full year 2022 financial report, the company is selling its products in 35 countries. That is a slight decrease from 2021 and 2020 levels, which were at 38 and 37 countries respectively. The group's main market is Lithuania, where it is domiciled, while its main exporting counties are Sweden and Germany. The remaining list of countries are distributed globally, with majority being large, stable or mature economies, like USA, Australia, UK, France, Japan, and Canada, among other. As presented in the *figure 6* below, the percentage of all sales in group's key market, Lithuania, represents less than 35% of total sales over the past five years. The protein and agriculture sector methodology scorecard, detailed in Annex 2, classifies this as a defining feature of an "A"

score. The rest of the export countries represent around 65%-70% of total sales over the past five years, which is lower than characterized by an "A" or "Baa" score of 75%, but way higher than "Ba" score since the group generates more than 50% of sales from large, stable or mature markets.

Figure 6

Auga Group's revenue by geographical territory



Source: compiled by the author, based on Auga group, 2019a; 2020a; 2021a; 2022a; 2023a.

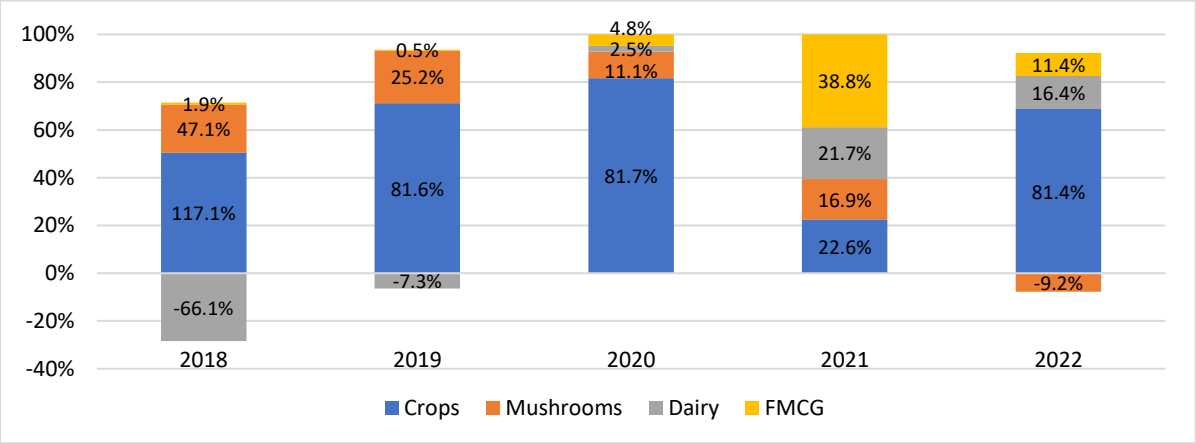
On the other hand, the group's geographical concentration for the supply of raw material is not clear, as the company does not provide detail information on its suppliers and their origin markets. While the company can cover some of its raw material needs on its own due to its circular business structure, the company relies heavily on external suppliers for fuel, machinery, seeds etc. The company has experienced increase in its raw material prices due to unfavorable political and economic climate over the past years. Therefore, taking into account the exposure to raw material price changes, it can be likely concluded that the company does not possess characteristics of low raw material supply concentration, which is attributable to "A" or a higher score. All in all, it can be concluded, that the company is best positioned for the "Baa" score steadily for last five years, since the company has low sales concentration and high exposure to strong markets, which can benefit company greatly during economic downturns. This has been supported by relatively stable revenue over the years despite major global economic challenges. The score also indicates uncertainties surrounding company's exposure to the raw material prices and availability.

Segment diversification. There are four main segments within which the Auga Group has been operating over the sampled period: mushroom growing and seedbed sale, agricultural crop growing, dairy, and fast-moving consumer goods (FMCG). The group's main segments are mushroom growing and seedbed sale and agricultural crop growing, with both segments generating roughly 75% of all revenue over the past five years combined, though this share has

been decreasing over the years. This is due to the growth of the remaining third and fourth segments, which represent remaining approximately 25% of the total sales, with dairy being the main contributor. As presented at the beginning of the model in annex 4, fast-moving consumer goods (FMCG) segment only in recent year has surpassed the 10% benchmark of total sales, hence according to the protein and agriculture methodology is only representing a core segment for the year 2022 (Moody's Investors Service, 2021). This means that in terms of contribution to the overall sales, the company has generally had three core segments during the years 2018 and 2021, which is characteristic of "Baa" score, and four segments in 2022, which is characteristic of an "A" score. On the other hand, as presented in the *figure 7*, in terms of profitability the main contributor to the overall gross profit is crops segment, which contributed significantly more profit over the years than the remaining segments. Mushrooms segment has been an important contributor as well, however over the recent years FMCG segment has seen an exceptional rise in profitability. Dairy segment has endured gross loss in 2018 and 2019 but has recovered since. Therefore, in terms of profitability the segment diversification score varies between "Caa" and "A".

Figure 7

Auga Group's gross profit by segment

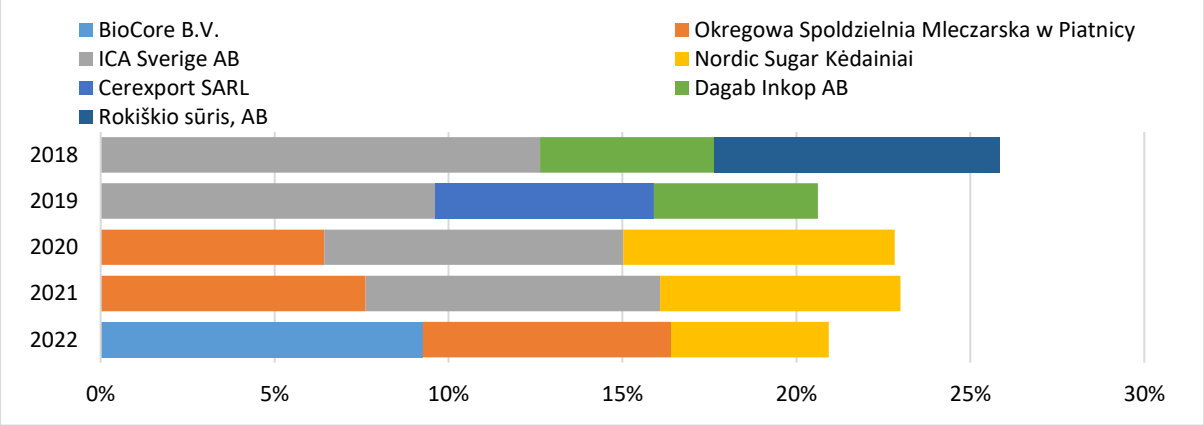


Source: compiled by the author, based on Auga group, 2019a; 2020a; 2021a; 2022a; 2023a.

Overall, the volatility in profitability offsets the stability of revenue, hence reducing the likelihood of a higher score. Hence it would be most appropriate to assign a "B" score for all the years with an exception to 2021, which due to much more diversified profitability within segments is more characteristic of a "Ba" score. This, all in all, indicates that Auga Group has a weaker segment diversification profile, which during economic downturns could hurt company's ability to sustain stability of its sales and most importantly – profitability.

Market Share. Despite exporting its products globally, Auga Group maintains a small market share, both domestically and even more internationally. While according to the company it is the largest vertically integrated organic food producer in Europe, it maintains a status of a medium size enterprise, based on revenues and the number of employees, among other. As discussed in the section *1.3.2 Agriculture Sector overview*, the agriculture sector in Lithuania plays a significant role in the overall economy, and despite being not a major market payer, Auga Group has established itself as a leader in the niche of organic farming. This, however, limits its customers base to only those who have demand for organic food. In fact, as stated in the company's full year 2022 report: "around 50% of total revenue of the Group was generated by 11 largest customers in 2022, while in 2021 around 50% of total revenue of the Group was generated by 10 largest customers" (Auga Group, 2023a). Furthermore, customer base concentration is even higher when main three customers of the group are analyzed, as presented in the *figure 8*. During the last five years three largest customers on average represented 22.6% in terms of generated revenue. Concentrated customer base poses a significant credit risk since losing one of these customers would significantly impact company's revenue-generating abilities and given high competitiveness in the market, it also limits group's ability to raise prices.

Figure 8
Main customers of Auga Group



Source: compiled by the author, based on Auga group, 2019a; 2020a; 2021a; 2022a; 2023a.

This, all in all, according to the protein and agriculture sector methodology, indicates group's positioning for an "Caa" score over the years, given its small and niche market share as well as limited customer base. The score highlights group's inability to impact the markets it operates in, which is somewhat offset by its capacity of adjusting to unique customer needs as it relates to demand for the organic food.

Product Portfolio Profile. Auga Group's product portfolio is complicated, given it produces both, value-added and commodity-like, products. While group's crops growing segment is mostly characteristic of commodity-like business, its FMCG segment predominantly features value-added product characteristics. Remaining segments mainly exemplify commodity-like product features, however, entail some value-added aspect too. In addition, all commodity products the company sells are not industry typical, since they have an additional value for being organically grown. This is even more distinctly represented in the group's supply chain structure, where due to its unique vertical integration some raw materials produced are used in the company's production of FMCG segment, as well as other, for example crops for dairy segment, when grown crops are sometimes used to feed the cows. Therefore, despite FMCG representing a small part of group's products in terms of revenue, most group's commodities entail unique value-added features, hence supporting a more moderate value-added product portfolio profile. This is mostly in line with the "Ba" and "Baa" score based on the protein agriculture sector methodology.

However, another important aspect which is inspected when evaluating company's product portfolio profile is the operating profitability of the segments, which can signal their strength in terms of brand and innovation, or weaknesses, in terms of sensitivity to commodity cycles and consumption trends. As discussed in the previous sections of the thesis, Auga Group has a strong brand value which is more than one and a half times higher than its 2020 revenue of 83 million euros (Bieliauskas, 2022). However, if the group's profitability of the segments is analyzed, some major weaknesses of all four segments is evident. The group provides for all four segments four principal financial data points: revenue, cost of goods sold, change in fair value of biological assets, and operating expenses. Since there are centralized operating expenses which, as well as net impairment loss of financial assets, other income and other net gains or losses at an aggregate level for all four segments combined, the analysis of segment profitability is only dealing with items reported on a per segment basis. Therefore, the profitability margin of all segments is analyzed comparing revenue generated by the segment versus its operating profit before centralized operating expenses, net impairment loss of financial assets, other income, and other net gains and losses, or hereafter the operating profit "before other items". The full model on segments' profitability is presented in the *table 11*. At an initial view it is clear that, in terms of operating profit margin before other items, none of the segments with the exception of crops have generated a margin higher than 10% over the past five years. However, in 2021 even crops segment had a negative margin, due to unfavorable weather conditions and change in fair value of biological assets. Throughout the

years crops segment maintain a relatively high profitability, with operating profit margin before other items reaching more than 36% in the full year 2022.

