



**Kaunas University of Technology**  
School of Economics and Business

# **Business Valuation in the Context of the COVID-19 Pandemic**

Master's Final Degree Project

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Supervisor

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**Kaunas, 2022**



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Accounting and Auditing (6211LX037)

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**Kaunas, 2022**



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## **Business Valuation in the Context of the COVID-19 Pandemic**

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### **Summary**

Master Thesis studies the subject „Business Valuation in the Context of the COVID-19 Pandemic“. The object of the Thesis is to reveal what challenges the COVID-19 pandemic posed to the business valuation process. The goal of the Thesis is to analyze business valuation methods and evaluate their application in a COVID-19 pandemic situation.

The first section of Master’s Thesis analyses the key challenges and issues, which faces the entire business valuation process in the context of the COVID-19 pandemic. The emergence of uncertainty risks is one of the key challenges that valuers must minimize in their valuations in order to properly calculate value. Rapidly changing environment forced by uncertainty creates additional challenges for valuation process. Firstly assumptions today may no longer be actual tomorrow, secondly financial data reliability decreases also valuation methods became more complex and requires additional adjustments. Taking all of these factors into accounts, valuers face challenges, which are not relevant under normal economic conditions.

The second section of Master’s Thesis analyses scientific literature, which states that there are three main methods of business valuation: income, market, and asset. In general, there is no single method in the business valuation methodology that is suitable for use in all situations. Therefore, the choice of business valuation method depends on the characteristics of the company being valued and the current economic situation. In the context of the COVID-19 pandemic, valuers have to consider many different options due to the current uncertainty, so even the applicability of standard valuation methods can vary significantly. Each business valuation method has its own specific aspects of use, so due to the risks posed by a pandemic, valuers need to carefully assess the variables and reliably substantiate their assumptions.

The third section is dedicated to introduce and describe the Master’s Thesis research methodology. The research methodology is based on a mixed method strategy, which includes qualitative and quantitative research. Qualitative research is conducted through a semi-structured interview approach of business valuers. Quantitative research analyzes „Novaturas“ case study, which aims to test the application of the income method in the context of a pandemic and calculate the value of the company. The mixed method strategy was selected in order to further disclose the impact of the pandemic on the business valuation process, since this crisis not only affected valuation methodology but also valuers working routine and other related aspects.

The fourth section of Master’s Thesis studies begins with the presentation of qualitative research results. The results of the qualitative research provide the valuers answers to the questions asked during the semi-structured interviews. The questions to valuers can be grouped into two main sections, the first one analyzes how the pandemic has affected business valuation methods according

respondents experiences and what changes had to be made in order to reliably determine the value of the company. The second part focused on the general experience of valuers in the context of a pandemic with goal to obtain more information and to find new angles to analyze this situation. Most of the valuers responses substantiated the fact that the pandemic affected the business valuation process, but this was not a significant challenge that would pose difficult problems to resolve. The valuation methodology has remained unchanged, but the indicators used to measure the risk of uncertainty must be carefully assessed. In general, valuers have managed to adapt to other difficulties caused by the pandemic, which has only partially affected the provision of assessment services. This section continuous with further analyzes of „Novaturas“ company case study. The case study determined the value of the „Novaturas“ company in two different periods, the first focusing on the current times in 2022 and the second on the peak of the COVID-19 pandemic in 2020. The change in the value of the company during these two different periods is obvious and this reveals the key aspects that need to be taken into account when applying the income approach in the context of a pandemic. The case study confirms the valuers views in the qualitative study that the business valuation methodology has remained unchanged, but additional attention needs to be paid to the variables and assumptions, a correct assessment of these matters makes it possible to determine the value of the company properly.

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## Santrauka

Magistro darbe nagrinėjama tema „Verslo vertinimas COVID-19 pandemijos kontekste“. Baigiamojo darbo tikslas – atskleisti su kokiais iššūkius verslo vertinimo procesas susiduria COVID-19 pandemijos kontekste. Baigiamojo darbo tikslas – išanalizuoti verslo vertinimo metodus ir įvertinti jų pritaikymą COVID-19 pandemijos situacijoje.

Pirmoje magistro darbo dalyje analizuojami pagrindiniai iššūkiai ir problemos, su kuriomis susiduria visas verslo vertinimo procesas COVID-19 pandemijos kontekste. Neapibrėžtumo rizikos atsiradimas yra vienas iš pagrindinių iššūkių, kurį vertintojai turi sumažinti savo vertinimuose, kad galėtų tinkamai apskaičiuoti vertę. Sparčiai besikeičianti aplinka, kuri nulemta vyraujančio neapibrėžtumo, sukuria papildomų iššūkių vertinimo procesui. Visų pirma, šiandieninės prielaidos rytoj gali būti neaktualios, antra, mažėja finansinių duomenų patikimumas, o vertinimo metodai tampa sudėtingesni ir reikalauja papildomų korekcijų. Atsižvelgdami į visus šiuos veiksnius, vertintojai susiduria su iššūkiais, kurie normaliomis ekonominėmis sąlygomis nėra aktualūs.

Antroje magistro darbo dalyje analizuojama mokslinė literatūra, kurioje teigiama, kad yra trys pagrindiniai verslo vertinimo metodai: pajamų, palyginamasis ir turto. Bendrai verslo vertinimo metodikoje nėra vieno metodo, kuris būtų tinkamas naudoti visose situacijose. Todėl verslo vertinimo metodo pasirinkimas priklauso nuo vertinamos įmonės savybių ir esamos ekonominės situacijos. COVID-19 pandemijos kontekste dėl dabartinio neapibrėžtumo vertintojams tenka svarstyti daugybę skirtingų variantų, todėl net standartinių vertinimo metodų pritaikymas gali reikšmingai skirtis. Kiekvienas verslo vertinimo metodas turi savo specifinius naudojimo aspektus, todėl dėl pandemijos keliamos rizikos vertintojai turi atidžiai įvertinti kintamuosius ir patikimai pagrįsti savo prielaidas.

Trečioji dalis skirta apibūdinti ir supažindinti su magistro baigiamojo darbo tyrimo metodika. Tyrimo metodika paremta mišraus metodo strategija, kuri apima kokybinį ir kiekybinį tyrimus. Kokybinis tyrimas atliekamas taikant pusiau struktūrizuoto verslo vertintojų interviu metodą. Kiekybiniame tyrime analizuojama „Novaturas“ atvejo analizė, kurios tikslas – išbandyti pajamų metodo taikymą pandemijos kontekste ir apskaičiuoti įmonės vertę. Mišraus metodo strategija pasirinkta siekiant dar labiau atskleisti pandemijos įtaką verslo vertinimo procesui, nes ši krizė palietė ne tik vertinimo metodiką, bet ir vertintojų darbo kasdienybę bei kitus su tuo susijusius aspektus.

Ketvirtoji magistro baigiamojo darbo studijų dalis prasideda kokybinių tyrimų rezultatų pristatymu. Kokybinio tyrimo rezultatai atskleidžia vertintojų atsakymus į pusiau struktūrizuoto interviu metu užduotus klausimus. Klausimus vertintojams galima suskirstyti į dvi pagrindines dalis.

Pirmojoje analizuojama, kaip pandemija paveikė verslo vertinimo metodus pagal vertintojų patirtį ir kokius pakeitimus reikėjo atlikti, kad būtų galima patikimai nustatyti įmonės vertę. Antrojoje dalyje dėmesys buvo sutelktas į bendrą vertintojų patirtį pandemijos kontekste, siekiant gauti daugiau informacijos ir rasti naujų šios situacijos analizės kampų. Dauguma vertintojų atsakymų pagrindė faktą, kad pandemija paveikė verslo vertinimo procesą, tačiau tai nebuvo didelis iššūkis, dėl kurio kiltų sudėtingų vertinimo problemų. Vertinimo metodika išliko nepakitusi, tačiau neapibrėžtumo rizikai matuoti naudojami rodikliai turi būti kruopščiai įvertinti. Bendrai vertintojams pavyko prisitaikyti prie pandemijos sukeltų sunkumų ir tai tik iš dalies paveikė vertinimo paslaugų suteikimą. Šiame skyriuje toliau nagrinėjama „Novaturas“ įmonės atvejo analizė. Atvejo analizės metu buvo nustatyta bendrovės „Novaturas“ vertė dviem skirtingais laikotarpiais: pirmasis orientuotas į dabartinius laikus 2022 m., o antrasis – į COVID-19 pandemijos piką 2020 m. Įmonės vertės pokytis per šiuos du skirtingus laikotarpius yra akivaizdus ir tai atskleidžia pagrindinius aspektus, į kuriuos reikia atsižvelgti taikant pajamų metodą pandemijos kontekste. Atvejo analizė patvirtina vertintojų nuomones kokybiniame tyrime, kad verslo vertinimo metodika išliko nepakitusi, tačiau papildomai reikia atkreipti dėmesį į kintamuosius ir prielaidas, teisingas šių dalykų įvertinimas leidžia tinkamai nustatyti įmonės vertę

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## INTRODUCTION

**Relevance of the topic:** Business valuation topic in COVID-19 pandemic context is very actual, because even in those unpredictable times there were many different kinds of business transactions. For companies, which managed to overcome this pandemic it created possibilities to become even stronger market players. This expansion can be executed through acquisitions of other related businesses, but then the question appears how much should be paid for those companies? There are multiple business valuation methods, that are used to calculate a fair price, but each of them differs from methodology and possible results point of view. Most of the previous researches (Fernandez, 2002), (Damodaran, 2008) were focused on how to decide which method to choose for correct business evaluation value, but uncertainty brought by COVID-19 pandemic creates new challenges for traditional methodologies and even creates another question if those traditional valuation ways are applicable these days? During the pandemic crisis, both the economic and other key areas changed very rapidly as the flow of news forced different decisions to be made by both businesses and individual people. The business valuation process also must reflect these economic changes in order to bring accurate values, but that requires additional knowledge and understanding of how one or another aspect changes final results (Baker Mckenzie, 2020), (EY, 2020).

**Problem:** This research will try to find best possible solutions to overcome valuation barriers influenced by the COVID-19 pandemic also to provide better business valuation opportunities. It should be noted that one common methodology for selecting assessment methods in practice, not found. There is no obvious and persuasive response, through analyzes of theoretical articles or practical valuation cases, as to what procedures, models, and techniques must be used in determining the way of calculating the business value during uncertain economic periods and how the results computed by the chosen methods should be correctly processed. Taking into account this fact three main business valuation methods will be analyzed in order to understand their application during the COVID-19 pandemic context and to analyze required adjustments for correct valuations.

**Research aim:** To analyze business valuation methods and evaluate their application in a COVID-19 pandemic situation.

### **Research objectives:**

1. To reveal what challenges the COVID-19 pandemic posed to the business valuation process.
2. To present the concepts of business value and valuation process as well as to analyze the most used business evaluation methods.
3. To develop research methodology for investigating the impact of the COVID-19 pandemic on business valuation.
4. To carry out mixed method research based on valuator's recommendations, which would be implemented in the case study.

**Research methods:** In the theoretical part of the work, the literature related to business valuation during the COVID-19 pandemic will be analyzed and systematized. Three main business valuation methods: asset, income and market will be analyzed separately to understand standard valuations approaches also differences between each of them. Practical research part will be based on mixed method strategy. This type of strategy provides broader understanding, which is very important in activities effected by COVID-19 pandemic, because otherwise research results would be too narrow, focusing on some particular aspect, but not on the whole problem. Qualitative research will include semi-structured interviews for professionals in the field of business valuation. The advantage of this method is that valuers will be able to share their experiences and at the same time will provide first-hand information, which is very relevant as the impact of the pandemic on business valuation is not yet widely described in scientific literature. Quantitative research part will focus on „Novaturas“ business valuation case study. The company „Novaturas“ was chosen because it was severely affected by the crisis caused by the COVID-19 pandemic, so the business valuation of this company will help to analyze how to properly value the company using the chosen business valuation method and provide relevant recommendations or insights.

**Scope and structure of the research:** The master’s research consists of 86 pages and includes 27 tables also 12 figures. The structure of the work consists of 4 main parts. The first part reveals the analysis of the problem of business valuation in the context of the COVID-19 pandemic. The second part analyzes the theoretical concept of business valuation, valuation methods and the impact of the COVID-19 pandemic on the whole business valuation process. The third part examines business valuation in the context of a pandemic using qualitative and quantitative researches. The last fourth part is a summary of the results of the whole master’s research.

## 1. PROBLEM ANALYSIS OF BUSINESS VALUATION IN THE CONTEXT OF THE COVID-19 PANDEMIC

Business valuation (company valuation) is the determination of the market value of a company (or other organizational form of business) by determining at what price such or similar business should be bought or sold under market conditions. Even though this description of business valuation process is standard, but it indicates one the major reasons why problem appears in this research topic. It relates to market conditions, which are certain characteristics of the market and the situation at the given point of time. From COVID-19 pandemic context point of view it becomes clear that assessing market conditions is a difficult task due to the uncertainty of the future. COVID-19 pandemic created many new challenges in health, finance, economic and social sectors. Most companies have lost their main sources of income or were able to operate only because of the state support they received. Workers were forced to go into downtime or were laid off, resulting in a decline in purchasing power, which in general had a very strong impact on the global economy. Taking into account business valuation process dependency on market conditions, which were unpredictable, questions arises how to appropriately evaluate businesses during COVID-19 pandemic crisis? There are several standard business valuation techniques, which are used in order to evaluate business value, but then second problem appears, how to adjust commonly used methods to be applicable in the field of economic uncertainty? These concerns are particularly vexing to many valuation professionals, because determined value fluctuates rapidly, depended on news, government issued restrictions or any other relevant facts.

In order to understand how business valuation was effected by the COVID-19 pandemic crisis, it is important to understand general economic situation, which has the main impact on business profitability and future perspectives. Economic disruptions have resulted from the spread of the COVID-19 virus, which was followed by lockdown measures and changes in economic behavior. A variety of factors have had a significant influence on businesses in general, but particularly in industries such as tourism, restaurants, and personal services. A variety of methods, including restraint measures, a forced drop in consumer demand, supply chain interruptions, as well as productivity and capacity decreases. The main economic indicators based on „Eurostat“ data it shows clearly that during COVID-19 pandemic peak eurozone GDP growth rate significantly decreased by 12%. Countries support measures for business included tax deferrals, provided state credit guarantees, subsidize fixed and wage costs, due to this in majority of EU countries significantly increased expenditure specially comparing with numbers before pandemic. Economic downturn consequences, can be reliably analyzed, through business dynamics in 2020 — entrances, exists, and bankruptcies — appear to be very different from business dynamics in the years of crisis. Demand is lowered during an economic downturn, which decreases predicted profitability and may also reduce banks' willingness to lend money. As a result, during a recession, admittance tends to be fewer, and the number of enterprises that quit or go bankrupt is likely to be larger. The research conducted by (Alexander Bartik, Marianne Bertrand, 2020) shows that from sample of 103 American firms, 43 percent of enterprises were temporarily shuttered, and 40 percent of jobs were lost. This is the most significant blow to America's small businesses since the Great Depression of the 1930s. Study findings indicate that many of these companies had little cash on hand at the start of the epidemic, implying that they will have to drastically slash costs, take on extra debt, or declare bankruptcy. At the same time in Europe, al'ost one out of every five EU enterprises lost jobs as a result of the outbreak. Almost 40% of EU businesses had to reduce their employees' working hours, with nearly

a quarter (23%) of those impacted being the majority of employees. In response to COVID-19, more than one-third of EU businesses altered their main business activity by 2020. Many businesses adjusted their manufacturing lines to make much-needed protective gear, respirators, sanitizing tools, and other equipment. Even though, these economic factors should not be directly attributed to business valuation process, but it helps to understand context in which business valuator operates. As mentioned, business valuation is all about what is known about company at valuation date, it helps to draw forecasts, evaluate current situation, determine significant threats or possibilities, which in the end of the day, creates value of the particular company. COVID-19 pandemic brought to valuator new considerations about companies forecasts, that is crucial specially when applying discounted cash flows method, because different interpretations of possible company results can create misleading values. That is why understanding not only of company business and segment where it operates is important but knowledge of broader fields is mandatory, as facts presented indicates, this pandemic effected various of sectors differently and future perspectives must be forecasted accordingly.

Although the COVID-19 pandemic only started in 2020, there is already a number of scientific articles that examine the impact of this phenomenon on the business valuation methodology side. The vast majority of scientific articles (Yogel, 2020), (Martin, 2020), (McKenzie, 2020) unanimously agreed that the pandemic had an impact on business valuation and created new challenges that must be taken into account in order to draw the right conclusions. One of the examples, which clearly states vulnerability of business valuation to economic uncertainty is that „fair value is based on what is known and knowable at the measurement date. The assumptions taken into consideration today may no longer be applicable tomorrow, which means that the procedures and rationale for any valuations you perform should be documented in full “(KPMG, 2020). Business valuation in the context of COVID-19 pandemic and uncertainty are very closely related topics, previous researches analyzed different aspect of this relationship. One of the studies was conducted by (French and Gabrielli, 2004), which states „ The outcome of a valuation is only certain if we can accurately predict the future. Given that is not possible, there will always be an element of risk that the “actual” value differs from the predicted estimate “. During the COVID-19 pandemic times, even experienced valuation professionals face challenges how to develop credible financial forecasts, taking into existing economic confusion.

Business valuation methods are standard and widely used in different segments, but their understanding alone cannot fully answer the question of what impact the context of the COVID-19 pandemic had on this scientific field. Recent research made by (Donald Kaiser, 2021) suggests that not all three methods can be appropriate used in this pandemic situation „ Since COVID-19 caused an economic disruption, a valuator may consider using the discounted cash flow (DCF) method which is an income method. DCF studies the future performance of the business each year until conditions are no longer affected by COVID-19“. This is not to suggest that other valuation approaches are not useful rather, there are certain additional factors to keep in mind when using them. For instance, when applying the market approach based on pre-COVID-19 transactions, the valuator will need to consider what adjustments, if any, are required to produce useful financial metrics to apply to the subject company in the middle of COVID-19. It is possible that the evaluators will not be able to collect a set of transactions from the previous three years, calculate the average and apply it to the subject company. The use of the market method may require further analysis and adjustments before pre-COVID-19 transactions are used in post-COVID-19 assessments. Other author (Harold

G.Martin,2020) emphasizes the importance of taking into account certain factors when assessing businesses in the context of a pandemic, which have main impact on the results of the evaluation „one of the key questions that must be answered when valuing a business is whether the effect of COVID-19 should be considered and/or disclosed in the valuation report. The answer to this question depends on the effective valuation date, what was known or knowable as of the valuation date, and the report issue date “. All standard business valuation methods in the context of COVID-19 pandemic should be adjusted in order to provide correct assessment also must take into account other outside factors, which influences final results.