Table 11

Auga group product portfolio analysis

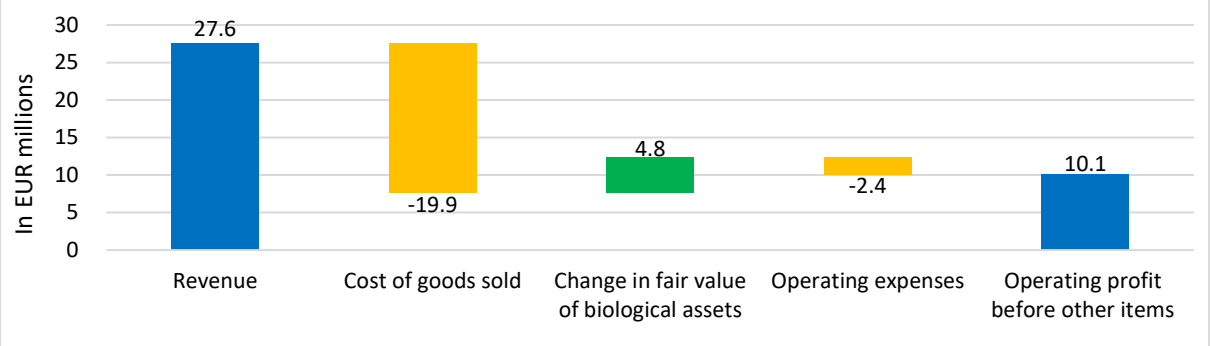
Revenue	**FY2018**	**FY2019**	**FY2020**	**FY2021**	**FY2022**
Mushrooms	26,456	28,707	30,001	28,360	27,893
Crops	17,475	27,574	35,253	23,558	27,578
Dairy	8,954	12,056	12,939	13,611	16,495
FMCG	1,864	2,798	4,880	6,191	8,122
Total revenue	54,749	71,135	83,073	71,721	80,088
Cost of goods sold	**FY2018**	**FY2019**	**FY2020**	**FY2021**	**FY2022**
Mushrooms	(24,731)	(26,221)	(28,248)	(27,691)	(29,298)
FMCG	(1,793)	(2,753)	(4,130)	(4,656)	(6,379)
Crops	(9,736)	(24,819)	(30,063)	(19,512)	(19,945)
Dairy	(9,563)	(10,577)	(10,032)	(9,982)	(11,899)
Cost of sales	(45,823)	(64,370)	(72,474)	(61,841)	(67,521)
Gross profit before Gain (loss) on biological assets	8,926	6,765	10,599	9,880	12,567
Change in fair value of biological assets	**FY2018**	**FY2019**	**FY2020**	**FY2021**	**FY2022**
Crops	(3,449)	5,281	7,692	(3,155)	4,791
Dairy	(1,813)	(2,199)	(2,517)	(2,772)	(2,090)
Gross profit after Gain (loss) on biological assets	3,664	9,847	15,774	3,952	15,268
Operating expenses	**FY2018**	**FY2019**	**FY2020**	**FY2021**	**FY2022**
Mushrooms	(1,250)	(1,372)	(1,133)	(1,280)	(1,248)
Crops	(2,614)	(2,486)	(2,523)	(4,145)	(2,374)
Dairy	(1,667)	(1,586)	(1,609)	(2,610)	(1,487)
FMCG	0	0	(681)	(1,330)	(1,506)
Operating profit before other items	(1,867)	4,403	9,828	(5,413)	8,654
Centralized operating expenses, EUR'000	(4,823)	(4,138)	(4,281)	(4,995)	(6,151)
Net impairment loss of financial assets, Other income and Other gain/(loss), net	2,753	744	1,350	590	594
Operating profit, EUR'000	(3,937)	1,009	6,897	(9,819)	3,097
Operating profit before other items per segment	**FY2018**	**FY2019**	**FY2020**	**FY2021**	**FY2022**
Mushrooms	475	1,114	620	(612)	(2,653)
Crops	1,676	5,550	10,359	(3,254)	10,051
Dairy	(4,089)	(2,306)	(1,220)	(1,753)	1,019
FMCG	71	45	68	205	237
Total	**(1,867)**	**4,403**	**9,828**	**(5,413)**	**8,654**

Source: compiled by the author, based on Auga group, 2019a; 2020a; 2021a; 2022a; 2023a.

For a better understanding of the main segment of crops Figures 9 and 10 below detail the "bridge" between revenue and operating profit before other items. The data is shown for the years 2022 and 2021 respectively.

Figure 9

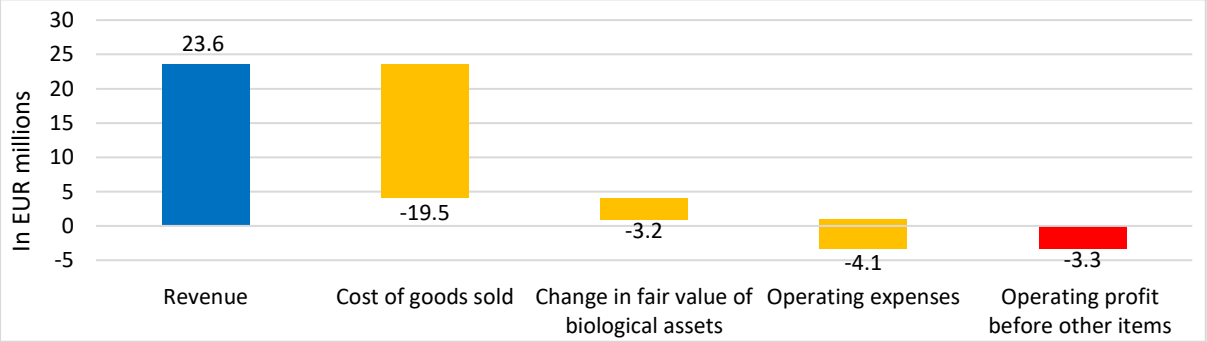
Operating profit before other items for the year 2022



Source: compiled by the author, based on Auga group, 2023a.

Figure 10

Operating profit before other items for the year 2021



Source: compiled by the author, based on Auga group, 2022a.

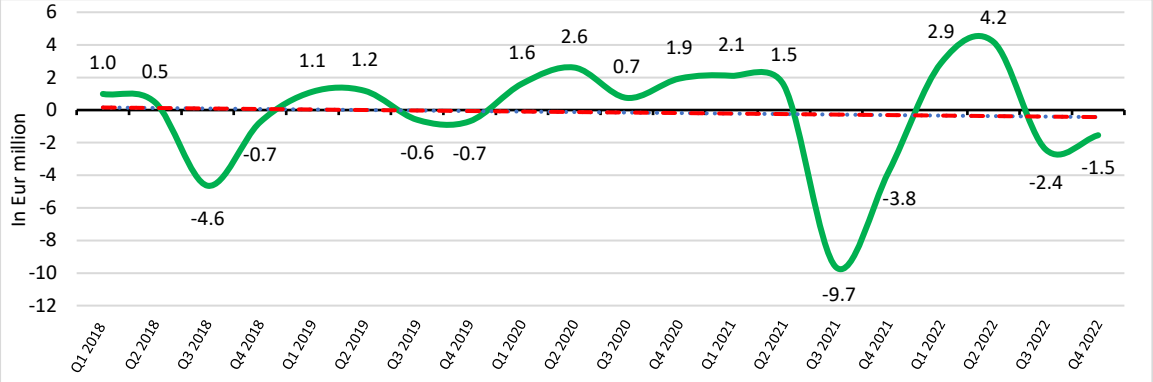
Both graphs provide an insight into the company's crops segment profitability during different financial circumstances. Crops segment seems to be stable in terms of costs of goods sold and to some extent in terms of operating expense, however, change in fair value of biological assets has an immense effect on the group's profitability. Change in fair value of biological assets is based on forecasted prices, costs and yields of the crops among other factors, which are highly impacted by the economic cycles and other macroeconomic factors, such changes in consumption trends and competition. Therefore, when change in fair value of biological assets is negative, the crops segment profitability falls below positive values and vice versa, as compared in the Figure 9 and 10. This, all in all, positions the group best for the "Ba" score, therefore indicating that despite being innovative and value-added organic brand Auga group faces major profitability constrains due to exposure to macroeconomic headwinds.

Earnings Stability. By further analyzing Auga Group's financial model, it can be observed that it had negative operating performance in two out of three financial years. However, given that the seasonality of financial performance is typical for the agriculture sector, it is important to analyze operating performance on a quarter per quarter basis. As

presented in the *figure 11*, Auga Group's operating profit is substantially volatile, with eight out of twenty quarters yielding negative results. Negative quarters do not last longer than two quarters in the observed data, hence suggests group's ability to recover financially within approximately half a year.

Figure 11

Quarterly operating profit volatility



Source: compiled by the author, based on Auga group, 2019a; 2020a; 2021a; 2022a; 2023a.

From a statistical analysis point of view, operating profit mean is equal to negative 0.1 million euros, highlighting overall weak average operating efficiency and profitability. This is complimented by a median of 0.9 million euros, indicating that negative operating profit values are exceptionally large and hence pull the mean down. Standard deviation and variance of 3.15 and 9.92 further signify the volatility and therefore unpredictability between quarterly operating profit values. A red dashed line in the graph represents the overall trend in the data, with the slope of only -0.031. The slope indicates the overall stagnancy in group's ability to maintain sufficient operating profit over the long term. Overall, according to the protein and agriculture sector methodology, the group is mostly positioned in the "Caa" score category, given group's poor earnings stability in already inconsistent and unpredictable agriculture industry, which is offset by trends in operating profit recovery due to loses not being persistent over more than two quarters.

3.3.2. Financial policy

Financial policy factor has a weight of 15% alone to the overall scorecard indicated outcome. As explained in the MIS methodology, this factor matters because it "encompasses management and board tolerance for financial risk and commitment to a strong credit profile" (Henson et al., 2021, p. 9). In order to access Auga Group's financial policy and assign a most

appropriate score, this section will analyze groups liquidity position, its capital structure, and actions taken by the group's management as it relates to its financial risk.

Liquidity. As discussed in the methodology section of the research *2.3 General principles of liquidity risk assessment,* Auga Group's liquidity is evaluated though four main metrics of internal sources, external sources, covenant compliance and alternate liquidity. The table below present scores for all four liquidity assessment components. The liquidity framework and a full list of scores for all four assessment metrics can be found in the annex 3.

Table 12

Speculative-grade liquidity scores of Auga Group

	2018	**2019**	**2020**	**2021**	**2022**
Internal sources	4	4	4	4	4
External sources	3	3	3	2	3
Covenant compliance	1 - 4	1 - 4	2	4	4
Alternate liquidity	2	2	2	2	2
Average liquidity score	***2.5 - 3.3***	***2.5 - 3.3***	***2.8***	***3.0***	***3.3***
Total average liquidity score	***2.8 - 3.1***				
Final SGL score	***SGL-3***				

Source: assessed by the author, based on Auga group, 2019a; 2020a; 2021a; 2022a; 2023a.

The "SGL-3" score is reflective of adequate liquidity over the observed time frame. As stated in the cross-sector methodology on general principles of liquidity risk assessment, companies with a "SGL-3" score "are expected to rely on external sources of committed financing" and "there is only a modest cushion and the company may require covenant relief in order to maintain orderly access to funding lines." (Verde et al., 2023, p.10). This is supported by the scores for all four liquidity assessment components, which are defined in the annex 3. First, internal sources attain score of 4 for all five years, which is reflecting group's inability to cover all basic cash requirements from internal sources when no market access is assumed. Group has maintained net cash movement positive only in the years 2018, 2019 and 2022, which is due to large debt drawdowns from credit institutions or issuance of bonds. As per the methodology, while no market access is highly unrealistic, it "creates a standard analytical starting point, and it aligns with our general expectation of no market access for low-rated companies during periods of stress" (Verde et al., 2023, p.2).