In general, business valuation process is strongly effected by COVID – 19 pandemic crisis and that can be shown through specific adjustments which are currently required in order to correctly apply specific business valuation methodologies. According (Ross Yogel, 2020). During a pandemic, company valuation becomes more sophisticated from a methodological aspect. Financial performance may be unpredictable, and it is up to the expert to determine when operations will resume normalcy. According to professional norms, a site visit/interview is a key stage in completing a fundamental investigation. During COVID-19, the site visit and interview have become even more important to acquire a better knowledge of qualitative elements that affect the company and to check the value of quantitative data. As a result of COVID-19, organizations now have varying rules, thus the best method to organize a site visit for the valuation specialist could be to book a virtual facetime or zoom at the owners' location. Taking into account instability brought by pandemic crisis, these specific conditions are in favor for discounted cash flows method adoption for valuation purposes. A discounted cash flow analysis entails forecasting financial results until normality is restored, then valuing the outcomes. Therefore the first method would lead to a business valuation expert determining several values for the company. The scenarios created might be optimistic, pessimistic, or a mix of the two. Negotiating the business value might be as simple as taking the average of the three possibilities or utilizing the base scenario. Analyses stated in (The Bureau of National Affairs, 2020) supports necessity of particular adjustments required for business valuation value determination. Those valuation dates after the COVID-19 epidemic, on the other hand, must incorporate cash flow predictions that adequately account for the virus's current and future effect. Although there is still uncertainty about when life will return to normal, most firms should avoid using cash flow predictions that overlook a long-term recovery. As a result, a long-term growth rate based on the long-term performance of the economy in which the firm or legal entity works should be considered. Due diligence is essential to ensure that cash flow predictions represent not only current circumstances but also reasonable long-term aspirations. Another crucial aspects that must be taken into accounts is correct interpretation of the required rate of return (i.e., discount rate) applicable to most business valuations is the weighted average cost of capital (“WACC”). The WACC represents the weighted after-tax costs (or required rates of returns) for debt and equity. The WACC is often estimated using the capital asset pricing model, which takes into account a variety of market inputs such as the risk-free rate, equity risk premium, guideline business betas, and loan cost. In steady market conditions, inputs that are current at the time of valuation serve as appropriate indications for a longer-term perspective. Given the current market instability, market inputs may provide significantly changing values over time. To avoid this, it is recommended to consider several adjustments to support discounted rate that leads to a more reasonable value conclusions, it includes to capture volatility in debt rates, reduce impact of of short term equity volatility or achieve balance measure of country risk. Furthermore, (Frank Schneider, Allie Schwartz, Diego Vega, 2021), the present environment's uncertainty not only affects the DCF approach, but it can also influence relative



value. When doing previous transaction analysis in the present context, for example, caution must be taken. Multiples from prior transactions may not be useful for valuation in the current context if they reflect economic conditions untouched by COVID-19. Similarly, similar business analysis may need more investigation to guarantee that the collection of comparable enterprises was exposed to the COVID-19 environment in a comparable manner.

One of the key parts of business valuation is the financial cash-flow forecast. Forecasting during the COVID-19 pandemic period is very important not only for business valuation purposes, but also to control the company's financial situation and avoid risks related to liquidity problems. Financial forecasting during a pandemic is a complex process because the existing uncertainty directly affects the assumptions that assessors use to determine future prospects. For this reason, the main task that a valuer has to perform is to ensure the reliability of financial forecasts. This can be achieved through application of discount rate when forecasting future cash flows, which, in addition to all the risks caused to businesses, also include all additional risks brought by the pandemic (Pejovic, Trifunovic, Zivaljevic, 2020). Forecasting future cash flows became more difficult as no consensus existed on the duration of the COVID-19 crisis specially during the peak time of the pandemic also including the duration of public health actions, particularly those restricting physical movement, the duration of government (economic) actions to combat the crisis, and thus the associated economic impact. As a result, predicted cash flow predictions should be changed to the degree practicable, and discount rates should be adjusted to account for the added risk based on the best information available at the time of valuation (Neuteleers, Tulder, 2020). When valuing a business, both forecasting (expected cash flows) and determining an appropriate discount rate should be done at the same time so that the risk premium added to determine an appropriate discount rate is still in line with, without double-counting, the expected cash flows of the business. Apart of careful choice of discount rate it is recommended to use multiple scenarios (Vecellio, 2021). It is fairly unusual for firms to predict many scenarios, but towards the end of the year, companies usually choose the one in which they have the most confidence, and this becomes the budget for the next year. During COVID-19 pandemic, that strategy is not feasible since it is hard to predict what will happen in upcoming periods. As soon as the epidemic began, it became evident that finance teams and companies needed to implement systems and strategies that would allow them to plan for unforeseen interruptions three months, a year, or even two years in the future. In practice, a rolling forecasts were implemented for businesses to make more confident estimates further ahead of time while also allowing them to make modifications along the way depending on changes in business operations, sales tactics, or cost savings (Metcalf and Gupta, 2021). As the statements listed above confirm, financial forecasting during a pandemic has become significantly more complex, as uncertainty can not be measured and properly incorporated into financial modeling, the only way for valuers to reduce potential deviations from future actual outcomes.

Other theoretical and practical problematic aspects of business valuation field are deeply related to business valuation process itself, without taking into consideration COVID-19 pandemic context. It is expected that different business values will be obtained, until valuers will operate with different values. Market changes these days are very often and it becomes very hard to apply any kind of regulations, due to this it causes increased apathy to business value accuracy. According (Richard M. Teichner, Erik J. Bolinger, 2009) sometimes valuers are not able to obtain all the relevant information during business valuation process and to arrive at a conclusion of value. In cases like this, relevant parties should accept something less than conclusional business value. This problem is

usually faced, when valuating SME companies, because information is not easy to obtain, smaller companies are not required to disclose all the relevant data publicly also the key information is most the time associated with the owners. Simultaneously private situation and lack of resources, SMEs do not provide complex organizations. The lack of reliable information, mainly for the future assessments can cause a significant problem. Another aspect mentioned by (Raffaele Marcello, Matteo Pozzoli, 2019) is reliability and ability to correctly evaluate financial statements. The limited reliability of financial data may have a misleading effect. Proper setting financial data is the basis of any business valuation. This it is clear that the misleading effect is particularly pronounced in the application of accounting models, due to this valuator faces risks that forecasted figures might be incorrectly interpreted also discrepancies in opening balances of accounts appears.

Part of theoretical problems also takes into account shortcomings of business valuation models, which are base for the whole process. There are three main business valuation approaches: income, cost and market methods. Event though exists different approaches, but the problem arises when it comes to choosing the most appropriate model. This confusion is due to facts, that each models has limitations and particular requirements for correct application. This topic was analyzed by (Florin Turcas, Florin Dumiter, Petre Brezeneu, 2016), their study states that regarding valuation approaches recommendation is to apply market and income models, because cost approach is mostly used when other approaches do not provide credible information. Other limitation by cost approach is that interpretation of some accounting rules can lead to alterations in business values, that is specially related to financial reports and cost leave forms, because it is base for this approach. Even if cost approach limitations looks significant it does not mean that income and market models must be used standardly in all cases, because on the other hand there exists other theoretical problems. The same study analyzed market approach, which also by other authors (Richard M. Teichner, Erik J. Bolinger, 2009) was indicated as strongly affected by market changes. That is biggest problem of this approach, markets are usually found in state of unstable equilibrium, includes big variations, due to this forecasted business values volatiles from actual value. This is very actual in the field of companies listed in stock exchanges, where market valuation are more relevant for short term period, rather than long term forecasts. Third option is income approach, even though it is most modern method and treated by many theoretical and practical materials, but same like in previous cases, had it is own limitations, related to practical application. This includes calculations of actualization and capitalization rates, many variations can by found in different materials of this approach. At the same time, different size companies can obtain the same results, which lead to equal theoretical values of the realizations. This point creates confusion for investors, when trying to understand if it is really worth to invest in smaller companies rather then bigger ones. As analyzes above presents, all the three main models has their limitations and problems, that are more related to theoretical application and do not have any kind of parallels with COVID – 19 pandemic situation.

The table below summarizes the key issues arising from the COVID-19 pandemic that are affecting the business valuation process. Table into two main categories general and specific challenges. General includes issues that effects business valuation in all the situations, no matter which particular business is going to be valuated. Specific section is related to business valuation methodology and selection of main approaches, which under pandemic situation became more sophisticated.

Table 1. Summary of the main challenges for business valuation during pandemic.

<b>General challenges:</b>
The assumptions taken into consideration by valuers today may no longer be applicable tomorrow, due to high uncertainty caused by COVID-19 pandemic.
Future financial performance in most cases is unpredictable. Businesses are heavily dependent on state restrictions, so recovery is only possible with an improvement in the overall situation in the country.
Due to the high level of uncertainty, the reliability of financial data decreases, which directly translates into business valuation methods, which may result in inaccurate values.
<b>Specific valuation challenges:</b>
Increased complexity of the right valuation model choice. Valuers must take into account several options to check if calculated values are not realizable.
It is not possible to apply all business valuation models that are appropriate under normal economic conditions. Especially those that are related to comparison between similar transactions.
Correct application of standard business valuation methods requires additional adjustments, which includes risk inclusion into discount rate.

This section has disclosed very actual aspects, that should be taken into accounts not only analyzing from COVID-19 pandemic field but also considering issues, which valuers faces all the time when applying different approaches and models. The main question of this study, whether standard business valuation methods can be applied in the context of the COVID – 19 pandemic crisis, should be answered not only by analyzing the recent twists and turns that affected valuers, but also by looking at the theoretical problems that have arisen in the past. Most of authors prefer income and market business valuation models, but there are already recent scientific articles that given the impact of the COVID – 19 pandemic, requires changes to standard models application or increased attention to certain things that have not been taken into accounts so carefully before. This mix, which incorporates existing problems and new ones emerging during a pandemic, will be examined in this study to provide guidance on the appropriate way to determine business value and to identify things that need to be modified to adapt current global situation changes.

## **2. THEORETICAL ASPECTS OF BUSINESS VALUATION DURING COVID-19 PANDEMIC**

### **2.1. The concept of business value and business valuation**

The business value of an enterprise from accounting general point of view can be described as company's all assets and all liabilities at future economic value that are not fully reflected in the income statement and balance sheet. International valuation standards describe business value as fundamental premises on which the reported value will be based on. Depending on the bases of value, it is assumed that there could be number of different bases. International valuation standards defined bases of value: market value, market rent, equitable value, investment value/worth, synergistic value, liquidation value. According methodology presented in valuation standards, valuers must choose relevant approach based on terms and purposes of valuation assignment. Most recent asset valuation methodology approved by the government of the Republic of Lithuania states that "business valuation is an impartial calculation of business value, including a description of the valued business, the valuer's opinion on the condition of the asset, its suitability for use and expected market value". Valuing a company can be understood as a process and as a goal that helps manage business finances. Other researchers also refers business valuation as a process of calculating value of companies assets. (Sinem Koseoglu, Saad Almeany, (2020) states that valuation activities are the process of valuing assets. Valuation is the determination and estimations of the present market value of an economic asset in cash. In other words, it can be defined as evaluation of the total assets of an enterprise, such as current assets (e.g. inventories), fixed assets (e.g. land, buildings, real estate, machinery, factories, equipment and vehicles) and intangible assets (e.g. goodwill and other intangible assets).

Business valuation as process is very important process specially for privately held companies economic life. The need for business valuation arises due to economic development. Along with economic globalization, accompanied by intense capital flows to an increasing number of countries, valuation is becoming necessary in the sale, privatization, mergers and acquisitions or creation of joint ventures and many other business-related processes (Ireneusz Miciuła, Marta Kadłubek (2020). (Piotr Szymanski, 2016) describes valuation as the basis for settlement between parties in transactions, in court litigation between owners and in other forms of settlement. This explains the need of this process, because there are millions of different types of businesses all around the world and business owners usually need to decide how to develop or grow company, taking into account various types of transactions. That is why in order to evaluate price of those transactions it is important to use business valuation methodologies, which helps to justify the value and benefits of the particular strategical decisions.

In the paragraphs above the essence of business value was described. For further disclosure of this topic it is important to analyze the main current value concepts, which will be used in business valuation methods and for explanations of particular value deviations. According International Financial Reporting Standards (IFRS) there are three main definitions of current value in accounting: fair value, value in use, recoverable amount.

Fair value definition presented in IFRS 13 (Fair value measurement) standard. „The objective of a fair value is to estimate the price at which an orderly transaction to sell the asset or to transfer the liability would take place between market participants at the measurement date under current market conditions (ie an exit price at the measurement date from the perspective of a market participant that

holds the asset or owes the liability) “. In other words, fair value of an asset or liability is amount of money reporting entity could expect if they sold the asset/liability to other market participant at valuation date. Determining fair value can pose significant challenges for financial professionals even in the best of times, as this may involve judgment and evaluation. It is now even more difficult due to the effects of COVID-19. Rapid changes in market perceptions and economic forecasts pose challenges determining fair value based on information available to market participants measurement day. Greater valuation uncertainty and less noticeable market the data may require companies to change valuation methods and use other solutions or assumptions.

Value in use definition is given in IAS 36 (Impairment of assets) standard. „ Value in use is the present value of the future cash flows expected to be derived from an asset or cash-generating unit “. There are number of aspects which must be taken into account when performing calculations. First of all the estimates of future cash flows which will be generated by the entity from the assets, secondly possible variations of future cash flows including timing, furthermore the time value of the money, calculated based on risk free interest rates and other factors such as liquidity, perceptions about market participants would like to reflect the future cash flows the entity expects to receive from the property. Methodology for value in use assets calculation includes following steps: estimating expected cash inflows and outflows to be obtained from continuous usage of the asset and from disposal other aspect is application of appropriate discount rate for future cashflows calculations.

Recoverable amount described in the same IAS 36 (Impairment of assets) standard, defines recoverable amount as the higher of an asset’s or cash-generating unit’s fair value less costs of disposal and its value in use. Standard states that „ Recoverable amount is determined for an individual asset, unless the asset does not generate cash inflows that are largely independent of those from other assets or groups of assets. If this is the case, recoverable amount is determined for the cash-generating unit to which the asset belongs “. Considering that recoverable amount includes aspects of already described fair market value and value in use calculations, due to estimates regarding future cash flows and current market situation must be used.

Table 2. Summary of concepts of value from different valuation sources.

<b>Summary of concepts of value</b>	
<b>Accounting standards (IFRS)</b>	<b>Valuation standards (TEGOVA)</b>
Value in use is the present value of the future cash flows expected to be derived from an asset or cash-generating unit	Market value – The estimated amount for which the business should exchange on the date of valuation, in a transaction between a willing buyer and a willing seller, acting independently of each other after proper marketing, wherein the parties had each acted knowledgeably, prudently and without being under compulsion.
The IFRS defines fair value as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.	Fair value – The amount that would be received to sell a business in an orderly transaction between identified market participants possessing full knowledge of the relevant facts, making their decision in accordance with their respective objectives.

Recoverable amount as the higher of an asset's or cash-generating unit's fair value less costs of disposal and its value in use.	Liquidation value – is the estimated amount that the dissenting creditors or equity holders could reasonably expect to receive in the event of the liquidation of the debtor's business, whether by piecemeal liquidation or by sale as a going concern, depending on the particular circumstances of each debtor.
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The table above summarizes the concepts of value according to accounting and business valuation standards. Accounting standards focuses on fair value measurement, while business standards includes different concepts. In general IFRS and TEGOVA mainly disclose business value through the same fair value concept, but business valuation standards more broadly describes required procedures as the main source of valuation.

## 2.2. Factors effecting business value

Many scholars agree that business valuation is unique and requires not only scientific, but also general knowledge. Given that there is no universal formula to calculate absolutely accurate and unique value of the company, it is necessary to review a number of factors that affect the value of calculation. The main purpose of business is to create maximum value for shareholders, that is why management must take into accounts different type of factors, which directly or indirectly influences value of the company. This knowledge helps to create and ensure that futures strategy is focused on building financial wealth at the same time creates patterns for further developments. There number of different factors which can be divided into separate categories (Patrik L. Anderson, Ilhan K. Geckil, 2017).

Table 3. Summary of factors affecting business value

<b>Accounting factors</b>	<b>Economic factors</b>	<b>Management policies</b>
Historical sales and revenue	Growth assumptions for company	Management and management policies
Cost and profitability	Economic conditions in the industry	Important business plan assumptions
Capital structure and discount rates	Conditions in geographic trade area	
Any material, peculiar conditions	Value of franchises, licenses and intangible assets	
	Market transactions for similar businesses	

Accounting factors includes financial aspects related to business valuation decisions. Financial statements, ratios show company's situation at given point of time. Analysis of financial data indicates trends, changes, weaknesses, problems or on the other hand strengths, value drivers and other significant factors, which helps to draw conclusions and evaluate business financial wealth. Economic factors are associated with general environment where business operates. Even though information obtained from company's financial statements draws one part of significant assumptions, but economic factors can have major impact about company's present situation and future

perspectives. Taking into account current situation influenced by COVID-19 pandemic, business valuers are really depended on how the whole world manages to deal with this crisis, because it affects company's employees, customers, clients and other related parties which all together runs directly or indirectly business process. Management policies are those internal factors, which are usually hardly obtainable, but brings understanding of how business is managed and will be managed.

Additional analysis required for external factors which influences business valuation, because it is related to COVID-19 impact on valuation side. Majority of external factors were summarized by George Crane (2021) article:

Table 4. Summary of external factors affecting business value.

<b>External factors influencing business valuation</b>	
Value drivers	Value diminishers
Economy growth	Economy's downturn
Interest rates are low	Interest rates are high
Taxation rates a low	Taxation rates are high
Strategic buyers have cash on hand	Strategic buyers holding cash
Private equity buyers are investing	Private equities are not investing

Connecting factors presented in the table above and current global situation effected by the COVID-19 pandemic, conclusions can be drawn that business value diminishing factors are more actual. During the pandemic period business business values tend to decrease taking into account economy's downturn, increased borrowing and taxation costs. Corporate risk and uncertainty are greatly increased, which in turn affects the risk profile of a particular company and the valuation of its business. Based on COVID-19 pandemic situation and at the same time in an economic recession, a business may collapse and / or be forced to restructure. In such cases, the business and the underlying assets may require an independent fair valuation. In overall at given point of time, external factors are more relevant than internal ones, because current economic situation forces business to adapt to changing environment at the same time leaving personal business ambitious or future goals aside for particular period of time in order to deal with crisis successfully and without suffering unpleasant consequences.

## 2.3. Business valuation approaches and methods

### 2.3.1. Business valuation approaches

The field of business valuation is not a new subject in modern scientific and work practice. Many different business valuation methods are currently being developed that can be divided into traditional and modern. The choice of business valuation method depends on many different factors, all the factors listed in the paragraph above also have a significant impact on the final choice of business valuator. There is no specific rule or methodology for choosing a business valuation method in one case or another, it all depends on the situation, the influencing factors and the competence of the valuator. Therefore, there is a significant problem in this area, as different methods yield different values and there is no possibility to agree on the optimal option. However, most researchers agree that there are three main business methods that should be recommended based on the particular operating conditions of the company under assessment and the current situation both internally and externally while performing this exercise (Rusnė Jagelavičiūtė, Valentinas Navickas, 2019). The three main business valuation methods are assets based, income based and market based, all three of these business valuation models can be subdivided into smaller groups because there are corresponding models that could be assigned to the underlying groups.

In the scheme below, is presented detailed information regarding business valuation methods and subdivisions:

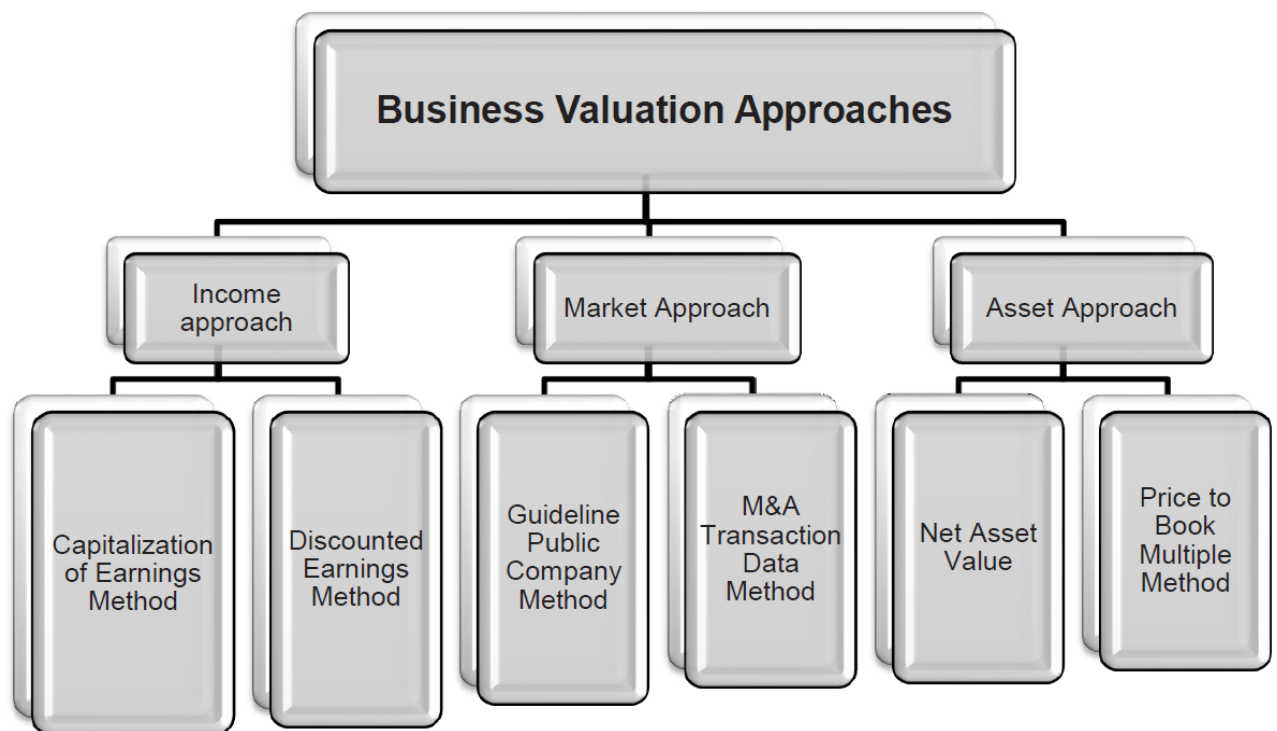


Figure 1. Scheme of business valuation methods (valuations and business modelling material, 2018)

In general, based on income method valuation methodologies, common way to identify companies, the value of the company shares or security by applying one or more methods by which the value is determined valuing future assets and possible cash flows. Valuation methodologies according to the market method are common methods of determining the value of a company, part of a company or collateral, using one or more methods which make it possible to compare the subject of the valuation with similar companies, shares or collateral sold on the open market. In valuing a



business using the asset methods, these are business or equity values determination using market valuation techniques deducting net of liabilities. All of the three main business valuation methods have their own advantages and disadvantages, due to this application will be used depending on the situation and examined company. In the paragraphs below will be disclosed detailed information of application of each business valuation method.