Secondly, scores for the external sources center around three with exception of 2021 where score of two is assigned. As presented in the *table 13* the group is relying heavily on the credit lines, with majority of the available lines being drawn each year. In 2021 the majority of credit lines (55%) was undrawn, which aligns with the requirement set for the score of two.

Table 13
External sources of liquidity

	2018	2019	2020	2021	2022
Limit of credit lines	25,000	21,900	12,400	12,400	19,950
Amount of credit lines undrawn	3,730	2,600	3,000	6,817	3,500
Amount of credit lines drawn (%)	85.1%	88.1%	75.8%	45.0%	82.5%

Source: compiled by the author, based on Auga group, 2019a; 2020a; 2021a; 2022a; 2023a.

Covenant compliance by the group is weak in years 2021 and 2022, as the group was non-compliant with the financial covenants. The company was compliant with the financial covenants in 2020, however the financial performance of the company does not provide confidence for score of one, which would require company's ability to meet covenant compliance even in the case of substantial financial loss. Covenant compliance is put within a range between one and four for the years 2018 and 2019 since not enough of the information about covenant compliance is disclosed in the annual reports. By assuming full covenant compliance with a sufficient cushion the average liquidity score for both years lands at 2.5, while assumption of non-compliance with the covenants gives an average score of 3.3. Despite that, the liquidity position in both cases still positions company within "SGL-3" category.

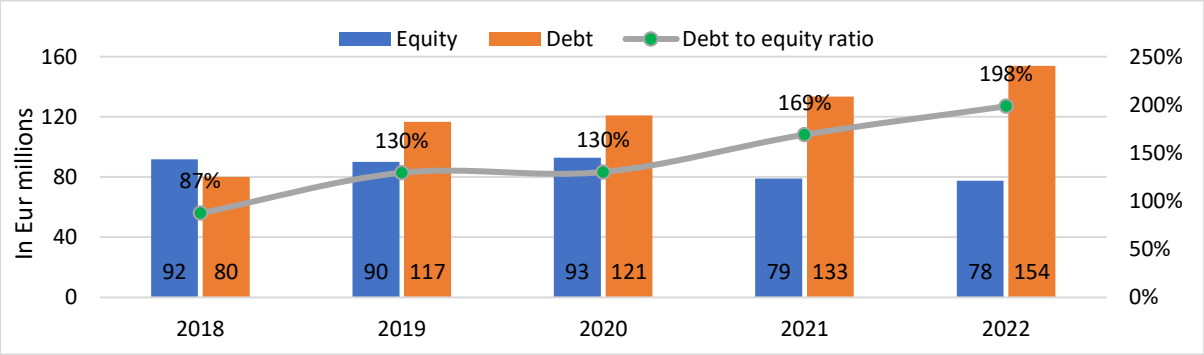
Lastly, the alternate liquidity of the group is positioned at a stable score of two. This is due to company's extensive amount of current assets which would be sold within a short time frame with likely small impact to their value. These liquid resources mostly include biological assets like crops and mycelium cultivation seedbed, and inventories such as agricultural produce or raw materials and consumables. While most of the group's debt from financial institutions is collateralized by non-current assets of property, plant and equipment, some current assets could also be encumbered, especially those of mushroom growing business, which limits group's ability to attain score of one.

All in all, the Auga Group's liquidity risk assessment shows adequate liquidity. The group's reliance on external funding is evident, as is a weak covenant compliance, suggesting challenges in meeting financial obligations during periods of significant loss. Yet, the group's significant current assets, reflected in a steady alternate liquidity score, provide a buffer against liquidity risk, ensuring the ability to liquidate assets quickly with minimal impact of their value.

Capital structure. Figure 12 presents Auga Group's capital structure from a balance sheet perspective. As shown, company's expansion is supported by an increasing level of liabilities rather than equity. As evident by a debt-to-equity ratio, group's debt is nearly two times of the equity in 2022, which is a significant increase from a relatively similar proportion between the two items in the year 2018.

Figure 12

Capital structure of Auga Group



Source: compiled by the author, based on Auga group, 2019a; 2020a; 2021a; 2022a; 2023a.

The liquidity analysis revealed that the group is experiencing liquidity constraints due to its dependence on external financing sources and borrowings. This suggests that the group's current borrowing strategy is not sufficiently meeting its financial profile needs. As discussed in the section *3.2. assessment of scores for the quantitative factors*, group's leverage has also remained high due to insufficient operating performance to offset rising debt.

In addition, debt maturity profile of the group is not distributed well thought the years, as presented in the *table 14*. Significant amounts of debt maturing in the near term could pose a significant credit challenge. While the group improved its maturity profile between the years 2018 and 2020, the course has changed since 2021. As of December 31st, 2022, the group has nearly half of its debt maturing in the next 12 months, and close to two-thirds of debt maturing in the next one to two years. Due to currently unfavorable debt refinancing environment in terms of rising interest rates, the group is facing even greater debt servicing costs in the future. Historically large annual debt repayments and debt drawdowns in the group's cash flow statements suggest a "rolling over" debt strategy pursued by the group's management. While this strategy can be effective in certain situations, it carries a large refinancing risk, especially when there are liquidity, interest or creditworthiness challenges. These risks are acknowledged by the group to a great extent in, for example, full year 2022 annual report (Auga Group, 2023a). This limits Auga group's ability to attain a high financial policy score.

Table 14
Annual debt maturity profiles of Auga Group

In Eur million	2018	2019	2020	2021	2022
Within 1 year	52.2	54.7	35.0	46.4	72.7
Between 1 and 2 years	14.4	11.5	23.8	21.5	39.0
Between 3 and 4 years	6.4	17.1	43.1	53.2	25.9
Over 5 years and later	2.1	41.8	28.1	24.7	24.7
On demand (Guarantees issued)	2.8	2.3	0.2	0.2	0.2
Total debt	**77.9**	**127.4**	**130.3**	**146.0**	**162.6**
% of debt maturing in <1 year	**67.0%**	**42.9%**	**26.9%**	**31.8%**	**44.7%**
% of debt maturing in <2 years	**85.4%**	**52.0%**	**45.2%**	**46.5%**	**68.7%**

Source: compiled by the author, based on Auga group, 2019a; 2020a; 2021a; 2022a; 2023a.
Note: the maturities presented are contractual undiscounted cash flows.

On the other hand, the group is pursuing relatively conservative financial policy as it relates to balancing interests of creditors and investors as well as merger and acquisition (M&A) strategies. The Auga Group, to date, has not distributed any dividends. This indicates their focus on prioritizing debt servicing and creditors, as well as channeling resources into reinvestment opportunities. In this term alone, Auga Group positions itself well for the financial policy score, which heavily emphasizes on the cash distribution to shareholders. In addition, the group is not pursuing large or frequent M&As. In fact, the group has had very few acquisitions over the past five years and has shown management's willingness to pursue a relatively conservative financial policy in these terms. On January 22, 2018, Auga Group entered into a share sale and purchase agreement to fully acquire UAB Arginta Engineering, with the transaction valued at EUR 6.4 million (NBSE, 2018a). However, on March 14th of the same year the group made the decision to nullify the share acquisition contract with UAB Arginta Engineering. Instead of pursuing a full acquisition, they have opted to collaborate on technological advancement through a contractual agreement (NBSE, 2018b). The termination fee reached €715 thousand, which indicates that the management of Auga Group is risk averse and is willing to change the course of action. On the other hand, the group pursed an acquisition of UAB Raseinių Agra on February 28th, 2018, for a cost of €2.4 million, which increased group's liabilities. UAB Raseinių Agra had €3.4 million of outstanding liabilities and other borrowings on the acquisition day (Auga Group, 2019a). While the group had pursued some acquisitions during later years, notably by capitalizing its loans to a company Grybai LT, KB in 2020, of which shares the group later sold to its majority shareholder Baltic Champs UAB,

Auga group has remined relatively restrained from the acquisitions (NBSE, 2020). To evaluate Auga group's historical acquisition activity there has to be a more in-depth analysis on this subject, however as already discussed in the section *1.3.1. Overview of Auga Group AB,* Auga group's acquisition with Baltic Champs AB was quite successful, however it deteriorated group's liquidity position, which seems to have not recovered to a sufficient level since then. All in all, Auga Group's restrained acquisition activity over the past five years appears to be net positive in creditworthiness terms. However, to facilitate future growth, the group might need to pursue some favorable acquisition opportunities, which preferably should come through alternative non-liability financing means, such as equity.

Overall, financial policy score assessment of Auga group is complicated. According to the methodology the group is balancing interests of creditors and shareholders and pursues modest acquisition activities, which positions it more in a „Baa" score category. Capital structure changes have positioned group for a lower, „Ba" or „B", score, including relatively short-term concentrated debt maturity profile. On the other hand, the group attains a liquidity score of SGL-3 (adequate liquidity), due to lack of internal cash recourse, reliance on credit-lines, occasional non-compliance with financial covenants, and some of its current assets being encumbered, which is more in line with the „Caa" score. All in all, the financial profile score of the group is best positioned in a „B" score category, where despite favoring creditors over shareholders in terms of dividends, the group pursues highly risky financial policies by raising debt and consequentially - leverage, maintaining challenging liquidity profile and carrying some event risk, especially due to "rolling over" debt strategy and recent non-compliance with the financial covenants. The group's score is below "Ba" mostly due to unhealthy amount of borrowings, while the score is above "Caa" due to group's ability to improve its financial profile during economic upturns. Lastly, while the positioning of group's financial profile is fluid over the years, other factors constrain the ability of attaining a higher score. For example, the group had higher levels of equity than debt in 2018, however its leverage stood at 12.8 times that year, among other. Hence financial policy score is stable at "B" throughout the years.

3.4. Final credit rating assessment and interpretation

3.4.1. Scorecard indicated outcomes

After compiling calculations and assessments from sections 3.1 to 3.3, final credit estimates can be derived. The *table 15* summarizes group's scorecard indicated outcomes for the five years observed in this research.

Table 15
Annual scorecard indicated outcomes

	FY2018		FY2019		FY2020		FY2021		FY2022	
	Measure	Score	Measure	Score	Measure	Score	Measure	Score	Measure	Score
Factor 1: Scale (10%)										
a) Total Sales (USD Billion)	$0.06	Ca (20)	$0.08	Ca (20)	$0.09	Ca (20)	$0.08	Ca (20)	$0.08	Ca (20)
Factor 2: Business Profile (35%)										
a) Geographic Diversification	Baa	(9)	Baa	(9)	Baa	(9)	Baa	(9)	Baa	(9)
b) Segment Diversification	B	(15)	B	(15)	B	(15)	Ba	(12)	B	(15)
c) Market Share	Caa	(18)	Caa	(18)	Caa	(18)	Caa	(18)	Caa	(18)
d) Product Portfolio Profile	Ba	(12)	Ba	(12)	Ba	(12)	Ba	(12)	Ba	(12)
e) Earnings Stability	Caa	(18)	Caa	(18)	Caa	(18)	Caa	(18)	Caa	(18)
Factor 3: Leverage & Coverage (40%)										
a) Debt / EBITDA	12.8x	Ca (20.5)	6.5x	Caa (18)	4.6x	B (15)	24.8x	Ca (20.5)	6.9x	Caa (18)
b) CFO / Debt	(23.4%)	Ca (20.5)	6.1%	Caa (18)	14.3%	B (15)	7.4%	Caa (18)	(14.0%)	Ca (20)
c) Debt / Book Capitalization	34.6%	A (6)	49.4%	Ba (12)	49.8%	Ba (12)	57.7%	Ba (12)	60.9%	B (15)
d) EBITA / Interest Expense	-1.7x	Ca (20.5)	0.2x	Ca (20)	1.2x	B (15)	-1.5x	Ca (20.5)	0.4x	Ca (20)
Factor 4: Financial Policy (15%)										
a) Financial Policy	B	(15)	B	(15)	B	(15)	B	(15)	B	(15)
Aggregate numeric scores	16.1		16.2		15.1		16.3		16.7	
Scorecard Indicated Outcomes	**B3**		**B3**		**B2**		**B3**		**Caa1**	

Source: author assessment, based on Auga group, 2019a; 2020a; 2021a; 2022a; 2023a., and Henson et al., 2021.

As per aggregate numeric scores, Auga Group's scorecard indicated outcomes are within the speculative ratings group, where the outcome of B2 is for the year 2020, B3 for the years 2018, 2019 and 2021, while for 2022 the outcome is Caa1. Historically, ratings of B2 and B3 positioned Auga Group withing the high-risk obligations category, however the most recent outcome of Caa1 for the year 2022 positions group under the category of current vulnerability to default. These findings confirm the null hypothesis, and it can be concluded, that there is correlation between corporate size and creditworthiness. Auga group's smaller size has not only constrained its ability to attain a meaningful scale score, but also score for market share and to some extent earnings stability. Quantitative factors are also constrained by the group's scale, as lower revenues constrain group's ability to sufficiently reduce its leverage and increase interest coverage. Auga group's sustainable business practices have positively contributed to some of the scores, mostly product portfolio profile, however are not sufficient to meaningfully improve company's credit profile, hence alternative hypothesis is rejected.

Credit strengths and weaknesses. Rating outcomes are reflective of Auga group's credit weaknesses of consistently generating insufficient profits to fulfill its interest obligations, instability in earnings, small scale, high leverage and the challenges as it pertains to its liquidity. These weaknesses are counterbalanced by the group's ability to significantly deleverage within a short timeframe, including ability to significantly modify its overall capital structure, its geographical diversification, prioritization of debt servicing over shareholders returns and significant amount of value-added products in its profile.

Factors that could change the rating. Since Auga group's aggregate numeric score for the year 2022 is 16.7, just 0.2 points above B3 threshold, improvement in any of the scorecard factors would uplift rating back to a B3 rating category. On the other hand, however, improvement of the rating from B3 to the B2 (aggregate numeric score of 15.5 or lower) would require an extensive improvement in the group's credit profile. Change of the rating to the B2 from a qualitative factors' perspective is unlikely, as it would require uplift in at least three out of six factors, and given their broad and multifaceted nature, it is highly improbable.

From a quantitative factors' perspective, an improvement in one of the five factors could theoretically uplift rating to a B2 on its own, however it would require uplifts many notches up of that one factor, which is highly unlikely. From a historical performance perspective, the most likely way Auga group's scorecard indicated outcome could return to B2 rating is through a combined effort of improving all of its leverage and coverage ratios by at least one notch uplift. This would require leverage reduction from current 6.9 times to below 6 times, CFO to debt ratio increasing from 0.6% to more than 2.5%, Debt to book capitalization ratio reducing from 60.9% to less than 60%, and EBITA to interest expense increasing from 0.4 times to at least 1.0 time. Scale factor is unlikely to change in the near future given "Caa" score would require revenues higher than $250 million.

Consequentially, the group's scorecard indicated outcome could fall from Caa1 to Caa2 if its credit profile were to deteriorate. Similarly as with the uplift, no singe change in qualitative factors could reduce the rating to Caa2, however group is weakly positioned in the financial policy score of "B", which, if group were to unsustainably continue increasing its debt, could deteriorate to "Caa". Since total sales, CFO to Debt and EBITA to Interest Expense subfactors already attain the lowest "Ca" score, the downgrade in the scorecard indicated outcome to Caa2 would require increase in current leverage levels from 6.9 times to more than 8.0 times and increase in Debt to book capitalization ratio from 60.9% to more than 90%.

Outlook. The short-term outlook for Auga Group is positive, as it is likely to improve at least one of its scorecard factors in the upcoming moths, potentially return it's positioning within the B3 rating category. However, further upgrades in the rating are unlikely in the medium-term, hence B3 rating will remain stable. This is due to extensive deleveraging, profitability and liquidity improvement measures the group would need to undertake in order to meaningfully improve its credit profile. If the group is able to refinance its obligations and maintain investors' confidence, the long-term outlook for the group is positive, as it stands to benefit from the increasing demand for organic food and the extensive support from Lithuania and the European Union for more sustainable agriculture.

3.4.2. Peer comparison

To evaluate Auga Group's rating performance more effectively across key metrics it is crucial to contrast it with its industry peers. This comparison not only provides a clearer picture of industry benchmarks and Auga Group's relative positioning but also illuminates potential areas for improvement and existing strengths. As discussed earlier, majority of issuers rated by MIS are large corporations, with revenues exceeding billions of dollars. However, there are six companies which have a scale in hundreds of millions in terms of revenue, hence are more comparable to the Auga group's scorecard indicated outcome. The latest available scorecards of these six issuers are presented in the table 16. Detailed descriptions of all selected companies are presented in annex 5.

First, it can be observed that these six rated companies which have revenues below one billion USD have ratings between B1 and Caa2. This reiterates that smaller scale companies are indeed likely to have higher risk ratings, suggesting an inherent vulnerability to default among such enterprises. Secondly, some peers used in the comparison have scorecard indicated outcomes which are higher than the actual ratings assigned. This might be attributed to a variety of elements, including pessimistic forecasts about the company's future results, government rating ceiling, adverse outcomes from cross-sector methodologies like liquidity risk assessments, or other factors that a rating committee deems significant. The same reasons can also be reflective of companies' outlooks, which signal possible rating actions and directions where future rating might move. Lastly, most of the issuers are mainly produces of sugar and are domiciled in the developing countries, with the exception of Placin S.á.r.l. and Bering III S.a r.l., which are domiciled in Luxemburg.

Table 16
Comparison of protein and agriculture sector industry peers

	Auga Group	**Placin S.á.r.l.**	**Bering III S.a r.l.**	**Camposol S.A.**	**Ingenio Magdalena S.A.**	**Usina Coruripe Acucar e Alcool**	**Dangote Sugar Refinery Plc**
Data as of	**FY 12/31/2022**	**FY 03/31/2022**	**FY 12/31/2022**	**LTM 6/30/2023**	**LTM 12/31/2022**	**LTM 06/30/2023**	**LTM 06/30/2023**
Factor 1: Scale (10%)							
a) Total Sales (USD Billion)	$0.1 (Ca)	$0.2 (Ca)	$0.5 (Caa)	$0.5 (Caa)	0.6 (Caa)	$0.7 (Caa)	$0.9 (Caa)
Factor 2: Business Profile (35%)							
a) Geographic Diversification	Baa	Ba	Ba	Ba	Caa	B	Caa
b) Segment Diversification	B	B	B	B	B	Ba	B
c) Market Share	Caa	B	B	B	B	B	Ba
d) Product Portfolio Profile	Ba	Ba	B	B	B	B	B
e) Earnings Stability	Caa	B	B	B	Ba	Ba	Ba
Factor3:Leverage & Cov. (40%)							
a) Debt / EBITDA	6.9x (Caa)	5.3x (B)	7.5x (Caa)	7.9x (Caa)	4.1x (B)	3.7x (Ba)	0.0x (Aaa)
b) CFO / Debt	0.6% (Ca)	8.0% (B)	1.6% (Ca)	2.3% (Ca)	7.0% (Caa)	21.6% (Ba)	2954% (Aaa)
c) Debt / Book Capitalization	60.9% (B)	56.3% (Ba)	62.0% (B)	61.9% (B)	38.6% (Baa)	66.7% (B)	2.0% (Aaa)
d) EBITA / Interest Expense	0.4x (Caa)	2.6x (B)	1.0x (Caa)	0.8x (Caa)	2.8x (B)	1.2x (B)	317.3x (Aaa)
Factor 4: Financial Policy (15%)							
a) Financial Policy	B	B	Caa	Caa	B	B	Ba
Scorecard Indicated Outcome	**Caa1**	**B2**	**Caa1**	**Caa1**	**B1**	**B1**	**Baa2**
Actual Rating Assigned	**n.a.**	**B2**	**Caa2**	**Caa1**	**B1**	**B3**	**Caa1**
Rating Outlook	**Positive**	**Stable**	**Negative**	**Negative**	**Stable**	**Negative**	**Positive**
SGL sore	SGL-3	SGL-3	SGL-4	SGL-4	SGL-4	SGL-4	SGL-3

Source: compiled by the author, author calculations and latest credit opinions by Moody's investors service, based on Balletta et al., 2023a, Balletta et al., 2023b, Morales and Schmidt, 2023, Rodrigues et al., 2023, Schmidt and Rodrigues, 2023, and Barrutia et al., 2023.

First, in terms of the first factor the only peer with the same "Ca" score as attained by the Auga group is that of Placin, a relatively small berries grower in Luxemburg. The fact that no other corporation operating within protein and agriculture sector with revenue less than 250 million USD has an MIS rating signifies that significance of rating inaccessibility. Similarly as in Lithuania, majority of companies operating within this sector are small to medium size enterprises. This justifies the focus of, for example, the CAP to reduce financing gap in the agriculture sector between smaller-scale farmers.

In terms of business profile, Auga group stands out in its ability to maintain a good geographical diversification and product portfolio profile compared to its industry peers. This is due to Auga group's exporting strategy to 35 countries and a unique organic value-added product offering. However, Auga group has a lower market share and earnings stability score.

This can in part be explained by its small scale compared to industry peers, as company with revenue less than 100 million USD cannot have a major market share. Moreover, lower revenues constrain company's ability to ward off volatility in its earnings.

Based on factor three, Auga group's quantitative factors are in line with its rating positioning of Caa1. From an overall industry perspective, it can be observed that all companies maintain a mid-to-high single digit leverage and debt in all book capitalization of roughly more than a half, with an exception of Dangote Sugar Refinery, which pursues very conservative financial policy and mostly utilizes payable letters of credit which are not considered under debt definition (Dangote's overall rating is constrained by the rating of its domicile country – Nigeria). For this reason, Auga group does not appear to be an outlier in these two subfactors, as agriculture sector is highly capital intensive, even at a smaller scale. However, group's CFO to debt and interest coverage ratios are extremely low, even compared to Camposol who has the same credit rating of Caa1. Therefore, Auga group's liquidity issues and poor debt servicing capabilities are weak even when compared to closest industry peers.