### **2.3.2. Income approach**

The income approach is based on the principles of substitution and expectation realized in a set of methods for cost assessment based on the calculating the expected revenues of the object under valuation. The income approach is based on the principles of substitution and expectation realized in a set of methods for cost assessment based on the calculating the expected revenues of the object under valuation.

International glossary describes income valuation approach as: „a general way of determining a value indication of a business, business ownership interest, security, or intangible asset using one or more methods that convert anticipated economic benefits into a present single amount “. The income valuation methodology is based on the financial premise that the present value of an asset’s future benefits equals the asset’s worth. As a result, not just firm equity, but also real estate, tangible equipment, and intangible assets are valued using the income technique. Forecasting future earnings necessitates examination of factors that influence earnings, such as revenues, expenses, and taxes. The income approach is unique in that it can account for the precise contribution of numerous elements of production to the overall value. The income approach can be divided into two main methodologies, capitalization of earnings method and discounted earnings method. Both of these methodologies will be disclosed in the paragraphs below.

Capitalization methodology (Damodaran, 2017) make the income approach the foundation of the created methodology for valuing enterprises’ businesses. International glossary of business valuation terms describes capitalization method as „, a method within the income approach whereby economic benefits for a representative single period are converted to value through division by a capitalization rate “. According J. Richard Claywell (2017) rather of estimating cash flows over a discrete discount period, this method is used to estimate cash flows over a continuous discount period, this technique estimates future cash flow will rise at a reasonable pace, steady rate in perpetuity based on different growth and performance assumptions. The strategy is based on the notion that a single period (with minor growth modifications) provides a credible projection of what the company will deliver in the future for investors.

The long-term sustainable growth rate is an important part of this strategy. The cash flow from a single period is multiplied by one plus the long-term growth rate in the Gordon growth model, which is commonly used to assess perpetuities. The capitalization rate is then calculated by subtracting the long-term growth rate from the discount rate. To get at the value of equity, the valuation specialist may need to deduct interest-bearing debt, depending on the form of the projected cash flow.

The capitalization of benefits method can be calculated based on formula which includes the value of anticipated economic benefits of a particular period and capitalization rate in perpetuity (Zuzana Rowland, Veronika Machova, Jakub Horak, 2019)

$$\text{VALUE} = \frac{\text{INCOME}}{K-G \text{ (capitalization rate)}} \quad (1)$$

Whereas:

Income – Amount of expected economic gain in the year after the valuation date.

K – The risk of the specific expected economic gain is reflected in the discount rate.

G – For the interest of the economy, a constant growth rate will be maintained throughout perpetuity.

This formula includes different components, which must have the assumptions on which the calculations will be based. The capitalized economic gains should be based on stable operations, which, when combined with a consistent growth rate, imply future economic benefits. There could be different scenarios for future assumptions, in the case of a gradually growing firm, as seen above, the applicable growth rate will most likely be determined by recent history. In cases if there is no hope of turning operations around, it may be more acceptable to look at a cost strategy utilizing liquidation values for a declining firm. Capitalization rates can be calculated based on either equity or invested capital. The discount rate for equity capitalization rates is calculated using the capital asset pricing model or the build-up model. The equity discount rate represents the risk associated with the cash flows of stock investors. The equity capitalization rate is calculated by subtracting the equity discount rate from the growth rate. For long term growth is hard to draw any conclusions, but the premise in business valuation is that fair value is a present value of benefits that extend into perpetuity, despite the fact that the time horizon for any investment cannot be determined with confidence.

Other method which belongs to income valuation approaches group is discounted cash flows method. As already used international glossary of business valuation terms indicates that it is „a method within the income approach whereby the present value of future expected net cash flows is calculated using a discount rate “. Among many valuers and researchers discount cash flows method is one of the most popular methodologies used for business valuation estimations (Elena Drabikova, Jozef Svetlik, 2018). The present range of values of the firm as of the valuation date is equal to the present value of future cash flows to the company shareholders, according to the Discounted Cash Flow approach (Slawomir Janiszewski, 2018). This method has to take into account financial projections of the selected period, this includes the present value of cash flows (the total of the present value of dividends paid to shareholders and/or extra capital injections made by shareholders) also the discounted value of the firm arising from cash flows created by the company beyond the projection period is known as the residual value of the company. The cash flows that represent dividend payments are governed by the company’s dividend policy. The capital injections and their length are contingent on the shareholders’ choice to exercise their option to exit the investment (Leslaw Gajek, Lukasz Kucinski, 2017).

The full equation of discounted cash flows method:

$$\text{Value} = \frac{\text{NCF}_1}{(1+k)^1} + \frac{\text{NCF}_2}{(1+k)^2} + \frac{\text{NCF}_3}{(1+k)^3} + \frac{\text{NCF}_4}{(1+k)^4} + \dots + \frac{\text{NCF}_\infty}{(1+k)^\infty}$$

Where:

NCF = Net cash flow

k = Net cash flow discount rate

(2)

It can be shortened to:

$$\text{Value} = \sum_{n=1}^{n=\infty} \frac{\text{NCF}_n}{(1+k)^n}$$

Where:

NCF = Net cash flow

k = Net cash flow discount rate

n = Time period

(3)

The discounted cash flows method can be analyzed in the following sequence, which includes the length of the discrete projection period, the forecasted cash flow, discounting conventions, calculation of terminal value. Starting with discrete projection period, annual predictions should be made to a point when operations are normalized in the future. If a business is losing money, the discrete phase should remain until operations are not only restored, but profits can be predicted at a steady pace of increase. On the other hand if the firm is expanding, either through a large capital expenditure or the acquisition of another company, unusual cash flow items are predicted until the company returns to normal. Regarding the forecasted cash flows, the projection should be based on in-depth industry and economic research, as well as internal financial analyses. Forecasted projections must to be verified throughout independent research or testing. Discounted conventions includes two types of conventions, mid-year and end-year. End-of-year discounting is based on the assumption that all cash flows are received on the year's last day. Although many small businesses follow this rule, it is impracticable for all but a few types of enterprises, such as seasonal firms. The assumption behind mid-year discounting is that cash flows are distributed equally throughout the fiscal year. The midpoint of the year is used to discount cash flows. The last component of discounted cash flows method is calculation of terminal value, which captures the value from the end of the discrete period into perpetuity. It is a single-period capitalization model calculated at the end of the last year of the discrete forecast.

In conclusion, the CCF is more error-prone. The capitalized cash flow technique provides the company appraiser with just one shot to get the predicted future benefits and rate of return correct. A mistake in one of these can substantially skew the value. When using the DCF technique, the business appraiser has a greater possibility of balancing different over and understatements of predicted future benefits, growth, rate of risk, capital expenditures, and working capital needs throughout the

computation. Overall, if management expects short-term variations in growth, income and spending, leverage, working capital needs, and capital expenditures, the discounted cash flow technique gives more flexibility. It's especially helpful for high-growth enterprises and start-ups that aren't yet profitable — or when assessing damages over a set period of time.

### **2.3.3. Market approach**

International glossary of business valuation terms describes this approach as: „a general way of determining a value indication of a business, business ownership interest, security, or intangible asset by using one or more methods that compare the subject to similar businesses, business ownership interests, securities, or intangible assets that have been sold “. The market method assumes that the value of a company may be assessed by comparing it to fairly comparable guideline firms with known transaction prices. Because these firms are publicly traded or because they were recently sold and the circumstances of the transaction were revealed, the valuations may be known. (John A. Trenor, 2018). In most cases, valuing an asset entails determining the value that would be allocated to it in an arm's length sale. The most clear and straightforward reference is the most recent price at which the item changed hands. Other literature also supports the basic description of the market valuation method, stating that method aims to evaluate a company based on the reported sales of other companies of similar size, among other things. A valuator must have access to statistical data and databases in order to employ the market method (David K. Smucker, 2020). Same like in case income valuation approach, market method also can be divided into two options, public company comparables and precedent transactions, which will be disclosed in detail in paragraphs below.

Public company comparables method uses the prices paid for publicly traded company equity to assess the subject company's worth (Eric Bar, 2015). Companies that have registered with the Securities and Exchange Commission (SEC) and are traded on a publicly listed exchange such as the NYSE (New York Stock Exchange), NASDAQ (National Association of Securities Dealers Automated Quotations), or the American Stock Exchange are examples of publicly traded companies. The comparables technique determines an asset's value by comparing it to the prices of other assets with similar but not identical qualities. The technique is based on the idea that assets with comparable qualities, such as risks and cash flow prospects, will trade at similar prices since arbitrage gains would otherwise be attainable (Jose Alberro, 2018). The key aspect in this method is understanding of valuations multiples, which justifies calculations and value determination. Valuation multiples are a method used to make comparisons. The multiples are the ratios that assist link a company's worth to a financial measure of its performance. The multiples produced are representative of the perceived fair market worth and risk associated with the provided security on that particular date since they are based on the market's reflection of value of the comparable's equity price as of the valuation and observation date. Firms that are ideal guideline companies are in the same industry as the company that is being appraised. However, if there is inadequate transaction data in the same industry, it may be required to evaluate firms that share fundamental investment characteristics such as markets, products, growth, cyclical variability, and other important criteria (Mercer capital, 2014).

When comparing the values of similar companies, these values need to be standardized by converting them into a common variable. The business market values of comparable companies can be standardized using profit, cash flow, book value or income multipliers. Most commonly used the multipliers are as follows:

Profit multipliers:

- $p / e$  (price to earnings per share ratio);
- $ev / ebit$  (ratio of business value to profit before interest payments and income tax);
- $ev / ebitda$  (business value and profit before interest, taxes, depreciation and amortization) depreciation ratio)

Book value multipliers:

- $p / bv$  (ratio of equity value to book value of equity);
- $ev / ak$  (business value to cost of recovery ratio (Tobin Q ratio)). Income multiplier:
- $ev / ps$  (business value to cash flow ratio);
- $ev / sales$  (business value to sales revenue ratio)

Next option under market valuation approach is transactions data method. Based on International valuations standards council issued document (2020) ,, The comparable transactions method, also known as the guideline transactions method, includes information on transactions involving assets that are the same or similar to the subject asset to arrive at an indication of value “. In cases when this valuation method is used, experts in valuation look for deals involving firms that are comparable to the target company in terms of industry, geography, and size. A transaction’s timing is critical. However, timing isn’t the only factor that decides whether a transaction is trustworthy enough to be included in an assessment. Use of the transaction may be unreliable if internal and/or external business circumstances or other factors have changed or evolved significantly between the time of the observed transaction and the date of the appraisal. This might likewise be the case for a transaction that occurs close to the valuation date. While the exact value of a dated transaction may be incorrect, the suggested relative worth of the transaction may be valuable to investigate (Mercer capital, 2014). This approach follows the similar methodology as previously described comparables method, because it includes different multiples as well in order to calculate approximate value of an enterprise. Usually transactions method includes takeover premiums and other aspects which are included in transaction due to this calculations slightly varies and requires adjustments for value estimations comparing with the comparables method.

In overall, the guideline public company method employs dynamic comparable stock transactions as of the valuation date in order to arrive at a value. This comparison gives the valuation analyst value data that includes industry and market components. At the same time of the main drawbacks of this method is that it pertains to the size of subject company and comparative analysis could be inadequate. Other difficulty with the Guideline Public Company Method is that public firms are more diverse than private enterprises. They may have more revenue and operational diversification, as well as a broader global footprint. From transactions method point of view, it provides a better knowledge of the market in terms of transaction frequency for various types of assets. Transactions range depicts the types of premiums that have already been paid, making it more realistic. One of the drawbacks is that every agreement is different, with its own set of benefits and minuses. There is no way to compare two offers in an absolute sense. Different purchasers may receive different synergy advantages, therefore determining the multiples of Company X may not be applicable for Company Z.

### 2.3.4. Asset approach

Asset approach according international glossary of business valuation terms is described as „ a general way of determining a value indication of a business, business ownership interest, or security using one or more methods based on the value of the assets net of liabilities “. The asset-based approach refers to a collection of techniques for valuing a firm based on its balance sheet. Income approach and market approach valuation methodologies, on the other hand, are primarily concerned with the company’s income statement and/or cash flow statement (Weston C. Kirk, 2018). According (Deloitte, 2017) issued report regarding valuations, the asset-based method to valuing looks at a company’s net asset value (NAV), or the fair market value of all of its assets minus all of its liabilities, to figure out how much it would cost to start again. While there is considerable leeway in determining which of the company’s assets and liabilities to include in the valuation, an asset-based method is often the simplest to implement compared to the conventional income-based and market approaches. There are several common ways for asset – based valuation approach, which includes book values, net realizable values and replacement values. The book value method is nearly useless, because book value is based on previously accounted costs and arbitrary depreciation also book value of net current assets might not be relevant as inventory and receivables might require adjustments. Assets net realizable values minus liabilities. If the assets were sold and the obligations were cleared, this figure would indicate what would be left for shareholders. Replacement values, the method tries to figure out how much it would cost to establish a firm right now. Unless an assessment is provided for the value of goodwill and other intangible assets, such as brands, the value of a successful firm using replacement values is likely to be lower than its real worth.

Taking into account different asset valuation approaches, net realizable value method is best used, because it presents for selling party the lowest value, expected from this transaction. According IAS 2 (2021) estimates of net realizable value are based on the most trustworthy evidence of the amount the assets are likely to realize at the time the estimates are prepared. These estimates take into account price or cost variations directly related to events that occur after the period ends, to the degree that such occurrences corroborate the circumstances that existed at the conclusion of the period. The reason for which the asset is stored is also taken into account when estimating net realizable value. For example, the net realizable value of the quantity of inventory held to satisfy firm sales or service contracts is based on the contract price. The net realizable value of the surplus is based on general selling prices if the sales contracts are for less than the inventory amounts maintained.

Based on asset approach the calculation of the value of the company requires the balance sheet of the company adjustment to reflect the actual market situation in measuring the entity’s assets and liabilities. All current and non – current liabilities of the enterprise are deducted from the estimated value of assets and the result of the calculation shows the market value of the company’s shareholders’ equity or block of shares. It is possible to expressed by the formula:

$$\text{Shareholder equity value} = \text{Company's asset value} - \text{the value of the company's liabilities} \quad (4)$$

Methods based on the valuation of the company’s assets stand out for simplicity, clarity, but the company is not static unit, therefore its business prospects and growth opportunities are not assessed. Such variables as the competence of the company’s employees, the competitiveness of the product is

invisible in the balance sheet and assets reasonable methods can only be used to determine the lowest business value.

#### **2.4. COVID-19 pandemic impact on business valuation methods**

Valuators understand that standard valuation approaches, which are applicable during normal economic conditions, at time of pandemic, might not provide reliable values of business worth. That is why, each of the standard business valuation approaches, have their own advantages and limitations in usage under unpredictable conditions. (RICS, 2020) states that the income method of valuation is the most appropriate for specific assets and markets. The present COVID-19 health crisis has created uncertainty about future revenue streams, necessitating additional professional considerations when using the income strategy. Income uncertainty can be a short-term concern or a longer-term consideration if there are expected behavioral, regulatory, or economic consequences. The use of the income strategy becomes more difficult the more unknown these impacts are and the longer the predicted duration of uncertainty is. Business valuation is closely related to inputs, based on historical and current information. Forecasts are often prepared by management for business valuation specialists. However, in the COVID-19 period, their calculations may not be as accurate. This is because managers frequently anticipate the current year using the previous year's outcomes as a starting point. Then revenue, variable expenditures, and working capital are expected to expand at a modest rate, while fixed expenses are expected to remain relatively steady. At the same time cost structure changes for different type of businesses. Furthermore, while producing a trustworthy set of predicted future cash flow estimates, a number of entity-specific characteristics must be taken into account. Forecast cash flows will be the key driver of present values, and they must include the following aspects: the expected rate of revenue growth, a updated estimate of gross profit and profit margins that might be achieved in the near future, the cost structure has been subjected to a thorough examination and analysis, the amount and timing of capital investment in a firm, prospects and opportunities are being re-evaluated, working cash requirements. The DCF approach necessitates the estimation of future cash flows as well as the selection of an appropriate discount rate. It's critical to match the discount rate used with the cash flows used to establish either an enterprise or equity value. Furthermore, consistency between the risk elements inherent in the cash flows and the risk components accounted for in the discount rate is critical — no risk variables should be included twice in the cash flows and the discount rate. (Israel Shaked, Brad Orelowitz, Paul Dionne, 2021) the weighted average cost of capital, which is usually used to indicate the discount rate (WACC). Because of the relevance of the discount rate and the sensitivity of valuation results to even slight changes in the discount rate, all parties to the disagreement must scrutinize discount-rate assumptions more closely. The WACC, or discount rate, is derived by multiplying the cost of equity by the proportion of capitalization that is equity, then adding the after-tax cost of debt multiplied by the percentage of capitalization that is debt. Due to the exceptional nature of the event, inputs utilized in a WACC calculation, such as beta or the risk-free rate, might become skewed during periods of aberrant market activity, such as the COVID-19 pandemic. The influence of an extraordinary market occurrence on a company's WACC is critical for a valuation specialist to grasp. Furthermore, as mentioned above, valuation specialist must assess to what degree the subject company's cashflow predictions include the impact of COVID-19. Valuation expert should be mindful of double-counting the impact of the COVID-19 epidemic. To begin, a valuation expert must examine the subject company's plans to see if they already account for the implications of COVID19 on the firm in the short and long run. To avoid double-counting, the discount rate used to determine the present value of those cash flows

should be normalized if the subject company's estimates represent management's best assessment of COVID-19's impact on the firm. Overall, the DCF technique involves a valuation professional's subjective judgment to determine how to accurately include the implications of COVID-19 in the study.

Secondly follows market approach, which as well is highly effected by COVID-19 pandemic and there number of reasons why it have happened. There are several ways to apply market approach one of them is guideline public company method and another one is guideline transaction method. As specified in paragraph above, the guideline public company technique rates the subject firm using earnings multiples from similar publicly listed companies, whereas the guideline transaction method uses value multiples determined from the sale of similar companies. The use of market multiples is more critical than ever in light of the sudden economic upheaval produced by the epidemic. That is because, if multiples are calculated based on pre-pandemic financial results, that could result in substantial over or under valuation of the subject company depending on various perspectives. Experts in valuation must create a consistent framework for their reference company to represent the current disruption and anticipated future recovery, or lack thereof. Based on statistical data during moments of increased uncertainty, investors are less likely to invest, which might result in lower levels of deal activity, transactions, or multiples than during periods of regular economic activity. S&P capital data indicates that throughout peak of pandemic, the third quarter of 2020 has resulted in a 32% decline in transaction value and 13% decline in a number of transactions. Guideline transactions made during the pandemic must be examined with scrutiny to be sure that process completed in a timely manner, especially if the subject company's valuation implies it would continue to operate as a continuing concern. It is typical for valuation specialists to examine transactions completed two or more years before to the valuation date of interest, although pre-pandemic purchases may have been based on pricing and earnings predictions that are no longer accurate in light of current market conditions. This means that, despite rapidly changing economic conditions, the valuation expert must thoroughly examine and justify each guideline transaction as sufficiently comparable. From inputs perspective, revenue and earnings, as well as other financial inputs to a market strategy, will need to be carefully reviewed it follows the same situation like in case of income approach. In the past, management may have supplied adequate proof that a company could fetch a specific trailing EBITDA multiple in a pre-crisis sale. According (John Dawson, 2020) one technique to adjust such multiples is to look at the percentage drop in earnings multiples suggested by the current market capitalization of a listed peer group of firms in the same or comparable industry and apply that drop to the previously observed transaction multiples. Although this is a rudimentary estimate, robust transaction multiples will not be accessible in the post-COVID-19 environment for some time. Trailing financial measurements, on the other hand, may no longer be accurate predictors of the future in the post-COVID-19 environment. Certain discounts and/or premiums (e.g., discounts for lack of marketability, control premiums, etc.) must frequently be taken into account when determining fair value. Given the recent impact of COVID-19 on financial markets, some of the more traditional quantitative sources (many of which rely on dated data) used to estimate these discounts/premiums may need to be reevaluated. Given the scarcity of historical data on the influence of COVID-19 on these metrics, management may need to make more qualitative modifications to these typical discount/premium estimations.

Most of the time business are typically valued using market or income approaches, focusing on cash-flows data also recent transactions or relevant comparables. In cases when it is more difficult to



evaluate business value due to complexity of economic segment, lack of comparables or current losses, valuers should place greater attention to asset-based valuation approaches. During the present crisis, the value of some assets (for example, property) may have decreased, while the value of others (for example, working capital in the form of cash, debts, stock, and so on) may have decreased as a consequence of losses. Provision for known and inevitable future short-term losses might affect asset value perception at a particular moment in time. One of the main drawbacks of asset-based valuation approach is that this one ignores the company's earning potential in the future. In reality, when a firm's current assets are disposed of item by item, the commercial value of the company might be significantly greater. In context of COVID-19 pandemic, companies assets at given point of time can provide positive information about current situation, but taking into account future perspectives and other threats caused by economic uncertainty, business value can be changed dramatically, that is why asset based approach should be used in particular cases, when other methodologies can not provide relevant results. As a result, capital-intensive firms, businesses with no present or forecast operational revenue, and non-operating entities such as real estate and investment holding corporations are best suited to this method. According (Weston C. Kirk, Kyle J. Wishing, 2018) asset-based approach is less applicable comparing with previously mentioned methods and there several limitations which are also actual in context of COVID-19 crises. While applying this method analysts need more data to perform this approach and specially during pandemic, numbers of transactions drastically decreased that even supports complexity of this method adoption. Taking into account amount of data, it also consumes more valuers time, which in the end stands out as increased costs. The above-stated observations should not invalidate the use of the asset-based approach, but as mentioned, there several reasons that valuers must take into account before applying this method and specially during pandemic times, it becomes a really hard choice, which method is the most applicable in particular situation.

### **2.5. Choice of business valuation method in the context of the COVID-19 pandemic.**

It is one of the rare cases, when it is possible to get lost by the amount of valuation approaches accessible to valuers when determining which to employ to evaluate different kind of business or asset. There are some basic valuation procedures, while others are more detailed and sophisticated. Unfortunately, there is not a single solution that works in every case. Each company is unique, and each industry or sector has its own set of features, necessitating the use of several valuation methodologies. COVID-19 pandemic even strengthens the difficulty of choosing most appropriate business valuation method, due to emerged unpredictable situations which most of valuers finds really challenging to evaluate using standard methodologies. There is no one valuation model that fits every case, but by understanding the company's features, valuator can choose the appropriate valuation model for the particular job. Furthermore, valuers are not restricted to utilizing only one method. Investors frequently conduct several valuations in order to generate a range of probable prices or to average all of the valuations into one. When it comes to business valuation, it is not always about using the optimal method for the task, but rather how many tools valuator uses to get different insights from the statistics.

A valuator might employ a variety of views when choosing a valuation model. The income method is one of the most often used approaches, and it is entirely reliant on the quality of the data and the assumptions made. There are different methods for determining worth. It is pretty clear that if a corporation is dissolved today, it has one value and another if it continues to operate.

The going concern assumption, which states that the firm will continue to operate for the foreseeable future, is a prominent value-finding concept. Absolute and relative valuation models are the two main forms of going concern valuation models (Charles M.C.Lee, 2003). A model that specifies an asset's inherent worth is known as an absolute valuation model. This model specifies a company's worth at a specific moment in time and compares it to current market pricing in order to make decisions. The most common sort of absolute model technique is the present value or discounted cash flow approach. Dividend discount models are based on the dividend idea, whereas free cash flow to equity and free cash flow to firm models are based on the free cash flow concept. When a business value is estimated based on the market value of the assets or resources it controls, then asset-based approach is applied. The relative valuation model is the second most common method of going concern valuation. It indicates the value of an item in relation to the value of another asset, and the underlying idea behind a relative valuation model is that like assets should sell for similar prices. Price multiples are commonly used to represent this. Price to Earnings (P/E), Price to Book Value (P/BV), Price to Sales, and other comparable price multiples are common. The technique of comparables is a term used to describe a relative valuation strategy used in equity valuation. The following three main factors must be considered before selecting which valuation model to use: First of all the valuation model must match the features of the organization being appraised. Secondly given the availability and quality of data, the valuation model should be adequate. Thirdly, the valuation model should be compatible with the valuation objective, as well as the analyst's personal viewpoint.

One of the things, which must be taken into account when applying the income valuation method is that, this method is based on an asset's fundamentals, it is less susceptible to market moods and perceptions when done correctly. Specially in cases, when present cash flows are positive and may be reasonably predicted for future years. DCF valuation considers the firm's basic qualities and comprehends the company's operations. It identifies the assumptions that a buyer makes while paying a certain price for an object. It is best suited for investors with a lengthy time horizon or a future purchaser of the entire company. Long-term market corrections occur in order for pricing to return to "real" value. (Damodaran, 2006).

On the other hand, using relative valuation methodology, value of an asset is obtained from the prices of similar assets which are standardized using a common variable. Multiples may be used to swiftly assess the worth of companies and assets, and especially effective when there are a lot of similar companies being traded on financial markets. At the same time using market valuation methods it is simple to misunderstand and manipulate, particularly when comparable businesses are utilized. Because no two businesses are exactly alike in terms of risk and growth, the phrase "comparable firms" is subjective. As a result, a biased analyst might select a group of comparable businesses to validate his or her preconceptions regarding the worth of a firm. While there is a risk of bias in discounted cash flow valuation as well, the analyst is compelled to be considerably more specific about the assumptions that generate the final value in DCF valuation. These assumptions are frequently left unexplained when dealing with multiples.

When determining the technique to apply in a given circumstance and the goal of the valuation, it's critical to define the subject of value. To put it another way, it's critical to characterize the valuation problem accurately. In this case, three factors are particularly crucial to consider: the predicted value of both the present value level and the valuation date, as well as the valuation's objective. The technique of valuation is frequently determined by the process of identifying the

valuation problem. Each valuation approach reflects the market’s expectations about how it can or cannot operate. It is considered that market prices depart from fair value but adapt over time when using the discounted cash flow approach. The comparative technique presupposes that markets are fairly competitive and that firms in the sector or market in issue are overpriced, while the sector or market as a whole is underpriced (Damodaran, 2006). In practice, choosing a valuation technique is frequently the result of a variety of tactics based on experience, tests, and errors, intuition, principles, ethics, consultation with neutral third parties, and a variety of other factors. As a result, the decision-making process for choosing the valuation technique cannot be allocated to a single decision-making process group.

The diagram below describes the sequence of business valuation model selection including different cases when it most appropriate to choose one or another method. At the same time, several adjustments must be included in selected valuation methodology in order to present fair values:

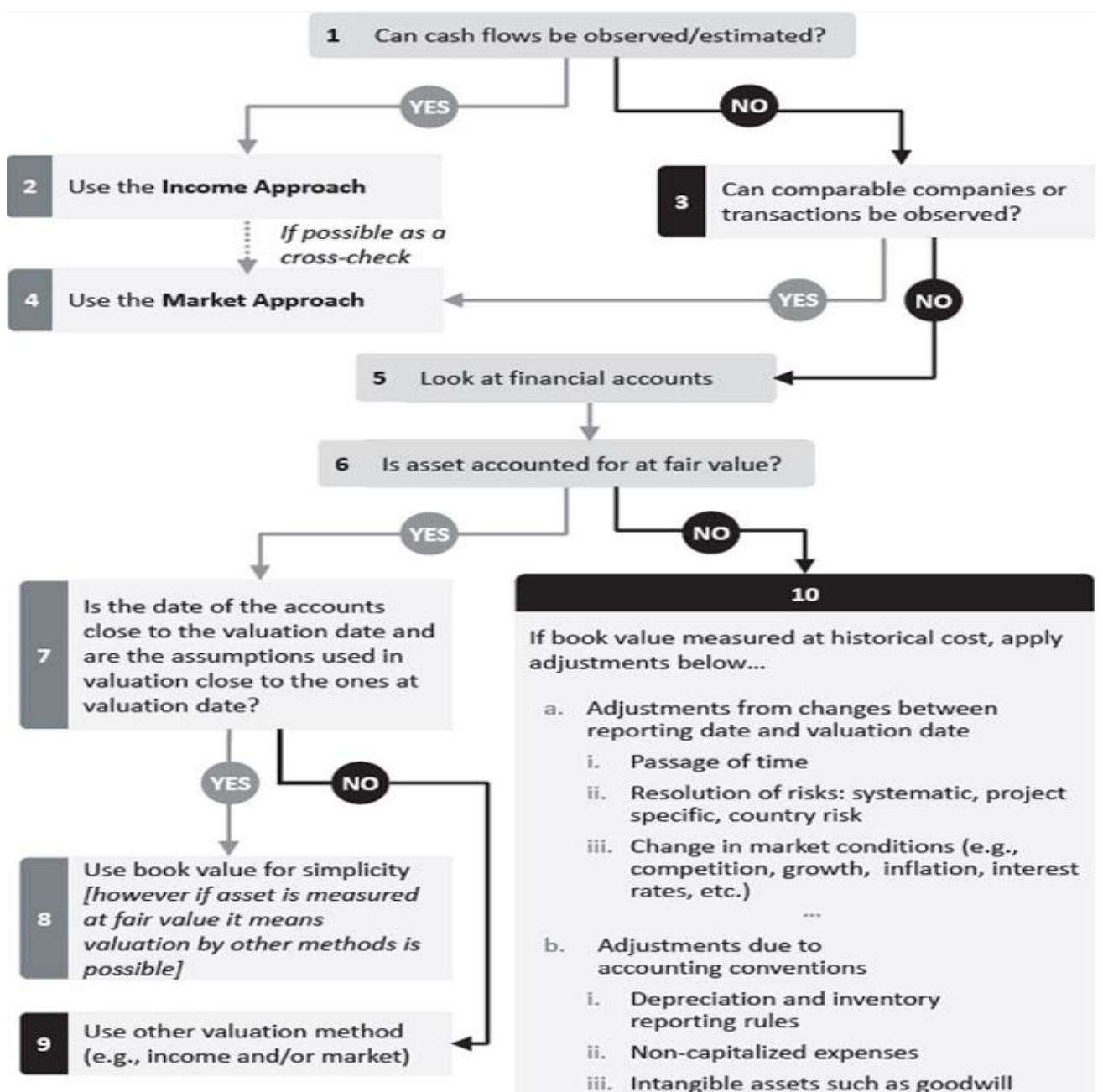


Figure 2. Scheme of business valuation method selection (M. Alexis Maniatis, F.Nunez 2021)

Table above can be divided into smaller steps, which sequence describes logic of method selection. Firstly, if there is a possibility to observe/estimate cash flows, in those cases, key valuation method should be selected as discounted cash flows model, because it provides most accurate calculations. In following step, it is a must to answer the question if comparable companies or transactions can be observed, if yes, then market method should be used to estimate or infer the market value of the assets. Valuator must keep in mind, that when applying market approach, appropriate adjustments should be made to account for difference between particular asset and comparable assets (M. Alexis Maniatis, F.Nunez, 2021).

If none of mentioned methods are accessible, the valuer may adopt an accounting-based asset valuation approach based on the financial statements. In order to apply this method correctly, first of all valuator must understand the accounting standards used to record the assets value in accounting books. When book value is being used, then according theory, assumption that financial reports are reported at fair value is employed. As a result, the valuer must assess if the financial account's date is near to the valuation date, and whether the account's assumptions are adequate for the valuation. In situations when this logic can be applied, then book value might be used to estimate market value. When the valuation date or accounting assumptions can not be reliably measured, then valuers must use different techniques, which includes previously mentioned methods, such as income or market.

In cases when in financial statements book values are recorded at historical costs, in most of cases it will indicate that accounting value will probably not match market values, due to this it requires revisions of book values. There are multiple reasons why these discrepancies occurs, it includes passage of time, the resolution of risks, changes in market and all these factors contributes to modifications between the reporting and valuation dates. Accounting regulations such as depreciation and inventory reporting regulations necessitate additional adjustments. Accounting norms also influence how corporations report intangible assets, or whether they disclose them at all, as with non-capitalized costs or internally created goodwill. Because of the enormous and unavoidable obstacles that occur when attempting to establish market values from accounting values, accounting based-asset valuation is normally only used as a last resort valuation technique.

According research made by (R. Jegelavičiūtė, V. Navickas, 2019) after reviewing the scientific literature and articles, it is reasonable to infer that there is no single technique for selecting valuation methods that is both practical and efficient. There is no obvious and persuasive explanation, either in theory or in the practice of business appraisers, as to what techniques, models, and how the outcomes of the chosen approaches should be handled. The amount of aspects and difficulties examined in the literature for the selection of valuation methods and approaches clearly verifies the claim that this process is not easy and cannot be automated or integrated in unambiguous algorithms. Factors impacting the process of selecting a good business (shareholding) valuation technique may be addressed differently or weighted in different scenarios. As a result, standardizing the decision-making process by selecting valuation methodologies, while keeping in mind that the valuation process is linked to the appraiser's subjective approach, is a difficult task. Furthermore, the fact that valuation is a critical and responsible component of the financial industry must be considered. As a result, it is important to emphasize that organizations responsible for assessing the value of a firm (shareholding) must adhere to particular criteria while using alternative valuation methodologies.

The paragraphs above in detail describes possibilities of business valuation model selection using different cases, assumptions or regulations. All these researches are linked to the normal economic

conditions and business operations. COVID – 19 pandemic impact and brought uncertainty to the whole world requires to rethink standardized assumptions and to use additional modifications specially regarding previously created methodologies. As researches conducted by different authors confirms the fact that standardized approach or model for business valuation method selection does not exist, due to various of variables which influences directly or indirectly business value. In pandemic situation these assumptions become even more convincing. Using discounted cash flows method, for valuator it becomes a really big challenge to estimate or predict companies future perspectives, possibilities to growth, measure risks and any other relevant facts. These conditions strongly influences calculated values and valuator must draw different scenarios. Other option is to use, market approach, but in this case the situation is very familiar to discount cash flows method application. Specially during the peak of COVID-19 pandemic crisis, there were number of distorted transactions between businesses, because it was really hard to measure fair prices, uncertainty forced business to think about higher margins in order to gain higher financial benefits for future financial protection. In the end of day, market data became not fully reliable and application solely of market approach poses an additional risk due to incorrect calculation of estimates. Taking into account these limitations, valuator may start to think about asset based valuation approach, but this method is usually applicable in cases when none of previously mentioned approaches can not be reliably applied or company is under liquidation and not able to provide future cash flows. Asset based valuation approach is usually applied as last resort for valuator and most of the time calculations are based on discounted cash flows or market approaches. From the COVID-19 pandemic perspective, including all these relevant limitations it becomes clear, that it is recommended to use different approaches not only depending solely on one approach. For example, to justify the values calculated using discounted cash flows method, market approach if it is possible can be used cross checking, to ensure that there is no high deviations which can indicate that application solely on one approach might provide inaccurate values due to uncertainty or other significant pandemic factors influencing collected data and calculations. At the same it can provide checks were adjustments must be made for correct method application.

## **2.6. Conclusions regarding theoretical solutions of business valuation methodology.**

This chapter in detail described main definitions of business value, factors influencing business value, valuation process, business valuation methods and most importantly the role of COVID-19 pandemic in this whole process. Business valuation is an impartial calculation of business value based on different approaches and methodologies. There are three main groups of business valuation methods, including income, market, asset approaches. Each of this method has it is own advantages and disadvantages. Valuator must keep in mind different scenarios or situations when each of these methods are most applicable. Even though, various of researches confirms the fact, that there is no general valuation method, which can be applied in all the cases, but most of the authors agree that income and market approaches are best adapted to calculate the fair value of the company. COVID-19 pandemic has it is own significant role in the field of business valuation. In general, the value of business is affected by accounting, economic, management decisions. Developing these assumption in more detail, it becomes clear that all these factors directly or indirectly depends on the whole business economy. COVID-19 pandemic effected accounting standards and financial statements presentation, economy started to turn into one of the biggest downturns of this decade, due to this business management needed to find solutions also to avoid risk regarding business development and continuation.

Table 5. Summary of critical points regarding business valuation method selection.

<b>Critical points to considering while selecting business valuation method during COVID-19 pandemic</b>		
Income method	Market method	Asset method
The most appropriate method to use when the following conditions are true:		
<ul style="list-style-type: none"> <li>- When there is an opportunity to properly determine the future cash flows of an enterprise.</li> <li>- Valuator must be able to properly calculate terminal value, discount rate and associated measures.</li> </ul>	<ul style="list-style-type: none"> <li>- When economic situation and other circumstances during the valuation are stable and predictable.</li> <li>- When assumptions about business future performance are subjective and alternative methods can not be used reliably.</li> </ul>	<ul style="list-style-type: none"> <li>- When there is no historical data about valued company.</li> <li>- When the entity will not generate significant cash flows in the future.</li> <li>- When company facing liquidation issues</li> </ul>
Aspects when business valuation method should be avoided:		
<ul style="list-style-type: none"> <li>- If there are no possibilities to prepare large amount of assumptions needed to be made to forecast performance.</li> <li>- When small variation in assumptions can have a significant impact on value.</li> </ul>	<ul style="list-style-type: none"> <li>- When there is not enough information about comparables companies.</li> <li>- During COVID-19 some of the transactions may have occurred during periods with substantially different market/industry conditions, which may not represent the prevailing environment.</li> </ul>	<ul style="list-style-type: none"> <li>- When the value of a company is more accurately determined by measuring cash flows</li> <li>- When the value of an enterprise is significantly affected by intangible assets</li> </ul>

In summary, taking into account all these factors listed above, valuers in the context of the COVID-19 pandemic have to consider many different options due to the current uncertainty, so even the applicability of standard valuation methods can vary significantly. For these reasons businesses which had high business value before COVID-19 pandemic, became much cheaper than during casual business conditions. For valuers it created additional challenges, because pessimistic, realistic, optimistic scenarios needed to be evaluated for enterprise value calculation also while using market approach, not all transactions can be by default including in selected list of comparables, valuers must keep eye on agreement which prices can not be appropriately evaluated. The theory part provides an incentive for further methodology part, which will based on income and market approaches in order to evaluate results, which can be distorted due to impact of COVID-19 pandemic. The use of a different method will allow for a more targeted evaluation of the results obtained and will allow the models to complement each other, taking into account necessary adjustments.