Lastly, from a financial policy perspective Auga group has a strong score despite its rating, supported by a slightly better SGL score. Four out of six peers have an SGL score of SGL-4, which highlights the predominance of liquidity constraints in the smaller scale industry peers. Auga groups is also in contrast abstaining from paying dividends, which provides relief to an already deficient liquidity.

All in all, the comparison of Auga group to the industry peers reveals several factors. First, smaller companies like Auga Group tend to exhibit higher risk ratings, and this is indicating their inherent vulnerability to default. In addition, companies of this scale tend to have lower ratings despite their scorecard indicated outcomes being higher. Secondly, from qualitative factors perspective, Auga Group stands out positively in its geographic diversification and product portfolio profile, thanks to its export strategy and unique organic value-added product offering. It also maintains a relatively strong financial policy score, supported by a better SGL score, indicating its efforts to manage liquidity constraints, including a policy of abstaining from dividend payments. However, it lags in market share and earnings stability, likely due to its smaller scale. Lastly, from quantitative factors perspective, Auga Group's leverage and debt capitalization ratios are consistent with the industry, but its CFO to debt and interest coverage ratios signal liquidity issues and poor debt servicing capabilities, even compared to peers with similar credit ratings and scale. In summary, peer comparison provides valuable insights into Auga Group's relative strengths which support its positive outlook, and areas for improvement, within the context of its industry peers.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

1. Credit rating agencies, particularly the biggest three, have a critical role in financial markets by determining creditworthiness. However, they have been scrutinized due to their oligopolistic market dominance, regulatory issues, improper responsiveness, and reliance on issuer disclosures. Despite criticisms, Moody's Investors Service ratings significantly impact financial instruments, especially for high-leverage firms due to its conservativeness. These findings provide a nuanced understanding of the credit rating landscape, paving the way for further research.
2. Company's credit rating is influenced by a blend of quantitative and qualitative factors, each with varying degrees of weight depending on the specific industry. Quantitative factors, such as leverage and profitability, contribute significantly to creditworthiness. Qualitative factors, such as business profile and financial policy, add context and depth to the numerical assessment. Emerging qualitative factors, like cybersecurity and ESG components, are increasingly relevant, though their incorporation into credit risk assessment is still evolving.
3. Auga Group is a significant player in the European organic farming industry, with a diversified business portfolio and a commitment to sustainable farming practices. Despite its recent financial performance showing a net loss, the company's stock value has shown a positive trend, and it has been favorably assessed by several analytical firms. These firms highlight the company's potential for growth. The company's focus on sustainable agriculture technology is overall seen as a value added, although potential risks such as high energy prices, weather conditions, and economic downturns persist. The agriculture sector, in which Auga Group operates, is a critical part of the global economy and faces significant environmental challenges, requiring a shift towards more sustainable practices. The sector's financing needs, particularly in Lithuania, are substantial, and initiatives like the European Union and Lithuanian government CAP subsidies play a crucial role in maintaining profitability. The future outlook for the sector is stable but marked by uncertainties related to climate change, consumer demand, and sector changes.
4. The MIS methodologies employed in the credit rating assessment are multifaceted and involve several stages, including data gathering, data processing, and data analysis. They balance both quantitative and qualitative factors, ensuring a comprehensive

understanding of the company's financial health and operational stability. While the process is systematic, it is also flexible to account for sector-specific variables, as seen in the application of MIS protein and agriculture sector methodology for Auga Group. The final credit rating is a nuanced interpretation of the firm's creditworthiness, highlighting the depth and sophistication of these methodologies.

5. Auga Group's credit rating assessment reveals its positioning within the speculative ratings group, with a recent downgrade to Caa1 reflecting increased vulnerability to default. The outcome is largely influenced by the company's smaller scale, high leverage, and challenges related to liquidity and profitability. Despite these constraints, Auga Group's credit strengths, like its geographical diversification and prioritization of debt servicing, provide some balance. The company's commitment to sustainable business practices also positively influences its credit profile, particularly in its product portfolio profile. The group's outlook is positive, as improvements in any of the scorecard factors could potentially uplift the rating back to a B3 category, but a further upgrade to B2 would require substantial improvements in the group's credit profile. Medium-term outlook is stable in the B3 rating category, given the significant measures needed to improve the group's credit profile, including upcoming large debt maturities. The long-term outlook is positive if the group can maintain investor confidence and benefit from the growing demand for organic food and support for sustainable agriculture.
6. Based on comparative analysis Auga Group's credit rating and financial performance mostly align with industry trends for smaller-scale companies. These companies inherently exhibit higher risk ratings due to their vulnerability to default. Auga Group's unique strengths lie in its geographic diversification and product portfolio profile, supported by its export strategy and organic value-added offering. However, its smaller scale contributes to lower market share and instability of the earnings. Auga Group's leverage and debt capitalization ratios are consistent with the industry, but faces significant liquidity issues and poor debt servicing capabilities, even when compared to peers with similar credit ratings. Despite these challenges, Auga Group's financial policy and efforts to manage liquidity constraints, such as abstaining from dividend payments, provide a degree of stability.

Recommendations

1. Auga group should implement a debt management strategy to the extent possible. Since large repayments of debt are unlikely due to group's current and future capital needs, this can be achieved though equity increase in its capital structure or prioritization in repayment of highest interest-bearing liabilities. Since debt is at a core of the credit rating assessment, its effective management can positively impact multiple scorecard factors simultaneously. Due to Auga Group's unique strengths identified in geographic diversification and product portfolio, it is recommended that the company continue to maintain its current product profile and exporting strategy. While improvement in earnings stability and market share is currently difficult due to group's focus on unique organic food production, segment diversification has potential improvements if new products are offered.
2. Policy makers should provide a much needed financial and regulatory support to the corporations having environmentally friendly organic agricultural food growing practices. These policies can include direct government subsidies and favorable trade policies. This would promote organic agricultural practices and potentially reduce prices of organically grown foods for consumers.
3. Future researchers can incorporate a more extensive analysis of additional qualitative factors in the corporate credit rating assessment. These could potentially include ESG considerations, cybersecurity positioning, regulatory risks, financial controls, company's strategy, overview of subsidiaries, institutional support, and sector cyclicality among other. The analysis could also incorporate forecasts of company's performance in the upcoming years.

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ANNEXES

Annex 1

Moody's Investors Service basic definitions for credit statistics.

Interest Expense	**Gross Interest Expense**
	Notes: (1) Interest Income is not deducted from Interest Expense. (2) Items that are reported as finance costs but that do not relate to the cost of debt are not included in Interest Expense.
Amortization of Intangible Assets	Amortization expense related to intangible assets only. Amortization does not include expenses over time that are related to operating assets that have had a cash inflow/outflow classified within the operating section of the Statement of Cash Flows.
EBIT	Pretax Income (Profit before tax)
	+ Interest Expense
	+ Equity method income/(loss), if not included in reported pretax income + Unusual Expenses/(Gains)
	Notes: For most companies, income/(loss) from equity accounted entities is included in EBIT irrespective of where it is reported in the income statement. Where a sector methodology specifies otherwise or where the NFC Adjustments Methodology describes a different treatment for a particular sector, EBIT will be adjusted accordingly. EBIT includes net income/(loss) that is attributable to non-controlling owners of a company's subsidiaries.
EBITA	EBIT
	+ Amortization of Intangible Assets
EBITDA	EBIT
	+ Depreciation Expense
	+ Amortization of Intangible Assets
Debt	Short-term Debt
	+ Current Portion of Long-term Debt
	+ Long-term Debt, net of Current Portion
Net Debt	Debt
	− Cash and Cash Equivalents
	Note: Moody's may include certain other current financial assets that are readily convertible to cash in as Cash and Cash Equivalents, even if they are reported in a different line on the balance sheet.

Capitalization	Debt
	+ Total Equity per the Balance Sheet (including non-controlling interest)
	+ Non-Current Deferred Income Taxes
Capital Expenditures	Gross cash outflows to acquire property, plant and equipment and certain intangible assets, per the Investing activities section of the Consolidated Statement of Cash Flows.
	Notes: Capital expenditures are not reduced by proceeds from disposals. Adjusted capital expenditures are reduced by government grants for capital purposes, irrespective of how these are reported.
Funds From Operations (FFO)	Cash flows from operations before changes in working capital and changes in other short-term and long- term operating assets and liabilities
	Note: We include amortization of non-intangible operating assets, and accretion of operating liabilities, in other short-term and long-term operating assets and liabilities, therefore these amounts are excluded from adjusted FFO.
Retained Cash Flows (RCF)	Funds from Operations (FFO)
	− Common Dividends per the Consolidated Statement of Cash Flows
	− Preferred Dividends per the Consolidated Statement of Cash Flows
	− Dividends to non-controlling interests per the Consolidated Statement of Cash Flows
Free Cash Flows (FCF)	Cash Flows from Operations (CFO)
	− Capital Expenditures
	− Common Dividends per the Consolidated Statement of Cash Flows
	− Preferred Dividends per the Consolidated Statement of Cash Flows
	− Dividends to non-controlling interests per the Consolidated Statement of Cash Flows

Source: compiled by the author, based on Moody's Investors Service, 2023d.

Annex 2

Moody's Investors Service Protein and agriculture sector full scorecard.

FACTOR 1: Scale (10% weight for the final score)		
Subfactor 1: Total Sales (USD billion) [1] (10% weight)		
Score	Numeric score	Criterias
Aaa	1	≥$60
Aa	3	$30 - $60
A	6	$15 - $30
Baa	9	$7.5 - $15
Ba	12	$3 - $7.5
B	15	$1 - $3
Caa	18	$0.25 - $1
Ca	20	<0.25
FACTOR 2: Business profile (35% weight for the final score)		
Subfactor 1: Geographic Diversification (5% weight)		
Score	Numeric score	Criteria
Aaa	1	Very low sales concentration, typically <10%; very high percentage of sales to large, stable, mature markets, typically >95%; very low raw material supply concentration.
Aa	3	Low sales concentration, typically <25%; high percentage of sales to large, stable, mature markets, typically >85%; low raw material supply concentration.
A	6	Low sales concentration, typically <35%; high percentage of sales to large, stable, mature markets, typically >75%; low raw material supply concentration.
Baa	9	Moderate sales concentration, typically <50%; high percentage of sales to large, stable, mature markets, typically >75%; moderate raw material supply concentration.
Ba	12	Moderately high sales concentration, typically <75%; moderate percentage of sales to large, stable, mature markets, typically >50%; moderate raw material supply concentration.
B	15	High sales concentration, typically >75%; primary market is large, stable, mature market with secondary markets that may include small, unstable or emerging markets; moderate raw material supply concentration.
Caa	18	High sales concentration, typically >75%; primary market is small, unstable or emerging; secondary markets may include some large, stable or mature markets; high raw material supply concentration.
Ca	20	Very high sales concentration, typically >90%; primary market is small, unstable or emerging; secondary markets include some large, stable or mature markets; high raw material supply concentration.