### **3. Research Methodology for Investigating the Impact of the COVID-19 Pandemic on Business valuation**

#### **3.1. Research methodology**

Business value calculation is a critical procedure that assures that an investor will not pay more for a company than it is worth, or that shareholders will know how much to expect from a transaction. This is inextricably linked to an objective, competent valuation of the firm or the acquired block of shares based on explicit, validated assumptions, in other words it represents calculation of the market value. Every business has unique qualities that are unique to that business or business segment and may necessitate a unique strategy when evaluating the chosen firm. As a result, determining the value of the enterprise's business, as well as the technique or procedures by which the value of the enterprise's business will be established, is not an easy or simple process. Based on the literature review, it can be concluded that theory and assessment practice provide a wide range of company valuation approaches. It should be emphasized, however, that the authors do so while emphasizing that there is no most appropriate or one-size-fits-all evaluation approach that can certainly address all of the concerns that emerge throughout the evaluation process in connection to market value computation. Many scholars that study assessment procedures state that it is a broad topic. The investigation of the valuation methodologies allows the value calculation findings to be made as near to objective as feasible when estimating the fair market value. Each of the approaches used in practice has its own set of advantages and disadvantages, and the method used to calculate the business or the market value of a block of shares will be determined by a variety of conditions and considerations.

The following chapter will be focused on the main objectives, goals, strategies, methods, data gathering and other relevant subjects which will be used in order to perform qualitative and quantitative researches for COVID-19 pandemic impact on business valuation field relevance disclosure.

Research object: the impact of the COVID-19 pandemic on the business valuation process and methodology.

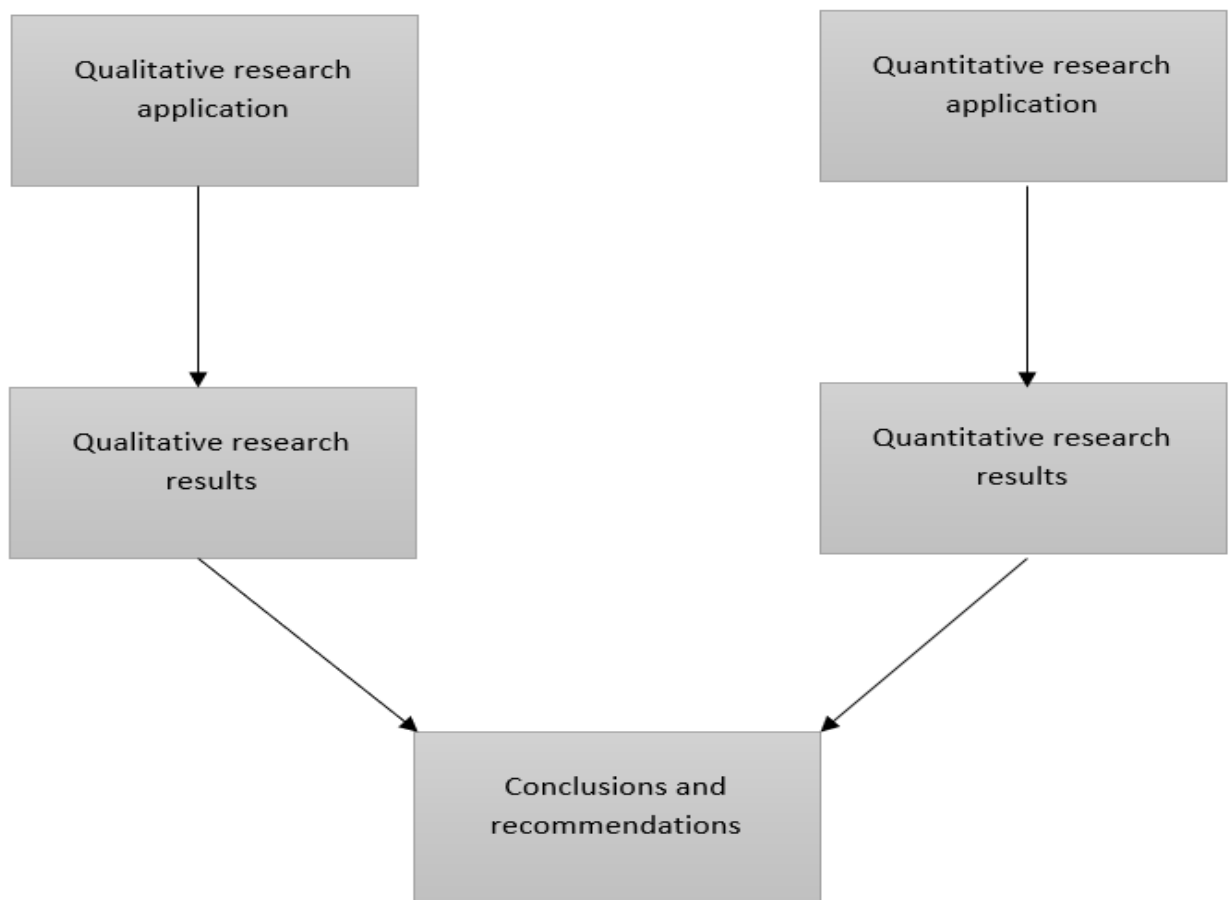
Research goal: Identify key aspects of the COVID-19 pandemic impact on the business valuation process and methodology.

Research tasks:

1. Interview officially approved business valuers in Lithuania and gather information regarding COVID-19 pandemic impact on valuations processes and methodology.
2. Provide valuers answers and opinions to various questions related to business valuation in the context of a pandemic.
3. Provide suggestions and recommendations for business evaluation in the context of a pandemic based on the experience of valuers.
4. To present the company „Novaturas“ and the impact of the COVID-19 pandemic on the tourism-aviation sector.
5. Determine and compare „Novaturas“ company values using the income approach during a pandemic
6. Provide an opinion of whether a standard business valuation methodology is appropriate for use during a pandemic and what factors should be considered.

This research is based on mixed method strategy. This type of strategy provides broader understanding, which is very important in activities effected by COVID-19 pandemic, because otherwise research results would be too narrow, focusing on some particular aspect, but not on the whole problem. Qualitative part is based on gathering data from business valuations professionals in order to reveal the practical impact of the pandemic on the business evaluation process, as well as to learn new aspects that have not yet been revealed in the scientific literature on the novelty of this topic. Quantitative part is dedicated to test business valuation methods, in this case using income approach, which is one of the most used by valuers, therefore, it will be possible to analyze the applicability of the methods during a pandemic.

Figure 3. Research sheme



Qualitative method application. Introduction to questionnaire for valuation experts. Review of each question and possible results.

Quantitative method application. Detailed clarification of business valuation including income approach based valuation of selected company.

Analysis of data gathered. This contains of received respondent's answers and financial data gathered from a particular business case used in quantitative research.

Presentation of results. Analysis of results gathered after application of mixed-method strategy.



Conclusions about challenges and opportunities. This section will be dedicated to answer main research problem question and finalize results.

This research will follow moral principles to conduct and report research without deception or intention to harm the participants of the study or members of the society as a whole. All the information received from respondents will be anonymous and participants will be able to terminate questionnaire if that violates their rights. Research will focus on transparency, all the information will be documented and results will be based on facts gathered. Data of research will follow the data protection policy, to ensure security and confidentiality.

## **3.2. Research methods**

### **3.2.1. Qualitative research**

Qualitative research includes semi-structured interview for professionals in the field of valuation. The advantage of the expert method is that experts logically analyze any problem by providing practical insights and formally processing it data. In the light of the experts' assessments, this research will disclose recent effect of COVID-19 pandemic to business valuation process as a whole.

Audit, Accounting, Property Valuation and Insolvency Management Services under Lithuania Ministry of Finance of the Republic provides list of 42 certified business valuers (online website: <https://avnt.lrv.lt/lt/veiklos-sritys/vertinimas-1/vertintojai-ir-vertinimo-imonos>). A survey will be conducted in an attempt to interview all listed business valuers in order to determine the views of these experts on the COVID-19 pandemic impact on business valuation process and methodology. The total sample consists of 42 business valuation experts whose professional activities are related to corporate business (shareholdings). Correspondents will be selected from the list based on their responsibilities and experience, as well as information and recommendations received from business valuation associations, ministries and other approved organizations in Lithuania.

The aim of qualitative research is to gather first-hand practical information from business valuation professionals. Given that this topic is a completely new phenomenon, there is a possibility that the topic will not be fully disclosed based on quantitative research alone, especially as the scientific literature is just beginning to analyse the impact of the pandemic on evaluation, so the amount of material is not large.

The study's design is based on the consistency with which data is collected. The study will employ the semi-structured interview approach, because target group is very small in Lithuania, valuation experts are usually highly busy people and in some situations respondents can compete with each other. In this case, survey will be directly communicated with respondents through in person meetings, mobile, internet calls or emails. After the respondents have agreed to be interviewed, the type, dates, time and other relevant matters of the interview will be agreed. This approach was chosen since it does not need large expenditures, as well as the fact that it can provide assistance fast and the requisite number of responders is readily available. It's also worth noting that these responders can all be identified.

At the beginning of the interview, a presentation will be made, including the purpose of the investigation and it will state that the confidentiality of the responsible person would be guaranteed when presenting the results of the investigation, respondents and their companies will not be mentioned and the answers will be coded. Semi-structured interview will consist of two question

blocks. The first block of semi-structured interview scenario will be designed to examine how the COVID-19 pandemic affected business valuation methodology and specific methods. Therefore, in the first part, the questions related to income, market and asset methods will be asked in order to find out which method the valuers chose when valuating businesses in the context of a pandemic and giving reasons for the limitations of applicability of particular methods. The second part will be devoted to analyzing the overall impact of the pandemic on the business valuation process, as follows asking general questions to get as much information as possible from different angles to discover new aspects not yet explored in the scientific pandemic valuation literature. Valuers will be asked what major challenges were encountered in processing valuations during the pandemic as well as the forecasting cash flow projections and preparing additional disclosures related to the COVID-19 pandemic risk.

Table 6. Qualitative research questions.

1. What additional adjustments are required in applying standard business valuation techniques during the pandemic to the valuation of the company?
2. Please justify which business valuation method is most appropriate to use to value businesses severely affected by the COVID-19 pandemic?
3. Is it possible to properly determine a company's future cash flows using the income method during a pandemic?
4. Under the income method, what additional changes have been made to the valuation methodology and separate estimates of the variables due to the effects of the pandemic?
5. Under the market method, is the impact of the pandemic making it more difficult to find similar transactions? If so, how did you solve this problem
6. In which cases was the asset valuation method used during the pandemic?
7. Have you added additional restrictions and / or warnings in delivering and disclosing business value based on the impact of the pandemic? If so, which ones.
8. Please briefly share, in general, what are the main challenges you have faced in the business valuation process due to the impact of the pandemic?

### 3.2.2. Quantitative research

Quantitative research part will focus on testing how business value changed due to COVID-19 pandemic impact, using income approach, as literature analysis concludes, that this method is most applicable one at the same time provides most accurate values, however, the decision on the chosen valuation model may change due to the results of a qualitative study if experts use more often other methods in practice, such as comparison or asset values. For this, case study of „Novaturas“ company, which operates in business sector significantly affected by the COVID-19 pandemic will be analyzed.

The financial data will be gathered from Lithuania state enterprises centre of registers (online website: <https://www.registrucentras.lt/savitarna/>) or using world-wide financial data base sources, which have access to different companies all around the globe including „Bloomberg“ (<https://www.bloomberg.com/professional/solution/bloomberg-terminal/>), „Yahoo finance“ (<https://finance.yahoo.com/>). This type of research will provide calculation based insights about business valuation methods effectiveness and credibility in the context of pandemic. As well will help to test perceptions received from valuation experts questionnaires and to shape broad understanding of the problem.

As stated in the scientific literature, there is no single model that is suitable for all situations, for this reason qualitative research results will help to decide, which method to choose for further analysis, because experts opinion will allow a proper impression to be formed of the most commonly used methods in practice during the COVID-19 pandemic. In literature, valuers in most of cases used income approach, qualitative research results will confirm or refute this hypothesis. The comparison of the obtained values will help to assess whether the methods are applied consistently and will also allow to analyze the differences and their causes, which should help to decide the impact of the COVID-19 pandemic on the whole business evaluation process by including the results of the qualitative study.

At the beginning of the case study, the aviation-tourism sector and the impact of the pandemic on related activities will be presented. This information will be needed to make assumptions for forecasting the recovery of the tourism-aviation sector in the coming years. Eventually, all of this will convert into cash flow projections that will be used in the income approach to estimate the value of „Novaturas“ based on currently available information. The following section will be dedicated to measure specific aspects of the income method used in the discount rate, betas and the cost of capital. All this information will determine the value of the „Novaturas“ company at 2022. In the next part of the quantitative study, the value of the „Novaturas“ company in the previous 2021 year will be determined. This phase will follow exactly the same steps as the 2022 „Novaturas“ valuation. The values of the „Novaturas“ company in two different pandemic years will make it possible to compare the value of a company during the peak of a pandemic and disclose aspects that needs to be taken into account when applying income methods to properly value a company during the COVID-19 pandemic

Quantitative research will be based on income method. This approach indicated the market value of a business enterprise based on the present value of the cash flows that the business could be expected to generate in the future. Such cash flows discounted at a discount rate (the cost of capital) that reflects the time value of money and the risks associated with the cash flows.

The discounted cash flows method, which is used for the valuation of „Novaturas“ equity is a universal method. According to the methodology, the value of a specific company is equal to the present value of cash flows generated by the company's shareholders. The estimation of a company's value consists of three parts: forecasting of financial statements, which allow calculating cash flows available for capital providers, estimating cash flow in perpetuity and determining an appropriate discount rate.

In this valuation of the „Novaturas“ equity it will be used the free cash flow method to firm. The enterprise value of company is estimated by discounting cash flows from operating activities (after

capital expenditures and working capital investments), which can be paid out for the capital providers of the company ( financial debt owners and equity shareholders). Value of the company's equity is then calculated by subtracting outstanding financial debt from the estimated enterprise value.

Valuation is prepared according to the following steps:

Free cash flows are calculated using developed forecasts of the consolidated balance sheet, profit/loss statement and cash flow statement of the „Novaturas“ company.

Net operating profit less adjusted taxes (NOPLAT) is calculated as follows: profit tax is assumed for the estimated EBIT (i.e, the operating profit for an enterprise without financial debt is calculated since the financing structure cost has already been estimated by calculating the WACC). In this case, the free cash flow have been calculated for a firm for financial years 2022-2025.

Free cash flow for the firm (FCFF) calculated as a sum of NOPLAT and depreciation. Decreased by change in working capital and capital expenditure.

The present value of FCFF is determined by applying the discount factor to the estimated FCFF. Discount factor for each period is calculated using WACC, raised to the appropriate present value factor for each forecasted year.

It is assumed that in 2025 the company will reach the long-term steady growth stage and starting with 2026 FCFF will continue to grow at a steady continual growth pace. The steady growth rate is chosen taking into account the expected long-term economic growth of the Eurozone economy. Taking into account these assumptions, the relatively low 1,6 % long-term growth rate is used, due to COVID-19 pandemic impact and at the time of this assessment, the fact of the Ukraine-Russia war was known. Assuming continuous growth, the terminal value of FCFF is calculated for year 2026 using Gordon formula:

$$TV = DF_{FCFF} \times (1+a)/(WACC-a) \tag{5}$$

Where:

TV – Terminal value

DF<sub>FCFF</sub> – Discounted free cash flow for the forecast period.

a – Terminal growth rate

WACC – Weighted average cost of capital.

By applying a corresponding discount factor for the financial year 2026 the present value of the terminal value is then estimated.

The enterprise value (EV) is calculated by adding up the present FCFF values and the present value of the terminal value.

To arrive at the estimated equity value, EV is decreased by the estimated value of interest-bearing debt as of 31 December 2021 and increase by the estimated value of the company's cash as of 31 December 2021.

WACC and equity cost:

We calculate the discount rate as the weighted average cost of capital (WACC):

WACC = Cost of equity x (1/(1+target D/E ratio)) + cost of debt x target D/E ratio x (1-T) / (1+ target D/E ratio)

(6)

Where:

WACC – the weighted average cost of capital.

D/E – ratio of interest-bearing debt to total value of company's equity.

T – profit tax rate

The cost of equity is calculated according to the formula:

Equity cost = Risk free rate of return + Beta x market risk premium + specific company risk premium

(7)

## **4. INVESTIGATION OF QUALITATIVE AND QUANTITATIVE RESEARCH PROCEDURES AND RESULTS**

Qualitative research was conducted during the 2021 February 27 – March 16 period. Survey respondents were selected based on a list published by the Lithuanian finance ministry. Respondents had to meet one criterion, namely to have a qualification certificate of a business valuer or a business valuer expert. On a public list, there are 42 certified valuation experts, most of them were contacted by mobile phone call to be invited to participate in a survey. Respondents were informed in advance about the topic of the conversation. After the consent has been obtained, an email was sent with a survey link to the business evaluators. A survey included 8 open types of questions, regarding business valuation methods, their application during the COVID-19 pandemic period and other challenges faced due to existing uncertainty. A total of 9 respondents participated in the survey. Although the number of business evaluators is higher, it reaches the already mentioned 42 professionals, but some of them are not actively involved in the business evaluation process and therefore do not have the appropriate experience to participate in this survey, while others refused to participate for some personal reason. Taking into account that the Lithuanian business valuation market is very small, due to this 9 respondents which consist 21 % of total officially certified business valuers, should provide sufficient information to give an impression of the impact of the pandemic on the valuation of the business in the Lithuanian market.

During the surveys, the respondent's personal information about their selves was not recorded, due to the fact, that survey was only sent to business valuation professionals and other personal attributes were not relevant for surveys conclusions. Some information, such as name, the exact job title to ensure the confidentiality of the respondents at work is not provided. In the analysis of the study, all information was coded according to the order of the respondents' interviews from R1 to R9. Ensuring confidentiality allowed respondents to express their views freely and not to be harmed rules for communication about the company.

### **4.1. Qualitative research results**

This section presents the results of an empirical qualitative study and their analysis. Survey questions can be divided into two groups, first group focuses on business valuation methods and their application during the pandemic period while the second one is more related to the attempt to find out what kind of general challenges business evaluators have encountered, given the novelty of the topic, such information would help to expand the results of the research and analyze the obtained results from another angle.

The first question of the survey was: Please justify which business assessment method is most appropriate to use to assess business value severely affected by the COVID-19 pandemic?

Given that there is no consensus in the literature analyzed which business valuation method is the most suitable for assessing the business-affected COVID-19 pandemic, it was relevant to understand which method in practice is preferred by business valuers in Lithuania.

Table 7. Summary of respondents' answers regarding valuation methods.

Respondents	Valuation method
(R1; R3; R4; R8; R9)	Income approach
(R7)	Asset-based approach
(R2; R5; R6)	Did not specify the particular method, all methods can be applied based on the situation.

This survey confirms the material in the literature that the income method is most often used to value businesses during times of uncertainty, but on the other hand, one specific model is not suitable for all, as highlighted by the rest of the respondents.

„The effects are either positive or negative. Throughout the pandemic, businesses that have been positively affected have been the main focus. The income method was usually chosen as the main method for their assessment. And businesses that were severely affected probably didn't have anything to pay for the valuation, so they probably didn't apply for the valuation. If, however, this had to be assessed and it was still viable, or at least it could reasonably be expected that cash flows would return to normal, then even then the income approach was the main one chosen. For those businesses where business continuity is in doubt, an asset-based approach is the most appropriate valuation.“ (R2).

Based on the answers to the first question, it can be stated that the choice of business valuation, in general, is based on the situation of the evaluated business, but the most popular business valuation method remains the income method even during a pandemic, and in some cases when business going to bankruptcy or cash flows can not be reliably forecasted then asset approach is usually selected.

Given that the income method is the most popular tool for valuing businesses under normal economic conditions as well as a confirmed survey conducted during a pandemic, this method is widely used, which raises the question of how valuers succeed in determining future cash flows that are a key part of this method.

In general, all respondents to the survey agree that it is not possible to estimate a company's cash flows in a completely reliable manner, whether it is a pandemic situation or not. A pandemic poses additional risks, making cash-flow forecasting more complex and requiring greater analysis of both the market itself and the company's financial condition.

„Both during the pandemic period and in any other period, cash flow planning must be based on assumptions, so the value is determined under certain assumptions. If it is difficult to decide on any of the assumptions, several scenarios and so on are analyzed.“ (R3).

„During the pandemic period, depending on the specifics of the company, additional analysis of indicators is needed to help assess the company's situation, according to which future cash flows are estimated, but this never guarantees complete accuracy.“ (R9).

The income method as the main tool of business valuation has its own strengths and weaknesses. As with all of the business valuation techniques, the income method is based on different assumptions, which are presented through forecasted future company cash-flows. Assumptions are associated with risk, it depends on how well the business valuator knows the market, company, economic situation and other factors which influences companies' value. As respondents' answers show, there is always risk regarding forecasted cash-flows reliability, but it does not mean that the income method is less adaptable during pandemic or uncertain times, it more relates to whether the assumptions are plausible or not.

Analyzing the application of the income approach during the pandemic in more detail, the evaluators were asked the question: In the application of the income value approach, what additional changes were made to the valuation methodology and separate estimates of variables due to the pandemic impact?

As in the case of cash flow forecasting, the respondents agreed unanimously. The evaluators emphasized that there were no changes in the evaluation methodology, but that additional attention should be paid to the variables.

„There were no additional changes to the evaluation methodology. As I mentioned, when the business environment changes, the situation of the company itself - all this is assessed and expressed through the size of the discount rate.“ (R5).

Discount rate and growth rate are the main variables in the income method valuation. These indicators are used to reflect the risk and the value of future money, as well as to form the basis for the company's growth rates.

„In the discount rate, because the choice is to determine the relative risk that has increased during a pandemic.“ (R8).

Therefore, the valuers did not make additional adjustments or non-standard actions in the methodology, but reviewed the risks associated with the key variables carefully and focused on determining the appropriate values to reflect the current economic situation.

Another valuation technique that follows the income approach is the market approach. This method is usually chosen when it is not possible to determine reliably the future cash flows using the income approach, so valuers have been asked: is the impact of the pandemic making it more difficult to find similar or equivalent transactions when the market approach is applied?

„The effects of the pandemic have neither complicated nor facilitated the selection of comparators or transactions - businesses in similar activities have been similarly affected by the pandemic around the world.“ (R2).

The main disadvantage of applying this market method in Lithuania is that the financial market in the country is very small, therefore it is difficult to find comparable transactions. Most evaluators acknowledge that this evaluation method is not widespread in their practice, which makes it difficult



to assess the impact of a pandemic on a comparable method, as it has been difficult to apply before the pandemic also.

Table 8. Summary of respondent's answers regarding the impact on the market method.

Impact	Respondents
Did not affect	R2; R5
Harder to find comparables	R1; R3
Other methods are used	R4; R6; R7; R8; R9

Continuing analysis of business valuation methods in the context of a pandemic, the remaining key method is the asset-based approach. The asset-based method is generally classified as highly specific because it is used when it is not possible to estimate reliably the future cash flows or when the entity is going to be liquidated. Given the uncertainty caused by the pandemic and the difficulties encountered in trying to assess future prospects, the evaluators were asked: In which cases was the asset-based valuation method used during the pandemic?

The main purpose of this question is to find out whether the impact of the pandemic has influenced the wider application of the asset-based approach and to determine whether this approach is more appropriate than the income and comparative methods previously analyzed.

According to the respondents, the application of the asset-based approach was not affected by the pandemic, as the use of this approach remained due to the same factors as before the pandemic.

„As always, as required by the Property Valuation Methodology or International Valuation Standards.“ (R5).

„When a company does not generate and does not plan to generate positive financial flows during the forecast period.“ (R6).

The answers of the remaining respondents are very similar to those mentioned above. Most argue that the asset-based approach is used when the entity has significant assets, when it is not possible to properly determine future cash flows, or simply that approach has not been applied during pandemic periods, and more detailed comments have been refrained from.

From this brief analysis, it can be concluded that the application of the asset-based approach remained unchanged during the pandemic and is mostly used in specific situations where other methods cannot provide adequate estimates.

Concluding the analysis of key business valuation methods and their application in the context of a pandemic, the aim was to find out: What additional adjustments are needed in applying standard business valuation methods during a pandemic?

The three main methods of business valuation have been used for quite some time, and the literature discusses the advantages and disadvantages of the business valuation models, presenting

different interpretations of the appropriate application. Given this diversity in the application of business valuation methods in the scientific literature, it is important to know how a pandemic has forced the modification of standard methods to establish reliable values, as this pandemic effect has not yet been extensively studied in recent years.

All respondents stressed that the COVID-19 pandemic affected standard business valuation methods, but the methodology itself remained unchanged, with more emphasis on input data.

„The methods are quite universal, there is no need to change the methods themselves, but more attention needs to be paid to the selection and substantiation of the input data and assumptions.“ (R1).

Most valuers emphasized the importance of already discussed discount rate, which has a very strong direct impact on the measurement of future cash flows. As the business environment changes, the resulting risks are transmitted through methodological indicators, but leaving the business valuation methodology itself unchanged.

„No additional adjustments were required, but more attention is paid to the company’s cash flows to determine whether the company has sufficient cash inflows and outflows to support operations. This was especially important when government-supported affected businesses. The assessor needs to consider how long the company can continue to operate under the uncertain conditions of COVID-19.“ (R8).

This question has made it clear that business valuation methods are universal, applicable to different situations even during the COVID-19 pandemic situation, but that more attention needs to be paid to input data and risk-reflective indicators.

All of the questions analyzed above were designed to understand the adequacy of business valuation methods in the context of a pandemic, and to understand which one is most appropriate, highlighting the strengths and weaknesses based on the experience and insights of business valuers. The remaining two questions will focus on the general experiences of business appraisers encountered during the pandemic, and on discovering new information from primary sources that has not yet been discussed in the literature review.

One of the remaining questions in the survey was: Did you add additional restrictions and / or warnings when presenting and disclosing business value, taking into account the impact of the pandemic? If so, which ones.

All evaluators unanimously agreed that additional disclosures due to the effects of the pandemic were made available to stakeholders to disclose the estimated value of the item being valued. Additional disclosures relate in almost all cases to the uncertainty that needs to be disclosed to the end user in order to properly understand the estimated value of the particular item.

„Yes. Special conditions have been included in accordance with the recommendations of European and International Assessment Organizations.“. (R3).

„Given the impact of economic uncertainty in forecasting cash flows and other unobservable inputs used in valuation techniques (such as certain risk-adjusted discount rates), additional disclosures have been made to enable users to understand how fair value has been determined.“ (R7).

The evaluators' responses show that the uncertainty caused by the pandemic has not been overlooked and is properly documented in the valuation reports, based on valuation standards recommendations.

The last question in the survey was of a general nature to assess the experience of evaluators and to understand the challenges faced, while at the same time discovering new aspects that could further develop the topic of the whole work. Briefly share, in general, what are the main challenges you have faced in the business assessment process due to the impact of the pandemic?

As the question is very abstract, many different opinions and observations were received. However, it can be concluded that the pandemic had an impact on the normal routine of business appraisers, but no critical problems or challenges arose, everything was managed, but certain things became more complicated than usual.

„The risk of activity, revenue and growth forecasting is very high and uncertain. The value obtained by making incorrect predictions fluctuates greatly.“ (R1).

„There were no additional challenges - perhaps the impact of global market activity, which required more and more sophisticated valuation services.“ (R2).

As the answers to the previous questions have highlighted, the main problem in valuing the entire business during the COVID-19 pandemic is uncertainty, which directly leads to significant changes in value. Uncertainty, at the same time, does not allow a reliable estimate of future cash flows, which are generally the basis for measuring the business as a whole.

„It is more difficult to predict the company's future cash flows because they have declined critically since the onset of the pandemic, and it is difficult to predict when to recover.“ (R6).

„The COVID-19 crisis, and hence the uncertainty affecting the valuation process, raises many questions regarding cash flow projections and factors such as the discount rate and market / transaction recurrences.“ (R8).

These responses indicated that the main challenge for valuers was the correct estimation of the uncertainty mentioned above and its application in standard business valuation methods. In general, the practice of business appraisers has not changed, most things have remained the same as the majority of society has adapted from home-based services, and the standard business appraisal methods used before the pandemic, were used also during the pandemic, but it simply required a different perspective to assess situations and risks, substantiate certain assumptions.

#### **4.2. Qualitative research conclusions**

Business valuation in the context of a pandemic is a new topic in recent years that raises one key question: can businesses be valued reliably even under very uncertain conditions? Valuing a business in unpredictable times has been an actual topic in the past as well, but like every economic-global crisis, it has its own conditions and aspects that create ever new challenges that appraisers have to overcome over time.

This quantitative study focused on the opinions of business valuers on various issues related to business valuation methods, their application, and the challenges encountered in the performance of their profession. This approach has been chosen because business valuation in the context of the COVID-19 pandemic is a relatively new topic, so the amount of scientific literature for this particular situation is not yet large, therefore, gathering first-hand information from evaluators is crucial to expanding the amount of information available and trying to discover new approaches to the situation.

At the beginning of the survey, the aim was to find out which business valuation method is the most appropriate to use in the context of a pandemic, and this question is very important, as the answers will be used to select a business valuation method to determine the value of a particular company. As expected, the income approach remains in the context of a pandemic as one of the key tools in business valuation, while the remaining comparative and asset approaches are more appropriate under certain conditions or when it is not possible to apply the revenue approach reliably. The income approach must take into account the risks associated with cash flow projections, even under normal market conditions it is not possible to fully provide reliable forecasts, and this risk is even greater in the context of a pandemic, requiring valuers to use different scenarios and select the most realistic option. Risks in the income approach are usually reflected in the discount rate, a variable that the evaluators have focused on in order to properly value in a pandemic situation. The remaining comparative and asset methods are more applicable under specific conditions according to the valuers' responses. The comparative method is rarely used in Lithuania, as it is often difficult to find comparable transactions and the pandemic has made it even more difficult to do so. The asset-based approach is applied only when the entity has significant assets or is in liquidation, in which case it is not possible to determine the future cash flows properly.

The survey responses to general questions highlighted that standard business valuation methods remain the main tools for determining value in a pandemic context, so there is no need for additional new models. But, as mentioned above, the standard methodology requires a review of certain indicators or different scenarios due to the existing uncertainty. In summary, business evaluation as a profession has adapted to the challenges posed by the COVID-19 pandemic, as have additional risks in all areas, but the existing tools allow for appropriate evaluations and the rest depends on the situation and the evaluator's abilities.

### **4.3. Case study of „Novaturas“ business valuation**

#### **4.3.1. About „Novaturas“**

„Novaturas“ is the largest tour operator in the Baltic States, having established itself in the Lithuanian market in 1999, and since 2004 is a Baltic market leader. „Novaturas“ is famous for its strong position in the Baltic markets, a well-known brand, large customer loyalty and excellent links with travel agencies and service providers, due to this company can offer customers a wide range of services at an attractive price.

„Novaturas“ products are available to people through various distribution channels. The company works with more than 400 travel agencies, including - the largest agencies in the Baltic States. It has its sales outlets in most of Lithuania, Latvia and Estonia in cities. It also invests in developing e. commerce channels. Internet trading is conducted through the Company's websites and international platforms.

The range of „Novaturas“ products is very diverse: it offers different types of trips, prices and travel directions, because of its wide range of products company can offer products that meet the needs and expectations of different customer groups. This is what allows „Novaturas“ to maintain its position in almost all market segments and adapt effectively to changing customer needs.

„Novaturas“ shares have been traded on the Warsaw and Nasdaq Vilnius stock exchanges since 2018. The share capital of the company is EUR 234,210. It consists of 7,807,000 ordinary registered shares with a nominal value of EUR 0.03. The number of the Company's shares giving votes at the General Meeting of Shareholders is 7,807,000. The majority of the company's shares belong to minority shareholders (51%), the rest of the shares belong to the investment funds and the company's founders.

The shareholder structure of „Novaturas“ consists of different related parties. The majority of the share capital belongs to other (free float) shareholders, and the rest to the investment fund and the company's founders.

Group structure consists of „Novaturas“ Group which is a holding structure and AB „Novaturas“ is the parent company, which conducts operations directly and through subsidiaries in their respective markets - Lithuania, Latvia and Estonia.

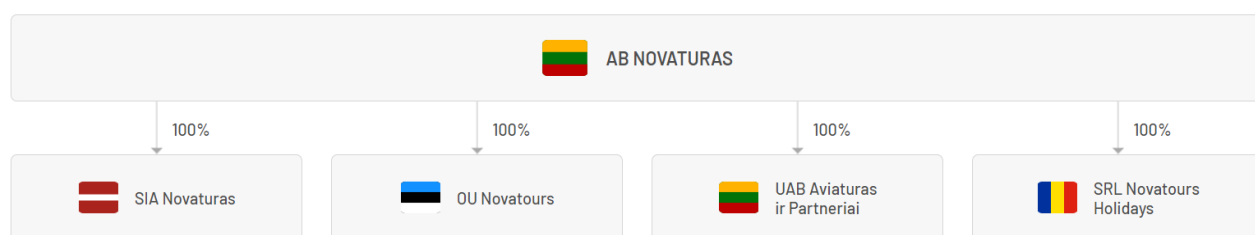


Figure 4. Novaturas group structure. (AB „Novaturas“ investors relation data, 2022)

„Novaturas“ offers are based on the organization of recreational air travel. This includes holiday trips to popular summer resorts in Europe (Mediterranean), North Africa and Asia, as well as the most popular winter destinations in Europe - Italy, France and Andorra. Customers are offered a full range of services: flights, airport transfers to the hotel, accommodation, 24-hour local guides and entertainment during the trip, including full-day summer excursions.

Sightseeing trips by air plane are long-distance trips, including trips to Asia and North Africa. Charter and regular flights from Vilnius, Riga and Tallinn are organized. „Novaturas“ offers flights, accommodation, bus tours and all-day travel guides that accompany tourists throughout the trip and provide them with information about the country and attractions and attractions.

Sightseeing bus tours to European attractions (including Poland, France, Italy, Austria, Croatia and Greece). Sightseeing trips by bus are organized from Lithuania. „Novaturas“ offers bus tours, accommodation, bus tours to attractions and tour guides who accompany tourists throughout the trip.

„Novaturas“ other products include airline tickets and online hotel reservations also sells these products to individual customers and tour operators, who often need seats on the most popular charter flights.

### 4.3.2. „Novaturas“ historical performance

Table 9. Consolidated statement of comprehensive income.

EUR 000s	2021	2020	2019	21/20 change, %	20/19 change, %
<b>Sales</b>	110,127	32,894	179,723	+234,8	-81,7
<b>Cost of sales</b>	(96,728)	(29,299)	(157,839)	+230,1	-81,4
<b>Gross profit</b>	13,399	3,595	21,884	+272,7	-83,6
<b>Operating (expenses)</b>	(10,956)	(7,346)	(18,252)	-51,2	59,7
<b>Other operating income</b>	10	189	112	-94,7	+68,8
<b>Other operating (expenses)</b>	(2)	(2)	(3)	-	+33,3
<b>Profit from operations</b>	2,451	(3,564)	3741	168,7	-195,3
<b>Finance income</b>	104	737	481	-85.9	+53,2
<b>Finance (expenses)</b>	(1,227)	(3,723)	(1,132)	-67.0	+226,8
<b>Profit before tax</b>	1,328	(6,550)	3,090	+120.3	-311,9
<b>Income tax (expense)</b>	(56)	800	1,124	-107	-28,8
<b>Net profit</b>	1,272	(5,750)	4,214	122,1	-236,4
<b>Total comprehensive income</b>	1,690	(6,393)	5,787	126,4	-210,5
<b>Earnings per share</b>	0.16	(0.74)	0.54	121,6	-237,0

Table 10. Consolidated balance sheet.

(EUR 000s)	2021	2020	2019
<b>Non-current assets</b>	31,614	31,760	31,595
<b>Current assets</b>	16,408	13,602	17,793
<b>Total assets</b>	48,022	45,362	49,388

<b>Equity</b>	15,450	13,761	20,154
<b>Current liabilities</b>	20,250	20,463	24,874
<b>Non-current liabilities</b>	12,322	11,138	4,360
<b>Total equity and liabilities</b>	48,022	45,362	49,388

Table 11. Main financial ratios.

<b>Indicators</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>21/20 change %</b>	<b>20/19 change %</b>
<b>Gross profit margin (%)</b>	12,1	7,1	14,3	+5,0 pp	+5,4 pp
<b>EBITDA margin (%)</b>	1,8	-38,2	3,1	+40,0 pp	-41,3 pp
<b>Operating profit margin (%)</b>	1,7	-40,3	2,4	+42,0 pp	-42,7 pp
<b>Profit before taxes margin (%)</b>	0,6	-63,4	1,9	+64,0 pp	-65,3 pp
<b>Net profit margin (%)</b>	0,5	-50,8	7,2	+51,3 pp	-58,0 pp
<b>Return on assets (ROA) (%)</b>	0,3	-2,5	5,4	+2,8 pp	-7,9 pp
<b>Return on equity (ROE) (%)</b>	1,14	-14,53	15,73	+15,76 pp	-30,26 pp
<b>Equity ratio (%)</b>	32,2	31,2	36,6	-7,2 pp	-5,4 pp

#### **4.3.3 COVID-19 impact on the tourism-aviation sector and „Novaturas“ company.**

The „Novaturas“ company was selected for business valuation case analysis because of its area of activity, which was one of the most affected by the COVID-19 pandemic. The travel industry is inseparable from aviation, as one of „Novaturas“ main activities is tours operation in different parts of the world, so international flights are mandatory to ensure the company's business continuity. The aviation sector was hit very hard by the pandemic, as most flights were cancelled to protect humanity

from the spread of the virus and at the same time future recovery prospects were unknown because the exact recovery period could not be precisely identified. Given these factors, companies operating in the aviation-tourism sector are well placed to assess the impact of the pandemic on business valuation, as the main features of this crisis, such as uncertainty, loss of revenue and liquidity problems, are highly reflected in almost all companies in this business segment.

The revelation of the coronavirus in late December 2019 and the classification of COVID-19 as a pandemic on March 11, 2020, wreaked havoc on the aviation sector. As research by ( Kaitano, Godwell, and David, 2021) shows the number of commercial flights between February and December 2020 (3rd picture). The analysis discovered that the biggest volume of commercial flights (commercial passenger flights, cargo flights, charter flights, and certain business flights) occurred in February, with the highest number of tracked daily flights occurring on February 14th, with a total of 109,400 flights. Following this date, the number of flights dropped dramatically, owing to measures such as airport closures and those that impacted the tourism industry in general, such as border closures and the closure of key regional and global tourist destinations around the world as governments sought to better respond to the COVID-19 pandemic.



Figure 5. Tracked number of commercial flights globally between January and December 2020. (Kaitano, Godwell and David, 2021)

The COVID-19 problem continued to have a negative impact on the passenger airline industry in 2021 also. Despite the fact that worldwide economic activity improved as a result of increased industrial output, travel limitations kept air passenger numbers low, particularly for international travel. The reopening of various domestic and regional markets in the second quarter of 2021 enhanced the numbers compared to the first quarter. However, between January 2021 and July 2021, the industry's revenue passenger kilometres (RPKs) fell by 64.5 per cent compared to the same time in pre-crisis 2019.