Subfactor 2: Segment Diversification (5% weight)		
Score	Numeric score	Criteria
Aaa	1	8 or more profitable core segments balanced in terms of sales and profitability.
Aa	3	6 or more profitable core segments balanced in terms of sales and profitability.
A	6	4-5 profitable core segments balanced in terms of sales and profitability.
Baa	9	3 core segments balanced in terms of sales and profitability.
Ba	12	2 - 3 segments that are each significant contributors to sales and profitability.
B	15	1 - 2 segments but heavy reliance on 1 segment for profitability.
Caa	18	1 core segment that experiences volatile profitability.
Ca	20	1 core segment that experiences regular swings to significant operating losses.
Subfactor 3: Market Share (5% weight)		
Score	Numeric score	Criteria
Aaa	1	Global player, expected to have #1 global market share in all key business segments with at least triple the share of #2 player.
Aa	3	Global player, expected to have #1 global market share in all key business segments with at least double the share of #2 player.
A	6	Global player, expected to have #1 global market share in all key business segments with at least 1.5x the share of the #2 player.
Baa	9	Global player, expected to have at least #2 global market share in all key business segments.
Ba	12	Expected to have at least #2 major regional market share in key segments.
B	15	Expected to have a #3 or weaker regional market share; a second-tier market participant.
Caa	18	Expected to have small regional market share, or be a niche producer with limited customer base.
Ca	20	Evolving or vulnerable market share position due to corporate restructuring, market or technology disruptions; shifting customer relationships.
Subfactor 4: Product Portfolio Profile (10% weight)		
Score	Numeric score	Criteria
Aaa	1	Substantially all strong value-added; very strong brands and very high innovation capacity.
Aa	3	Mostly high value-added; strong brands and high innovation capacity.
A	6	Mostly high value-added; solid brands and good innovation capacity.
Baa	9	Moderate value-added; some solid regional brands and some innovation capacity with sensitivity to competition or consumption trends.

Ba	12	Moderate value-added; low brand strength or largely commoditized or vulnerable to commodity cycles, competition or consumption trends.
B	15	Low value-added; mostly commodity-like products vulnerable to commodity cycles, new competition, or consumption trends.
Caa	18	Mostly commodity products; little or no value-added products highly vulnerable to competition, commodity cycles or consumption trends.
Ca	20	Predominantly commodity products; little or no value-added products extremely vulnerable to competition, commodity cycles or consumption trends.
Subfactor 5: Earnings Stability (10% weight)		
Score	Numeric score	Criteria
Aaa	1	Operating profits are extremely stable, and no potential for short-term earnings volatility.
Aa	3	Operating profits are very stable and predictable; and extremely low potential for short-term earnings volatility.
A	6	Operating profits are very stable and predictable; and very low potential for short-term earnings volatility due to business or commodity cycles.
Baa	9	Operating profits are relatively stable over long term; but can vary over short periods due to business or commodity cycles; rational industry supply discipline.
Ba	12	Operating profits are relatively predictable over long term; but can be volatile over short periods; during cyclical downturns may generate small quarterly operating losses followed by a reliable recovery; rational industry supply discipline.
B	15	Operating profits can be volatile and unpredictable; during cyclical downturns may generate large quarterly operating losses usually followed by equally strong recoveries; possibly weak industry supply discipline; or below average operating efficiency.
Caa	18	Operating profits can be volatile and unpredictable; during cyclical downturns may generate large losses that can be persistent; weak industry supply discipline or weak average operating efficiency.
Ca	20	Operating profits are volatile and unpredictable throughout the cycle; can generate large losses that can be persistent; or very weak industry supply discipline or weak average operating efficiency.
FACTOR 3: Leverage and Coverage (40% weight for the final score)		
Subfactor 1: Debt / EBITDA [2] (10% weight)		
Score	Numeric score	Criteria
Aaa	1	≤0.25x
Aa	3	0.25x - 1x
A	6	1x - 2x

Baa	9	2x - 3x
Ba	12	3x - 4x
B	15	4x - 6x
Caa	18	6x - 8x
Ca	20	>8x
Subfactor 2: CFO / Debt [3] (10% weight)		
Score	Numeric score	Criteria
Aaa	1	≥70%
Aa	3	50% - 70%
A	6	35% - 50%
Baa	9	25% - 35%
Ba	12	15% - 25%
B	15	7.5% - 15%
Caa	18	2.5% - 7.5%
Ca	20	<2.5%
Subfactor 3: Debt / Book Capitalization [4] (10% weight)		
Score	Numeric score	Criteria
Aaa	1	≤20%
Aa	3	20% - 25%
A	6	25% - 35%
Baa	9	35% - 45%
Ba	12	45% - 60%
B	15	60% - 75%
Caa	18	75% - 90%
Ca	20	>90%
Subfactor 4: EBITA / Interest Expense [5] (10% weight)		
Score	Numeric score	Criteria
Aaa	1	≥20x
Aa	3	15x - 20x
A	6	9x - 15x
Baa	9	6x - 9x
Ba	12	3x - 6x
B	15	1x - 3x
Caa	18	0.5x - 1x
Ca	20	<0.5x

FACTOR 4: Financial Policy (15% weight for the final score)		
Score	Numeric score	Criteria
Aaa	1	Expected to have extremely conservative financial policies (including risk and liquidity management); very stable metrics; essentially no event risk that would cause a rating transition; and public commitment to a very strong credit profile over the long term.
Aa	3	Expected to have very conservative financial policies (including risk and liquidity management); stable metrics; minimal event risk that would cause a rating transition; and public commitment to a strong credit profile over the long term.
A	6	Expected to have predictable financial policies (including risk and liquidity management) that preserve creditor interests; although modest event risk exists, the effect on leverage is likely to be small and temporary; strong commitment to a solid credit profile.
Baa	9	Expected to have financial policies (including risk and liquidity management) that balance the interests of creditors and shareholders; some risk that debt-funded acquisitions or shareholder distributions could lead to a weaker credit profile.
Ba	12	Expected to have financial policies (including risk and liquidity management) that tend to favor shareholders over creditors; above-average financial risk resulting from shareholder distributions, acquisitions or other significant capital structure changes.
B	15	Expected to have financial policies (including risk and liquidity management) that favor shareholders over creditors; high financial risk resulting from shareholder distributions, acquisitions or other significant capital structure changes.
Caa	18	Expected to have financial policies (including risk and liquidity management) that create elevated risk of debt restructuring in varied economic environments.
Ca	20	Expected to have financial policies (including risk and liquidity management) that create elevated risk of debt restructuring even in healthy economic environments.

Source: compiled by the author, based on Henson et al., 2021. Moody's Investors Service.

Notes:

[1] For the linear scoring scale, the Aaa endpoint value is $100 billion. A value of $100 billion or better equates to a numeric score of 0.5. The Ca endpoint value is zero. A value of zero or worse equates to a numeric score of 20.5.

[2] For the linear scoring scale, the Aaa endpoint value is zero. A value of zero or better equates to a numeric score of 0.5. The Ca endpoint value is 12x. A value of 12x or worse equates to a numeric score of 20.5, as does negative EBITDA.

[3] For the linear scoring scale, the Aaa endpoint value is 100%. A value of 100% or better equates to a numeric score of 0.5. The Ca endpoint value is zero. A value of zero or worse equates to a numeric score of 20.5.

[4] For the linear scoring scale, the Aaa endpoint value is 10%. A value of 10% or better equates to a numeric score of 0.5. The Ca endpoint value is 95%. A value of 95% or worse equates to a numeric score of 20.5.

[5] For the linear scoring scale, the Aaa endpoint value is 30x. A value of 30x or better equates to a numeric score of 0.5. The Ca endpoint value is zero. A value of zero or worse equates to a numeric score of 20.5.

Annex 3

Speculative grade liquidity assessment score table.

Liquidity assesment factor	**Score**	**Score rationale**
Internal Sources	Very good score (1)	At all times over the next 12 months, the issuer can comfortably cover all basic and other cash requirements from internal sources
	Good score (2)	For the projected 12-month period, but not necessarily for all interim quarterly periods, the issuer can likely cover all basic cash requirements as well as project-based capital spending and cash flow requirements of non-recourse/project subsidiaries from internal sources. Issuers in this category are not expected to be able to cover extraordinary capital expenditures from internal sources.
	Adequate score (3)	For the projected 12-month period, the issuer can cover all basic cash requirements from internal sources. Issuers in this category are not expected to cover other cash requirements from internal sources. For these issuers, external liquidity is needed to cover some or all cash needs above the basic cash requirements.
	Weak score (4)	The issuer is unlikely to cover the basic cash requirements from internal sources and likely to need external financing to remain liquid and/or to maintain status as a going concern.
External Sources	Very good score (1)	Little reliance on external sources. Large unused committed availability under a revolver or within the asset base of an asset-based lending facility.
	Good score (2)	Reasonable but not necessarily large amount of committed availability. May need the facility for seasonal swings or to bridge the timing of major capital expenditures during the next 12 months, although a majority of the committed availability is expected to be undrawn during the projected 12-month period.
	Adequate score (3)	More likely to rely on the facility. While there is a sufficient amount of committed availability, a majority of it is expected to be drawn during the next 12 months.
	Weak score (4)	No committed multiyear liquidity facility or inadequate amount of committed availability.

Covenant Compliance	Very good score (1)	Compliance is highly likely over the next 12 months based on current expectations and absent exogenous events. Companies are amply in compliance.
	Good score (2)	Covenant compliance is likely over the next 12 months. Good cushion and low probability of a covenant breach. However, cushion may not be large enough to absorb an unexpected and/or substantial drop in earnings or cash flow.
	Adequate score (3)	Company is expected to remain in compliance over the next 12 months, but the cushion is modest. Although not considered likely, the possibility of a violation exists.
	Weak score (4)	Company is or is likely to be in default of one or more covenants over the next 12 months.
Alternate Liquidity	Very good score (1)	There is a "back door" — there are alternatives for the company to raise cash within a 12-15 month horizon; e.g., company could sell a product line or assets without any pressure that would otherwise impair value. Assets are largely unencumbered.
	Good score (2)	There is a "back door" but it is more limited. There may not be assets that could be readily sold within a 12-15 month horizon without impairment to value. Assets are mostly encumbered.
	Adequate score (3)	Alternate liquidity is limited to the sale of assets at distressed value due to obvious liquidity pressures. Assets are largely or fully encumbered. Proceeds from asset sales would likely go to secured lenders leaving little new liquidity for the company. Company may be allowed to reinvest a portion of asset sale proceeds as opposed to the repayment of debt.
	Weak score (4)	Assets are fully encumbered and do not have realizable cash value independent of the company's primary operations. Proceeds from asset sales have to be applied to the repayment of debt. No alternatives available to raise cash.

Source: Moody's Investor Service. Rating Methodology: General Principles of Liquidity Risk Assessment, 2023.

Annex 4

Auga Group's full financial model.