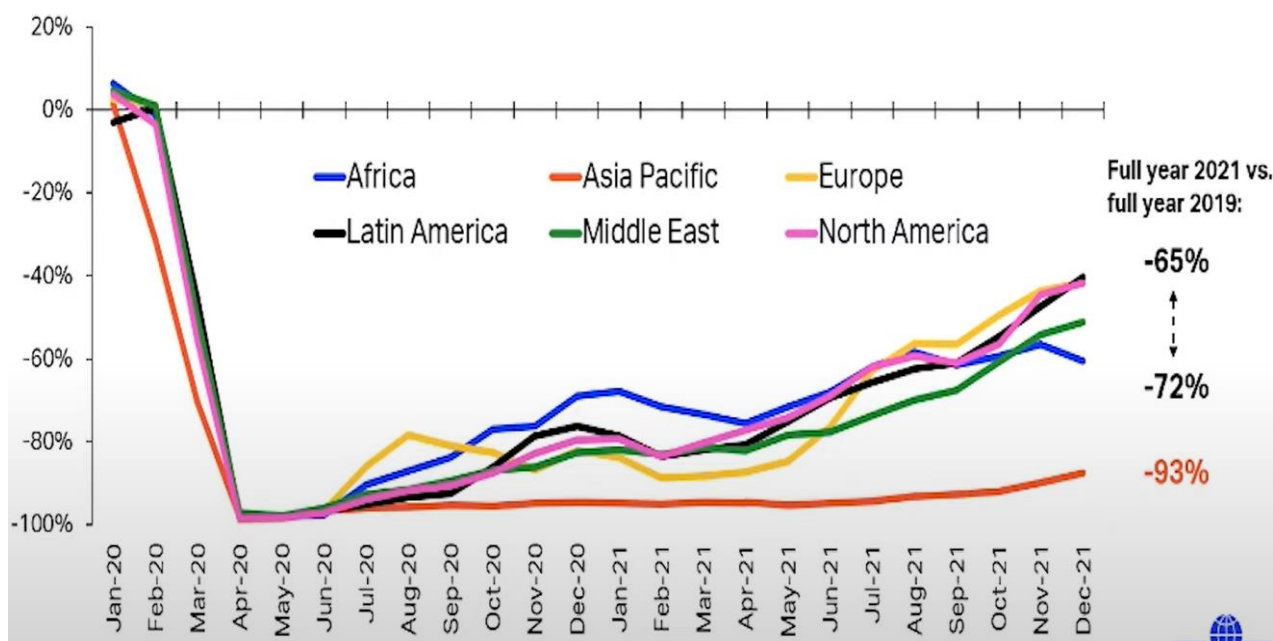


Figure 6. IATA Economics using data from IATA Monthly statistics and Refinitiv Eikon.(IATA, 2022)

In 2021, overall travel demand increased. Despite travel limitations imposed by Omicron, this tendency lasted through December. This reveals a great sign about passenger confidence and willingness to travel. The aviation industry goal for 2022 is to normalize travel in order to reinforce that confidence. While international travel is still uncommon in many regions of the world, there is progress being made.

Due to the COVID-19 pandemic, the „Novaturas“ group in 2020 did not carry out the usual activities of organized travel. In order to manage the situation caused by COVID-19, the „Novaturas“ Group has taken strict cost-saving measures, negotiated with business partners abroad, and used state aid to compensate part of the workforce pay. The „Novaturas“ group company (SIA Novatours) has signed an agreement with the state for loans from the Latvia Altum guarantee scheme for a 3-year grace period of EUR 1 million to secure the liquidity of the loan. Later in 2020 Novaturo Group agreed with Luminor Bank on long-term loan deferral and credit line extension.

In 2020, due to the coronavirus pandemic, The „Novaturas“ group lived and operated in crisis conditions. In response to the extraordinary situation, the company undertook a consistent implementation of the crisis program: actively cooperated with the parties governments, public authorities, and financial partners have drastically reduced spending. Although 2020 were financially unprofitable for the company, the company started the year 2021 with positive signs - the necessary conditions were agreed upon additional loans were settled by March with all travellers unable to leave due to the pandemic vacation. Since February, the company has updated its flight programs to the most popular winter holiday destinations - Egypt and Tenerife, and from April to Turkey. In 2021 the prestigious exotic trips to distant lands have also returned to the offer. Despite being part of the most popular exotic countries not open to international travellers or still imposing strict restrictions on them as early as November for travellers we offered flights to Cuba, Mexico, Mauritius, Seychelles, Thailand, Zanzibar. „Novaturas“ group of companies plans to return in 2022 to pre-pandemic supply.

#### **4.3.4. Tourism-aviation sector forecast**

Like every crisis, the shock to the tourism-aviation sector caused by the COVID-19 pandemic should end over time. There are already positive signs when it comes to humanity's fight against the pandemic. The number of people vaccinated is steadily rising, while the number of cases is falling, which makes it possible to control the pandemic and prevent it from spreading. These things are immediately reflected in the economy as constraints are reduced, allowing businesses to carry out their normal activities without any obstacles. In this case, the tourism-aviation sector is no exception, as people have the opportunity to travel if the security criteria are met and national laws become less restrictive over time. Therefore, it can be assumed that the tourism sector should also recover in the coming years and achieve the results demonstrated before the COVID-19 pandemic.

According to the latest (The World Tourism Organization, 2022) panel of experts international arrivals are expected to recover to 2019 levels in 2024 or later, according to the majority of experts (64 percent), while the rest of the experts expects to see recovery during 2023. Only a very small number of experts believe that a rapid recovery can be expected as early as 2022, and there are objective reasons for this. At this moment, vaccine coverage is inconsistent, and several destinations, particularly in Asia and the Pacific, still have their borders blocked. With the rise in oil prices, increase in inflation, prospective rise in interest rates, high debt levels, and prolonged disruption in supply chains, a hard economic climate might put additional pressure on the effective recovery of international tourism. However, the ongoing tourist recovery in many areas, namely in Europe and the Americas, along with widespread vaccination and a large coordinated removal of travel restrictions, may assist to restore consumer confidence and speed international tourism recovery in 2022.

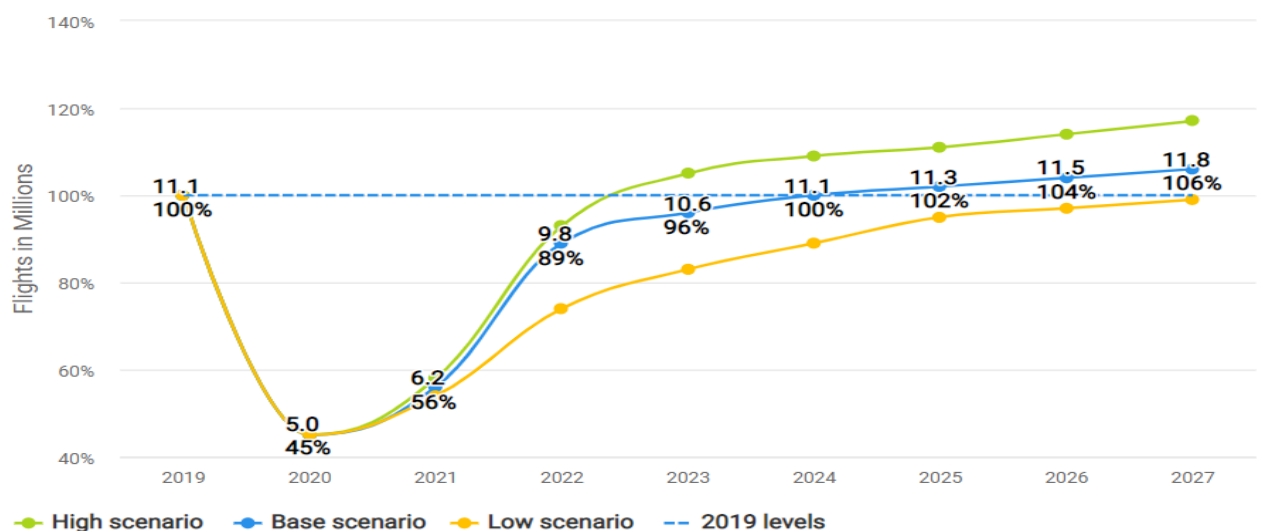
From the aviation sector perspective, the coming years' forecast is similar to tourism predictions. The International Air Transport Association (IATA) predicts that overall traveler numbers will reach 4.0 billion in 2024, surpassing pre-COVID-19 levels (including multi-sector connecting journeys as one passenger) (103 percent of the 2019 total). Government limitations on travel are the largest and most direct determinants of passenger numbers. Fortunately, more countries have realized that travel restrictions have little to no long-term influence on viral propagation. As a result, the gradual lifting of limitations is providing a much-needed boost to travel opportunities.

PASSENGER NUMBERS,

SHARE OF 2019	2021	2022	2023	2024	2025
Industry-wide	47%	83%	94%	103%	111%
International	27%	69%	82%	92%	101%
Domestic	61%	93%	103%	111%	118%
Asia Pacific	40%	68%	84%	97%	109%
Europe	40%	86%	96%	105%	111%
North America	56%	94%	102%	107%	112%
Africa	46%	76%	85%	93%	101%
Middle East	42%	81%	90%	98%	105%
South America	51%	88%	97%	103%	108%
Central America	72%	96%	102%	109%	115%
Caribbean	44%	72%	82%	92%	101%

Figure 7. IATA / Tourism economics air passenger forecast, march 2022.(IATA, 2022).

An analysis of the different data sources leads to the conclusion that the tourism-aviation sector should soon return to pre-pandemic levels. This period of the COVID-19 pandemic obliges evaluators to consider possible different scenarios, as forecasting is driven by a large number of different variables whose changes very quickly have a direct impact on the value of the business. Based on a recent (Eurocontrol, 2022) publication there are three different scenarios: high, baseline, and low, which are based on different assumptions regarding possible sector recovery.



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Figure 8. Eurocontrol forecast update 2021-2027.(Eurocontrol, 2021)

In the High scenario, the vaccination program will continue in Europe and across the world, using dependable vaccines that are still effective, including against variations. Travel restrictions are eased thanks to a concerted interregional strategy, with most interregional movements resuming by the middle of 2022. In this case, business travel rebounds swiftly. The baseline scenario is similar, but with business travel only rebounding to pre-COVID levels in 2023 (partly due to a lack of a coordinated inter-regional strategy). The impact of several downside risks, such as slow/patchy vaccination rates, the need for new vaccines due to variants, the reintroduction of lockdown and similar measures, the continuation or re-imposition of travel restrictions, economic risks, such as high energy prices, and a long-term drop in people's propensity to fly, are all considered in the low scenario.

#### **4.4. Valuation of „Novaturas“ company in 2022**

To estimate the „Novaturas“ equity value using DCF methodology, consolidated financial forecast for years 2022-2026 was used, developed according to tourism – aviation sector future growth predictions presented in the section above. Forecast follows a baseline scenario, assuming that „Novaturas“ operations will reach pre-COVID numbers by the end of 2023. After this, the company should keep a continuous growth pace of around 2 % per year and surpass 2019 financial figures.

It is forecasted that sales will grow by 45% in 2022 to EUR 160 mln, as the gradual pandemic recovery continues also COVID-19 pandemic restrictions in most countries ceased and due to this travel numbers must increase. By the end of 2022, total sales will be 12 % less than in 2019, but this situation will change in 2023, as the majority of tourism – aviation sector forecasts confirm, that during the 2023 year pre-pandemic situation should return. Taking into account that web sales, during pandemic increased significantly it means that „Novaturas“ is focused on digital marketing, which allows it to reach a larger customer base much faster, and helps reduce costs, as most of the sales took place through physical divisions before the pandemic. Given this very significant growth potential through digitalization, in 2023 revenues are not only expected to reach the level of 2019, but will also slightly exceed them by 11%, partly reflecting the optimistic recovery of the tourism-aviation sector. After 2023 the company's growth rate should return to normal, and according the current situation grow at least higher than the long-term growth rate. Based on this prediction, sales growth in 2024 and 2025 is +3 %.

Continuing with the cost forecast, the key factor is cost of sales, which consists of the cost of flights, bus travel, sightseeing tours and other sales. Before the pandemic, the gross profit margin was between 10 and 15 %, respectively, taking into account that due to the pandemic or other significant events, the cost should not change significantly and grow according to the inflation rate, it was decided to leave an average margin of 13 % for future periods.

In the operating expenses section, there is a significant change in agency commission expenses because, as mentioned earlier, the changes caused by the pandemic forced „Novaturas“ to switch to digital sales, which do not include additional commission expenses to the company, so increasing sales through this channel not only increases revenues but also lowers expenses. Therefore the growth of agencies commission is lower compared with the previous pre-pandemic periods. The other main part of operating expenses is related to employee salaries, as there is no information on the possible expansion of the company, therefore salary expenses increased according to the current inflation rate,

approximately 10 percent. Other cost-related items do not change significantly in future periods, as it do not account for the majority of the company's costs under both normal and pandemic conditions, and minimal growth has been projected to match growing business volumes.

Table 12. Consolidated statement of comprehensive income forecast

<b>Group forecast</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>Group sales ' 000 EUR</b>	<b>32 894</b>	<b>110 127</b>	<b>160 953</b>	<b>199 653</b>	<b>207 582</b>	<b>215 690</b>
Travel agencies	23 651	76 098	109 073	130 843	130 706	134 628
Own retail	3 849	12 224	18 387	23 693	25 461	26 225
Web sales	4 803	19 162	29 566	39 488	42 786	44 070
GDS	592	2 643	3 927	5 629	8 629	9 768
Cost of sales	(29 299)	(96 728)	(140 759)	(173 935)	(179 152)	(184 527)
<b>Gross profit</b>	<b>3 595</b>	<b>13 399</b>	<b>20 194</b>	<b>25 718</b>	<b>28 430</b>	<b>31 163</b>
Agencies commission	(1 749)	(6 091)	(8 136)	(9 826)	(10 032)	(10 150)
Advertising	( 472)	( 596)	( 834)	(1 168)	(1 635)	(2 290)
Employee related expenses	(2 590)	(2 793)	(3 072)	(3 380)	(3 717)	(4 089)
Office rent	( 89)	( 244)	( 256)	( 269)	( 282)	( 297)
Depreciation	( 441)	( 149)	( 164)	( 180)	( 198)	( 218)
Consultation expenses	( 275)	( 218)	( 283)	( 368)	( 479)	( 623)
Other operating expenses	(1 543)	( 857)	(3 187)	(3 798)	(4 086)	(4 417)
<b>EBIT</b>	<b>(3 564)</b>	<b>2 451</b>	<b>4 262</b>	<b>6 729</b>	<b>7 999</b>	<b>9 080</b>
Financial net	(2 986)	(1 123)	(1 179)	(1 238)	(1 300)	(1 365)
<b>Pre-tax Profit</b>	<b>(6 550)</b>	<b>1 328</b>	<b>3 082</b>	<b>5 491</b>	<b>6 699</b>	<b>7 715</b>
Tax	800	( 56)	( 462)	( 824)	(1 005)	(1 157)
<b>Net profit</b>	<b>(5 750)</b>	<b>1 272</b>	<b>2 620</b>	<b>4 667</b>	<b>5 694</b>	<b>6 558</b>

Table 13. Forecast margins summary.

<b>Group margins</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
Gross profit margin	10.9%	12.2%	12.5%	12.9%	13.7%	14.4%
EBIT margin	-10.8%	2.2%	2.6%	3.4%	3.8%	4.2%
Pre-tax Profit margin	-19.9%	1.2%	1.9%	2.7%	3.2%	3.6%
Net profit margin	-17.5%	1.2%	1.6%	2.3%	2.7%	3.0%

Table 14. Balance sheet forecast.

<b>Group forecast ' 000 EUR</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>Non-current assets</b>						
Goodwill	30 327	30 322	30 322	30 322	30 322	30 322
Intangible fixed assets	115	115	115	215	315	365
Tangible fixed assets	122	72	72	72	72	72
Long-term receivables	23	57	92	127	162	197
Deferred tax assets	954	829	371	0	0	0
Other non-current assets	219	219	219	219	219	219
<b>Total non-current assets</b>	<b>31 760</b>	<b>31 614</b>	<b>31 191</b>	<b>30 955</b>	<b>31 090</b>	<b>31 175</b>
<b>Current assets</b>						
Inventories	2	-	2	2	2	2
Prepayments and accrued expenses	7 837	6 974	7,674	8,374	9,074	10,274
Trade receivables	144	73	223	812	962	1,112
Prepaid income tax	70	70	170	270	370	470
Other trade receivables	184	332	732	1,132	1,532	2,617
Other current financial assets	-	200	200	200	200	200
Cash reserve	2 300	-	-	-	2 300	3 300
Cash and cash equivalents	3 065	8 759	7 875	10 183	11 192	12 180
<b>Total current assets</b>	<b>13 602</b>	<b>16 408</b>	<b>16 876</b>	<b>20 973</b>	<b>25 632</b>	<b>30 155</b>
<b>Total Assets</b>	<b>45 362</b>	<b>48 022</b>	<b>48 067</b>	<b>51 928</b>	<b>56 722</b>	<b>61 330</b>
<b>Equity</b>						
Share capital	234	234	234	234	234	234
Compulsory reserve	29	29	29	29	29	29
Other reserve	( 276)	142	142	142	142	142
Retained earnings	13 774	15 045	17 665	22 332	28 026	34 584
<b>Total equity</b>	<b>13 761</b>	<b>15 450</b>	<b>18 070</b>	<b>22 737</b>	<b>28 431</b>	<b>34 989</b>
<b>Non-current liabilities</b>						
Long term loans	9 140	5 120	4 120	3 120	2 120	1 120
Other long term liabilities	1 915	7 119	6 119	5 219	4 319	2 369
Non-current lease liabilities	83	83	83	83	83	83
<b>Total non-current liabilities</b>	<b>11 138</b>	<b>12 322</b>	<b>10 322</b>	<b>8 422</b>	<b>6 522</b>	<b>3 572</b>
<b>Current liabilities</b>						
Short term loans	5 798	5 131	1000	1000	1000	1000
Trade payables	1 961	5 484	5 684	5 784	5 884	5 984
Advances received	10 876	8 488	8 988	9 488	9 988	10 488
Income tax payable	7	6	6	100	100	100
Other short term liabilities and accrued expenses	1 178	989	3 649	4 049	4 449	4 849
Current lease liabilities	148	148	148	148	148	148
Other short term financial liabilities	495	4	200	200	200	200
<b>Total current liabilities</b>	<b>20 463</b>	<b>20 250</b>	<b>19 675</b>	<b>20 769</b>	<b>21 769</b>	<b>22 769</b>
<b>Total Equity and Liabilities</b>	<b>45 362</b>	<b>48 022</b>	<b>48 067</b>	<b>51 928</b>	<b>56 722</b>	<b>61 330</b>

The balance sheet forecast represents how „Novaturas“ assets, equity and liabilities change during the forecasted period. Non-current assets remain significantly unchanged as the basis is goodwill, which fluctuates sharply only under certain conditions, so it was decided to leave the balance of the last year for the entire forecast period, as a result of which all non-current assets remained stable.

Changes in current assets are mainly influenced by prepayments and changes in cash balances. This is related to „Novaturas“ type of business, as the company pays in advance for upcoming organized trips, so it's normal to see growing prepayments, which reflect the business recovery from the COVID-19 pandemic and at the same time increase the company's cash balance for services sold as a result. The change in equity is also affected by the recovered operations of the company, as a result of which the earned profit is directly reflected in the increased retained earnings. The analysis of current and non-current liabilities shows a decrease in liabilities, as it is assumed that companies will be able to reduce the debts incurred due to the pandemic, which are mainly driven by the recovery of „Novaturas“ and increased positive cash flows. Advances received also increased as prepayments, due to similar reasons, because company collects payments for the trips before it actually takes place.

Table 15. NWC forecast.

<b>EUR'000</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>Current assets</b>	13 602	16 408	16 876	20 973	25 632	30 155
<b>Cash and cash equivalents</b>	3 065	8 759	7 875	10 183	11 192	12 180
<b>Current assets minus cash and cash equivalents</b>	10 537	7 649	9 001	10 790	14 440	17 975
<b>Current liabilities minus borrowings</b>	14 517	14 971	18 527	19 621	20 621	21 621
<b>NWC</b>	(3 980)	(7 322)	(9 526)	(8 831)	(6 181)	(3 646)
<b>Change in NWC</b>	5 439	(3 342)	(2 204)	695	2 650	2 535

The summary of the NWC calculations shows that the indicator is negative for the whole period. Before the pandemic, „Novaturas“ NWC was also negative, due to the relatively large amounts of advances received, but as mentioned earlier, this is related to the business cycle of the company. The NWC was hit hard by the pandemic, mostly with increased loans that at the same time reflected growth in short-term liabilities, leading to a decline in the NWC till 2023. In the following periods, as „Novaturas“ business recovers, the share of liabilities decreases and directly current assets increase, as a result of which a positive change in the NWC can be realized.