Row number	Auga Group AB Financial Model in €'000 FYE December	FY2018	FY2019	FY2020	FY2021	FY2022
1	**Segment Analysis in €'000**	**FY2018**	**FY2019**	**FY2020**	**FY2021**	**FY2022**
2	Total revenues from mushroom sales, EUR'000	23,875	26,319	28,383	27,885	27,536
3	% of sales	*43.6%*	*37.0%*	*34.2%*	*38.9%*	*34.4%*
4	*Growth %*		*10.2%*	*7.8%*	*(1.8%)*	*(1.3%)*
5	Total revenues from sales of mushroom seedbed, EUR'000	2,581	2,388	1,618	475	357
6	% of sales	*4.7%*	*3.4%*	*1.9%*	*0.7%*	*0.4%*
7	*Growth %*		*(7.5%)*	*(32.2%)*	*(70.6%)*	*(24.8%)*
8	Total revenue of sold agricultural produce, EUR'000	17,475	27,574	35,253	23,558	27,578
9	% of sales	*31.9%*	*38.8%*	*42.4%*	*32.8%*	*34.4%*
10	*Growth %*		*57.8%*	*27.8%*	*(33.2%)*	*17.1%*
11	Total revenues of dairy segment, EUR'000	8,954	12,056	12,939	13,611	16,495
12	% of sales	*16.4%*	*16.9%*	*15.6%*	*19.0%*	*20.6%*
13	*Growth %*		*34.6%*	*7.3%*	*5.2%*	*21.2%*
14	Total revenue from fast moving consumer goods, EUR'000	1,864	2,798	4,880	6,191	8,122
15	% of sales	*3.4%*	*3.9%*	*5.9%*	*8.6%*	*10.1%*
16	*Growth %*		*50.1%*	*74.4%*	*26.9%*	*31.2%*
17	**Total revenue**	**54,749**	**71,135**	**83,073**	**71,721**	**80,088**
18						
19	**Gross Profit Analysis in €'000**	**FY2018**	**FY2019**	**FY2020**	**FY2021**	**FY2022**
20	Gross profit of mushroom growing segment, EUR'000	1,725	2,486	1,753	669	(1,405)
21	*Growth %*		*44.1%*	*(29.5%)*	*(61.9%)*	*(310.2%)*
22	Gross profit of crop growing segment per period, EUR'000 (a+b+c)	4,290	8,036	12,882	892	12,424
23	*Growth %*		*87.3%*	*60.3%*	*(93.1%)*	*1293.5%*
24	Gross profit of diary segment, EUR'000	(2,422)	(720)	389	857	2,506
25	*Growth %*		*(70.3%)*	*(154.1%)*	*120.2%*	*192.4%*
26	Gross profit from fast moving consumer goods, EUR'000	71	45	750	1,535	1,743
27	*Growth %*		*(36.6%)*	*1566.0%*	*104.8%*	*13.5%*
28	**Gross profit**	**3,664**	**9,847**	**15,774**	**3,952**	**15,268**
29	*Growth %*		*168.8%*	*60.2%*	*(74.9%)*	*286.3%*
30						
31	**Cost Analysis in €'000**	**FY2018**	**FY2019**	**FY2020**	**FY2021**	**FY2022**
32	MUSHROOM SEGMENT	24,731	26,221	28,248	27,691	29,298
33	*% of sales*	*93.5%*	*91.3%*	*94.2%*	*97.6%*	*105.0%*

34	FAST MOVING CONSUMER GOODS (FMCG) SEGMENT	1,793	2,753	4,130	4,656	6,379
35	*% of sales*	*96.2%*	*98.4%*	*84.6%*	*75.2%*	*78.5%*
36	CROP GROWING SEGMENT	9,736	24,819	30,063	19,512	19,945
37	*% of sales*	*55.7%*	*90.0%*	*85.3%*	*82.8%*	*72.3%*
38	DAIRY SEGMENT	9,563	10,577	10,032	9,982	11,899
39	*% of sales*	*106.8%*	*87.7%*	*77.5%*	*73.3%*	*72.1%*
40	**Cost of sales**	**45,823**	**64,370**	**72,474**	**61,841**	**67,521**
41	*% of sales*	*83.7%*	*90.5%*	*87.2%*	*86.2%*	*84.3%*
42						
43	**Income statement in €'000**	**FY2018**	**FY2019**	**FY2020**	**FY2021**	**FY2022**
44	**Revenue**	**54,749**	**71,135**	**83,073**	**71,721**	**80,088**
45	*Growth*		*29.9%*	*16.8%*	*(13.7%)*	*11.7%*
46	COGS	(45,823)	(64,370)	(72,474)	(61,841)	(67,521)
47	*% sales*	*(83.7%)*	*(90.5%)*	*(87.2%)*	*(86.2%)*	*(84.3%)*
48	Change in fair value of biological assets	(5,262)	3,082	5,175	(5,928)	2,701
49	*% sales*	*(9.6%)*	*4.3%*	*6.2%*	*(8.3%)*	*3.4%*
50	**Gross profit**	**3,664**	**9,847**	**15,774**	**3,952**	**15,268**
51	*Margin %*	*6.7%*	*13.8%*	*19.0%*	*5.5%*	*19.1%*
52	Selling expenses	0	0	0	0	(2,612)
53	*% sales*	*--%*	*--%*	*--%*	*--%*	*(3.3%)*
54	Administrative expenses	(10,354)	(9,582)	(10,227)	(14,361)	(10,153)
55	*% sales*	*(18.9%)*	*(13.5%)*	*(12.3%)*	*(20.0%)*	*(12.7%)*
56	Net impairment loss of financial assets	0	0	0	0	(202)
57	*% sales*	*--%*	*--%*	*--%*	*--%*	*(0.3%)*
58	Other income and other other gain/(loss), net	2,753	744	1,350	590	796
59	*% sales*	*5.0%*	*1.0%*	*1.6%*	*0.8%*	*1.0%*
60	**Operating profit**	**(3,937)**	**1,009**	**6,897**	**(9,819)**	**3,097**
61	*Margin %*	*(7.2%)*	*1.4%*	*8.3%*	*(13.7%)*	*3.9%*
62	Finance costs	(2,524)	(5,000)	(5,547)	(6,459)	(7,537)
63	**EBT**	**(6,461)**	**(3,991)**	**1,350**	**(16,278)**	**(4,440)**
64						
65	**EBITDA**	**3,779**	**13,653**	**19,814**	**4,013**	**17,486**
66	*Margin %*	*6.9%*	*19.2%*	*23.9%*	*5.6%*	*21.8%*
67	Depreciation	(7,504.0)	(12,778.0)	(13,274.0)	(14,293.0)	(14,723.0)
68	*% sales*	*(204.8%)*	*(129.8%)*	*(84.2%)*	*(361.6%)*	*(96.4%)*
69	**EBITA**	**(3,725)**	**875**	**6,540**	**(10,280)**	**2,763**
70	*Margin %*	*(6.8%)*	*1.2%*	*7.9%*	*(14.3%)*	*3.4%*
71	Amortisation	(565.0)	(12.0)	(11.0)	(10.0)	(16.0)
72	*% sales*	*(15.4%)*	*(0.1%)*	*(0.1%)*	*(0.3%)*	*(0.1%)*
73	**EBIT**	**(4,290)**	**863**	**6,529**	**(10,290)**	**2,747**
74	*Margin %*	*(7.8%)*	*1.2%*	*7.9%*	*(14.3%)*	*3.4%*
75	**Operating profit**	**(4,167)**	**1,009**	**6,897**	**(9,819)**	**3,099**
76	*Margin %*	*(7.6%)*	*1.4%*	*8.3%*	*(13.7%)*	*3.9%*
77	Interest expense (debt)	(2,172.0)	(4,854.0)	(5,179.0)	(5,988.0)	(7,185.0)
78	Interest expense (other)	(123.0)	(146.0)	(368.0)	(471.0)	(352.0)
79	**EBT**	**(6,462)**	**(3,991)**	**1,350**	**(16,278)**	**(4,438)**
80	Current tax	0.0	0.0	0.0	0.0	0.0

81	*Tax rate %*	*--%*	*--%*	*--%*	*--%*	*--%*
82	Deferred tax	482.0	773.0	442.0	843.0	(913.0)
83	**Net Income**	**(5,980)**	**(3,218)**	**1,792**	**(15,435)**	**(5,351)**
84						
85						
86	**Cash flow statement in €'000**	**FY2018**	**FY2019**	**FY2020**	**FY2021**	**FY2022**
87	**Reported FFO**	**6,346**	**9,653**	**10,813**	**11,979**	**9,346**
88	Change in working capital	(17,832.0)	(4,238.0)	2,560.0	(3,839.0)	(8,655.0)
89	Other LT assets and liabilities					
90	**Reported CFO**	**(11,486)**	**5,415**	**13,373**	**8,140**	**691**
91	Capex	(4,037.0)	(3,241.0)	(6,645.0)	(7,033.0)	(7,961.0)
92	Dividends paid	0.0	0.0	0.0	0.0	0.0
93	**Reported FCF**	**(15,523)**	**2,174**	**6,728**	**1,107**	**(7,270)**
94	(Acquisition) / Disposals	(998.0)	383.0	(1,204.0)	192.0	730.0
95	Debt repayment	(21,450)	(18,319)	(35,998)	(21,171)	(14,742)
96	Lease payments	(5,135.0)	(7,953.0)	(8,022.0)	(9,226.0)	(7,269.0)
97	Debt drawdown	28,199.0	24,753.0	36,681.0	18,789.0	16,096.0
98	Assets-related grants received from the NPA	260.0		722.0	380.0	1,831.0
99	Supplier financing arrangement				9,260.0	11,515.0
100	Issue of shares	17,569.0				
101	Other	(1,261.0)	415.0	(100.0)	574.0	
102	**Net cash movement**	**1,661**	**1,453**	**(1,193)**	**(95)**	**891**
103	Starting cash	620	2,281	3,734	2,541	2,446
104	**Closing cash**	**2,281**	**3,734**	**2,541**	**2,446**	**3,337**
105						
106	**Debt Structure in €'000**	**FY2018**	**FY2019**	**FY2020**	**FY2021**	**FY2022**
107	Credit lines	21,270.0	19,300.0	9,400.0	5,583.0	16,450.0
108	Leases (Current)	3,618.0	7,054.0	7,556.0	7,878.0	7,479.0
109	Leases (Non-current)	7,889.0	36,150.0	33,682.0	37,641.0	39,750.0
110	Borrowings from credit institutions (Current)	9,256.0	10,819.0	3,409.0	5,767.0	10,188.0
111	Borrowings from credit institutions (Non-current)	6,995.0	(2,414.0)	20,670.0	26,748.0	17,498.0
112	Bond (Green) 20 EURm 6% rate due December 2024	0.0	18,523.0	18,818.0	19,114.0	19,409.0
113	Bond (KŪB PVF) 6EURm EUR due March 2026	0.0	0.0	0.0	0.0	6,000.0
114	**Total Debt**	**49,028**	**89,432**	**93,535**	**102,731**	**116,774**
115						
116	Cash	2,281.0	3,734.0	2,541.0	2,446.0	3,337.0
117	**Total Cash**	**2,281**	**3,734**	**2,541**	**2,446**	**3,337**
118	**Net Debt**	**46,747**	**85,698**	**90,994**	**100,285**	**113,437**
119						
120	**Adjustments**					
121						
122	**Debt reconciliation in €'000**	**FY2018**	**FY2019**	**FY2020**	**FY2021**	**FY2022**
123	**Total Debt**	**49,028**	**89,432**	**93,535**	**102,731**	**116,774**
124	Supplier financing arrangements	0.0	0.0	0.0	7,005.0	6,978.0
125	**Adjusted Debt**	**49,028**	**89,432**	**93,535**	**109,736**	**123,752**

126						
127	Cash and cash equivalents on BS (-)	(2,281)	(3,734)	(2,541)	(2,446)	(3,337)
128	Restricted cash (+)					
129	**Adjusted Net Debt**	**46,747**	**85,698**	**90,994**	**107,290**	**120,415**
130						
131	**Interest expenses**	**FY2018**	**FY2019**	**FY2020**	**FY2021**	**FY2022**
132	Reported Interest Expense	(2,172)	(4,854)	(5,179)	(5,988)	(7,185)
133	Credit lines, reverse factoring arrangement	(38.0)	(103.0)	(313.0)	(405.0)	(348.0)
134	**Adjusted Interest Expense**	**(2,210)**	**(4,957)**	**(5,492)**	**(6,393)**	**(7,533)**
135						
136	**EBITDA reconciliation in €'000**	**FY2018**	**FY2019**	**FY2020**	**FY2021**	**FY2022**
137	Pretax income	(6,462)	(3,991)	1,350	(16,278)	(4,438)
138	Interest expense (+)	2,172	4,854	5,179	5,988	7,185
139	Depreciation (+)	7,504	12,778	13,274	14,293	14,723
140	Amortisation (+)	565	12	11	10	16
141	**Reported EBITDA**	**3,779**	**13,653**	**19,814**	**4,013**	**17,486**
142	Interest of securitisation/factoring	38	103	313	405	348
143	**Adjusted EBITDA**	**3,817**	**13,756**	**20,127**	**4,418**	**17,834**
144						
145	Depreciation	(7,504)	(12,778)	(13,274)	(14,293)	(14,723)
146	**Adjusted EBITA**	**(3,687)**	**978**	**6,853**	**(9,875)**	**3,111**
147	Amortisation	(565)	(12)	(11)	(10)	(16)
148	**Adjusted EBIT**	**(4,252)**	**966**	**6,842**	**(9,885)**	**3,095**
149						
150	**FFO, CFO & RCF reconciliation in €'000**	**FY2018**	**FY2019**	**FY2020**	**FY2021**	**FY2022**
151	**Reported FFO**	**6,346**	**9,653**	**10,813**	**11,979**	**9,346**
152	**Adjusted FFO**	**6,346**	**9,653**	**10,813**	**11,979**	**9,346**
153	Change in working capital	(17,832)	(4,238)	2,560	(3,839)	(8,655)
154	**Adjusted CFO**	**(11,486)**	**5,415**	**13,373**	**8,140**	**691**
155						
156	Dividend paid	0	0	0	0	0
157	**Adjusted RCF**	**6,346**	**9,653**	**10,813**	**11,979**	**9,346**
158						
159	**Capex reconciliationin €'000**	**FY2018**	**FY2019**	**FY2020**	**FY2021**	**FY2022**
160	**Reported Capex**	**(4,037)**	**(3,241)**	**(6,645)**	**(7,033)**	**(7,961)**
161	Lease repayments	(5,135)	(7,953)	(8,022)	(9,226)	(7,269)
162	**Adjusted Capex**	**(9,172)**	**(11,194)**	**(14,667)**	**(16,259)**	**(15,230)**
163						
164	**FCF reconciliation in €'000**	**FY2018**	**FY2019**	**FY2020**	**FY2021**	**FY2022**
165	**Reported FCF**	**(15,523)**	**2,174**	**6,728**	**1,107**	**(7,270)**
166	Lease repayments	(5,135.0)	(7,953.0)	(8,022.0)	(9,226.0)	(7,269.0)
167	**Adjusted FCF**	**(20,658)**	**(5,779)**	**(1,294)**	**(8,119)**	**(14,539)**
168						
169	**Book Capitalization in €'000**	**FY2018**	**FY2019**	**FY2020**	**FY2021**	**FY2022**
170	+ Total Debt	49,028.0	89,432.0	93,535.0	102,731.0	116,774.0
171	+ Total Equity	91,356.0	89,706.0	92,450.0	78,622.0	77,105.0

172	+ Deferred Income Taxes - Non-Current	883.0	1,509.0	1,483.0	1,553.0	1,863.0
173	+ Minority Interest	359.0	369.0	366.0	358.0	428.0
174	**Reported Book Capitalization**	**141,626**	**181,016**	**187,834**	**183,264**	**196,170**
175	Debt adjustments	0.0	0.0	0.0	7,005.0	6,978.0
176	**Adjusted Book Capitalization**	**141,626**	**181,016**	**187,834**	**190,269**	**203,148**
177						
178						
179	**Summary**					
180						
181						
182	**Adjusted Data in €'000**	**FY2018**	**FY2019**	**FY2020**	**FY2021**	**FY2022**
183	**Revenue (Gross)**	**54,749**	**71,135**	**83,073**	**71,721**	**80,088**
184	*% change in sales*	12.2%	29.9%	16.8%	(13.7%)	11.7%
185	**EBITDA**	**3,817**	**13,756**	**20,127**	**4,418**	**17,834**
186	*EBITDA margin %*	7.0%	19.3%	24.2%	6.2%	22.3%
187	**EBITA**	**(3,687)**	**978**	**6,853**	**(9,875)**	**3,111**
188	*EBITA margin %*	(6.7%)	1.4%	8.2%	(13.8%)	3.9%
189	**EBIT**	**(4,252)**	**966**	**6,842**	**(9,885)**	**3,095**
190	*EBIT margin %*	(7.8%)	1.4%	8.2%	(13.8%)	3.9%
191	**Interest expense**	**(2,210)**	**(4,957)**	**(5,492)**	**(6,393)**	**(7,533)**
192						
193	**FFO**	**6,346**	**9,653**	**10,813**	**11,979**	**9,346**
194	Dividends	0	0	0	0	0
195	**RCF**	**6,346**	**9,653**	**10,813**	**11,979**	**9,346**
196	Working Capital (WC)	(17,832)	(4,238)	2,560	(3,839)	(8,655)
197	**CFO**	**(11,486)**	**5,415**	**13,373**	**8,140**	**691**
198	Capex	(9,172)	(11,194)	(14,667)	(16,259)	(15,230)
199	**FCF**	**(20,658)**	**(5,779)**	**(1,294)**	**(8,119)**	**(14,539)**
200						
201	**Total Debt**	**49,028**	**89,432**	**93,535**	**109,736**	**123,752**
202	Cash and Cash Equivalents	(2,281)	(3,734)	(2,541)	(2,446)	(3,337)
203	**Net Debt**	**46,747**	**85,698**	**90,994**	**107,290**	**120,415**
204						
205	**Book Capitalization**	141,626	181,016	187,834	190,269	203,148
206	EUR/USD exchange rate	1.181	1.120	1.142	1.183	1.054
207						
208	Debt / EBITDA	12.8x	6.5x	4.6x	24.8x	6.9x
209	Net Debt / EBITDA	12.2x	6.2x	4.5x	24.3x	6.8x
210	EBITDA/Interest expense	1.7x	2.8x	3.7x	0.7x	2.4x
211	EBITA/Interest expense	-1.7x	0.2x	1.2x	-1.5x	0.4x
212	EBIT/Interest expense	-1.9x	0.2x	1.2x	-1.5x	0.4x
213	FCF/Debt	(42.1%)	(6.5%)	(1.4%)	(7.4%)	(11.7%)
214	RCF/Debt	12.9%	10.8%	11.6%	10.9%	7.6%
215	CFO/Debt	(23.4%)	6.1%	14.3%	7.4%	0.6%
216	RCF/Net Debt	13.6%	11.3%	11.9%	11.2%	7.8%
217	Debt/ Book Capitalization	34.6%	49.4%	49.8%	57.7%	60.9%

Source: compiled by the author, based on Auga group, AB, (2019a); (2020a); (2021a); (2022a); (2023a).

Annex 5

Descriptions of Auga group's industry peers' profiles

Placin S.á.r.l.	Planasa is an international operator in the berries market whose main activities are the breeding and nursery of berries, mainly strawberry and raspberry, with a growing contribution of blueberry and blackberry. Main revenues sources are royalties from its own varieties in the market, and the sale of plants to berry growers. Planasa's activities also include selling fresh produce to end customers. Planasa is majority owned (65%) by funds advised by the private equity sponsor Cinven.
Bering III S.a r.l.	Bering III S.a r.l. (Iberconsa) is a vertically integrated company whose main activity is to catch, process and distribute frozen hake, shrimp and squid. The company catches fish in Argentina, Namibia and South Africa; freezes and processes its catch directly on its vessels or at facilities in Argentina, Spain and Namibia; and distributes its products mainly across Europe, particularly in Spain, Italy and Portugal, and across Asia, mainly in China and Japan. In 2022, the company generated revenue of €427 million (2021: €407 million) and management-adjusted EBITDA of €68 million (2021: €72 million).
Camposol S.A.	Camposol S.A. is the main operating subsidiary of CSOL Holding Ltd. and Subsidiaries and a vertically integrated producer of branded fresh fruit; it also has a small portfolio of frozen fruit, accounting for 8% of sales. Camposol's main products are avocados and blueberries, which are sold to the largest retailers and wholesalers in the world. Camposol is based in Lima, Peru, and reported revenue of $492 million for the 12 months that ended June 2023.
Ingenio Magdalena S.A.	Ingenio Magdalena S.A. (IMSA), the largest sugar producer and exporter in Guatemala, has a 24% market share in the country. Its main activity is the production and sale of sugar in local and international markets, exporting mainly white refined sugar, as well as the sale of electricity, alcohol and other products derived from its production process. IMSA is fully owned by the Leal family, with five ultimate beneficial owners. In 2022, IMSA posted $596 million in net sales and $162 million in Moody's-adjusted EBITDA, including our standard adjustments, with a 27.2% EBITDA margin. IMSA does not add back the non-cash cost recognition of consumed biological assets to EBITDA; with the add back, IMSA's EBITDA margin would be 47.4%.

Usina Coruripe Acucar e Alcool	Headquartered in Coruripe, State of Alagoas, Usina Coruripe Acucar e Alcool (Coruripe) is a sugar and ethanol producer, and an electricity cogenerator. It has five crushing units, one in the State of Alagoas and the other four in the State of Minas Gerais (B2 ratings under review), with more than 16 million tons of crushing capacity. During the 12 months that ended June 2023, the company generated revenue of BRL3,767 million and Moody's-adjusted EBITDA of BRL1,490 million.
Dangote Sugar Refinery Plc	Headquartered in Lagos, Nigeria, Dangote Sugar Refinery Plc is the market leader in the Nigerian sugar industry, driven by its combined installed refining capacity of 1.44 million tons per annum and facilities strategically located across the country. DSR started operating in March 2000 as the sugar division of Dangote Industries Limited. DSR currently has operations in Apapa and Numan and has three subsidiaries, Nasarawa Sugar Company Limited, Dangote Taraba Sugar Limited and Dangote Adamawa Sugar Limited. For the last 12 months to 30 June 2023, DSR reported NGN421 billion revenue and Moody's adjusted EBITDA of NGN98 billion.

Source: compiled by the author, latest credit opinions by Moody's investors service, based on Balletta et al., 2023a, Balletta et al., 2023b, Morales and Schmidt, 2023, Rodrigues et al., 2023, Schmidt and Rodrigues, 2023, and Barrutia et al., 2023.