Table 16. FCFF forecast :

<b>EUR ' 000</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>EBIT</b>	(3 564)	2 451	4 262	6 729	7 999	9 080
<b>Tax rate</b>	12.2%	4.2%	15.0%	15.0%	15.0%	15.0%
<b>Tax expenses</b>	( 800)	56	654	1 052	1 250	1 442
<b>NOPLAT</b>	(2 764)	2 395	3 608	5 677	6 749	7 638
<b>Depreciation</b>	441	149	200	180	198	218
<b>Capex</b>	( 24)	( 105)	( 200)	( 250)	( 300)	( 350)
<b>Change in NWC</b>	(5 439)	3 342	2 204	( 695)	(2 650)	(2 535)
<b>FCFF</b>	(7 786)	5 781	5 812	4 912	3 997	4 971

Looking at „Novaturas“ situation from the FCFF's perspective, it can be concluded that „Novaturas“ was hit very hard by the pandemic in the first year, as cash flows were negative after the closure of core activities and liabilities only increased. However, after the pandemic periods show a much more positive financial performance of „Novaturas“, the company immediately took strict crisis management measures, which is reflected in the second crisis year cash flow in 2021, the company's FCFF indicator reaches EUR 5,781 million. After 2021, the FCFF remains positive, this ratio justifies the „Novaturas“ recovery in later periods and indicates that the company will be able to offset the negative effects of the pandemic crisis.

Table 17. WACC estimation:

<b>Risk-free rate (Rf)</b>	0.68%	The risk-free rate is calculated on the basis of long-term bonds of the Government of the Republic of Lithuania. Source:( <a href="https://tradingeconomics.com/lithuania/government-bond-yield">https://tradingeconomics.com/lithuania/government-bond-yield</a> )
<b>Market risk premium (Rp)</b>	5.08%	Market risk premium from Damodaran in 01-2022 for Lithuania ( <a href="https://pages.stern.nyu.edu/">https://pages.stern.nyu.edu/</a> )
<b>Small stock premium (Ssp)</b>	2.78%	Source: <a href="https://www.aaii.com/investor-update/article/16189-the-small-cap-premium-is-below-its-historical-average">https://www.aaii.com/investor-update/article/16189-the-small-cap-premium-is-below-its-historical-average</a>
<b>Unlevered beta</b>	1.02	Unlevered beta, segment hotel/gaming, Damodaran ( <a href="https://pages.stern.nyu.edu/">https://pages.stern.nyu.edu/</a> )
<b>Levered beta</b>	1.39	Levered Beta = Unlevered Beta * ( 1 + D/E ( 1 - t ) )
<b>Effective tax rate</b>	15%	Source company forecast 2022
<b>D/E ratio</b>	42.37%	D/E ratio for hotel/gamin segment by Damodaran ( <a href="https://pages.stern.nyu.edu/">https://pages.stern.nyu.edu/</a> )
<b>Cost of equity (Ce)</b>	10.51%	Cost of equity (Ce) = Rf + B (Rp) + Ssp
<b>WACC</b>	8.10%	WACC = Ce * E + Cd * D = 10.51%*70.24% + 2.35%*29.76%
<b>E/(D+E)</b>	70.24%	E/(D+E) ratio from hotel/gaming segment by Damodaran ( <a href="https://pages.stern.nyu.edu/~adamodar">https://pages.stern.nyu.edu/~adamodar</a> )
<b>D/(D+E)</b>	29.76%	D/(D+E) ratio from hotel/gaming segment by Damodaran ( <a href="https://pages.stern.nyu.edu/~adamodar">https://pages.stern.nyu.edu/~adamodar</a> )
<b>Credit spread for the company</b>	2.09%	(3.88%-1.79%)



<b>Pretax cost of debt</b>	2.77%	(2.09%+0.68%)
<b>Cost of debt (Cd)</b>	2.35%	2.77%*(1-15%)
<b>Hotel/Gaming</b>	3.88%	Cost of debt in hotel/gaming segment in Europe by Damodaran ( <a href="https://pages.stern.nyu.edu/~adamodar">https://pages.stern.nyu.edu/~adamodar</a> )
<b>Long term treasury bond rate</b>	1.79%	Long term treasury bond rate by Bloomberg at (1/31/2022) ( <a href="https://www.bloomberg.com/markets/rates-bonds/government-bonds/us">https://www.bloomberg.com/markets/rates-bonds/government-bonds/us</a> )

Table 18. Equity valuation:

<b>EUR'000</b>	2022	2023	2024	2025
<b>FCFF</b>	5 812	4 912	3 997	4 971
<b>Period factor</b>	1	2	3	4
<b>Present value factor</b>	0.925	0.856	0.792	0.732
<b>Discounted FCFF</b>	5 376	4 203	3 164	3 641
<b>Terminal growth rate</b>	1.6%			
<b>Sum of discounted FCFF</b>	16 386			
<b>Discounted terminal value</b>	41 703			
<b>Enterprise value</b>	58 089			
<b>Net debt*</b>	1 492			
<b>100% of equity value before adj.</b>	59 581			
<b>Liquidity discount**</b>	10%			
<b>EQUITY, EUR</b>	53 623			

Notes:

\*Net debt EUR 1 492 thousand, EUR 10 251 thousand net debt, EUR 8 759 thousand cash and cash equivalents at end of period 31.12.2021.

\*\*Liquidity discount rate of 10% was applied, considering the fact that the COVID-19 pandemic is still exists and future prospects can not be fully guaranteed.

Table below summarize estimated Company's equity value sensitivity to changes in assumed level of WACC.

Table 19. Sensitivity analysis

<b>Sensitivity analysis result</b>	
<b>WACC changes</b>	<b>Equity value changes</b>
-5%	4.65%
-1%	0.88%
0%	0%
1%	-0.86%
5%	-4.11%

The WACC changes can influence the level of equity value significantly, considering uncertainty in the market during COVID-19 pandemic, equity value can deviate in a short period of time.

The market value of the 100% equity of „Novaturas“ is EUR 53 623 thousand based on discounted cash flows method calculations. Business valuation was performed taking into account current business environment. In case of any changes in the outside or inside business circumstances, the valuation might change. The valuation report has been prepared on the basis of publicly available market information.

#### **4.5. Valuation of „Novaturas“ company in 2020**

##### **4.5.1. Situation in the tourism-aviation sector during the peak of the pandemic**

The COVID-19 pandemic in 2020 was the most significant shock to air travel and the aviation sector since WWII. Previously, the terrorist events of September 11, 2001, and the global financial crisis of 2007–08 were regarded to have had significant negative effects on aviation. However, neither had a significant influence compared to the expected 66 percent reduction in worldwide revenue passenger kilometers (RPKs) in 2020. Travel restrictions that grounded most of the aviation sector in 2020 April had far-reaching implications. Air service between cities throughout the world was

disrupted. Some service was maintained in China's and the United States' domestic markets, which began to recover in March. However, most scheduled intercontinental links between cities have vanished. Freight continued to fly, but the near-cease of passenger flights presented a significant dilemma for the worldwide supply systems on which our contemporary economy depends. International air travel was struck far harder than domestic air travel or international air freight. This is the outcome of states establishing travel restrictions in attempt to prevent COVID-19 from being imported from beyond their borders. In February, international aviation travel began to decline. It plummeted to a 98 percent lower level in March and April than the previous year. The ensuing sluggish rebound of international air travel has been tremendously discouraging for airline profits and global economic linkages. By September, global aviation traffic was over 89 percent lower than a year earlier (IATA, 2020).

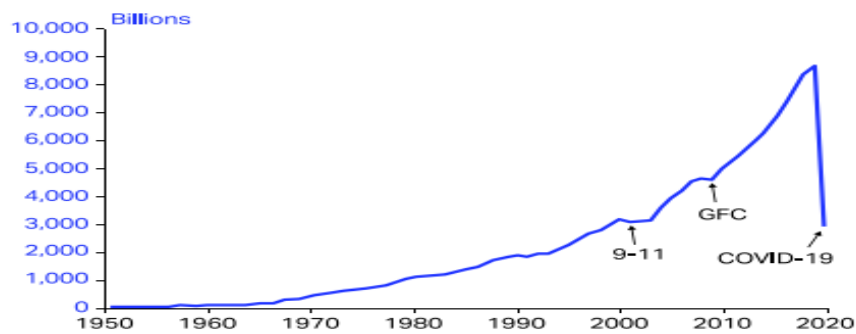


Figure 9. Worldwide revenue passenger kilometers flow by IATA economics

According (The World Tourism Organization, 2020) slow virus containment, poor traveller trust, and significant travel restrictions remaining in place owing to the COVID-19 pandemic slowed international tourist arrivals (overnight visitors) by 72 percent in January-October 2020 compared to the same period previous year. In comparison to the same period last year, there were 900 million fewer international visitor arrivals in the first ten months of 2020, resulting in a loss of US\$ 935 billion in international tourism export profits, more than ten times the loss in 2009 due to the global economic crisis. Between January and October 2020, arrivals in Asia and the Pacific fell by 82 percent. This ten-month period showed a 73 percent dip in the Middle East and a 69 percent drop in Africa. International arrivals fell by 68 percent in both Europe and the Americas.

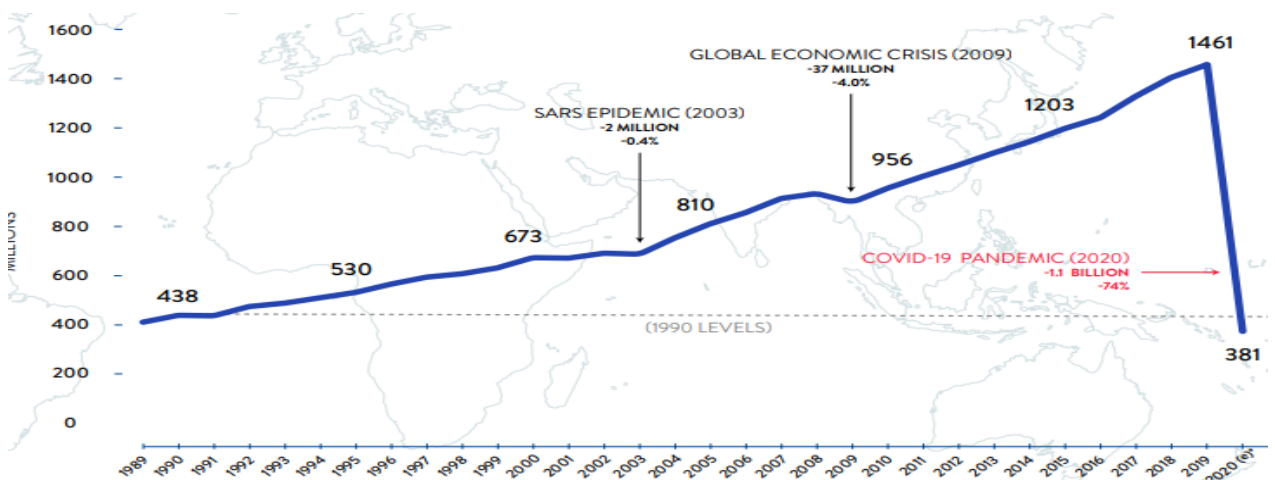


Figure 10. International tourist arrivals by IATA 2020

### 4.5.2. Tourism-aviation sector forecast based on 2020 data

The forecast for the tourism-aviation sector for the coming year based on the information for 2020 can be divided into 3 scenarios: optimistic, realistic and pessimistic.

The optimistic scenario assumes full vaccine coverage across the European network by summer 2021, as well as a coordinated relaxing of travel restrictions and the reintroduction of a few long-haul flows, with traffic recovering to 2019 levels by 2024. This scenario corresponds to the airlines' summer plans, which are based on the pent-up demand impact, especially in the VFR (Visiting Friends and Relatives) sector. Given the present status of vaccine rollout efforts, this first scenario is considered optimistic, with a coordinated strategy across States less likely to be attained in the coming months.

The most likely realistic scenario is that by 2024, traffic will have recovered to 95% of what it was in 2019, thanks to widespread vaccination across Europe and coordinated lifting of travel restrictions across global areas by Q1 2022, with more long-haul flows beginning to return.

The third, most pessimistic scenario forecasts that traffic in 2024 will be just 74% of what it was in 2019, with a full recovery not occurring until 2029. This scenario envisions ongoing limitations in the coming years as a result of sporadic vaccination uptake and/or new virus strain breakouts, with passenger confidence being harmed.

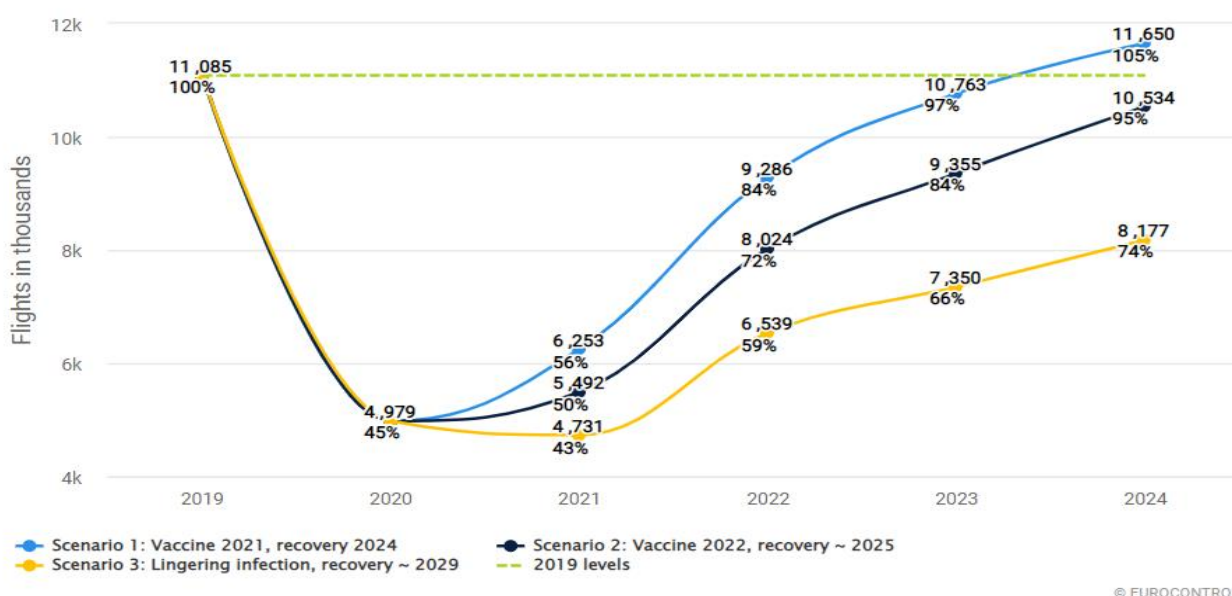


Figure 11. Eurocontrol forecast update 2020-2024.(Eurocontrol, 2020)

Most tourism experts do not anticipate foreign tourism to recover to pre-COVID levels until 2023, according to a research conducted by the United Nations World Tourism Organization (2020). The main reasons for this are the extremely strict travel requirements imposed by countries to curb the spread of the COVID-19 pandemic. Therefore, it is very difficult to expect the sector to recover in the coming years, the most likely scenarios are only a few years later.

### When do you expect international tourism to return pre-pandemic 2019 levels in your country?

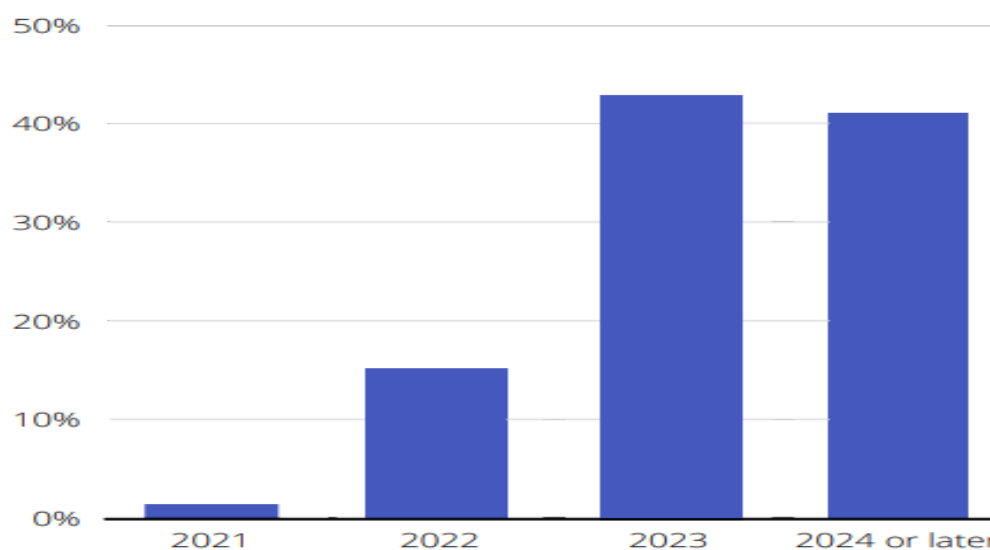


Figure 12. UNWTO panel of experts survey

#### 4.5.3. Estimating equity value in 2020

During the peak of the COVID-19 pandemic, much uncertainty surrounded the world and the tourism-aviation sector came to a halt, but analysts predicted that the cycle of the pandemic crisis should drag on for several years and return to normal by 2024. „Novaturas“ forecast was based on these assumptions, but compared to the 2022 valuation, in this case the forecast was based on a pessimistic option, because at that time the vaccination process was not yet in place, which means that the financial results for the coming years are much lower compared with the same pre-pandemic periods. For 2021, as the progress of vaccination was difficult to predict, the results of the „Novaturas“ company are projected to be negative, assuming that it is not yet possible to operate under normal conditions due to safety constraints. A stable recovery is forecasted for the following periods between 2022-2024, as the peak of the pandemic should have passed during this period and the flow of travellers will gradually reach the pre-pandemic level. In the overall picture of the forecast, the company's revenue will increase due to returning customer flows, and at the same time the costs related to the increased activity will increase, other unforeseen costs or expenses are not included in the forecast period. From a margin perspective, there are no significant changes, the company's recovery is forecast to be stable and should take place gradually depending on the flow of travelers.

Table 20. Consolidated statement of comprehensive income forecast according 2020 data.

<b>Group forecast</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>
<b>Group sales ' 000 EUR</b>	<b>32 894</b>	<b>77 281</b>	<b>129 401</b>	<b>150 967</b>	<b>170 737</b>
Travel agencies	23 651	54 097	90 580	104 677	118 516
Own retail	3 849	7 728	12 940	15 097	17 074
Web sales	4 803	13 911	23 292	27 174	30 733
GDS	592	1 546	2 588	4 019	5 415
Cost of sales	(29 299)	(71 028)	(113 644)	(131 006)	(148 369)
<b>Gross profit</b>	<b>3 595</b>	<b>6 253</b>	<b>15 756</b>	<b>19 961</b>	<b>23 368</b>
Agencies commission	(1 749)	(4 006)	(6 708)	(7 826)	(8 923)
Advertising	( 472)	( 550)	( 770)	(1 078)	(1 509)
Employee related expenses	(2 590)	(2 851)	(3 136)	(3 450)	(3 795)
Office rent	( 89)	( 200)	( 210)	( 221)	( 232)
Depreciation	( 441)	( 149)	( 164)	( 180)	( 198)
Consultation expenses	( 275)	( 300)	( 390)	( 507)	( 659)
Other operating expenses	(1 543)	(1 208)	(1 707)	(1 989)	(2 297)
<b>EBIT</b>	<b>(3 564)</b>	<b>(3 011)</b>	<b>2 672</b>	<b>4 710</b>	<b>5 755</b>
Financial net	(2 986)	( 950)	( 998)	(1 047)	(1 100)
<b>Pre-tax Profit</b>	<b>(6 550)</b>	<b>(3 961)</b>	<b>1 674</b>	<b>3 663</b>	<b>4 655</b>
Tax	800	594	( 251)	( 549)	( 698)
<b>Net profit</b>	<b>(5 750)</b>	<b>(3 367)</b>	<b>1 423</b>	<b>3 113</b>	<b>3 957</b>

Table 21. 2020 Forecast margins summary.

<b>Group margins</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>
Gross profit margin	10.9%	8.1%	12.2%	13.2%	13.7%
EBIT margin	-10.8%	-3.9%	2.1%	3.1%	3.4%
Pre-tax Profit margin	-19.9%	-5.1%	1.3%	2.4%	2.7%
Net profit margin	-17.5%	-4.4%	1.1%	2.1%	2.3%

Table 22. 2020 Balance sheet forecast

<b>Group forecast ' 000 EUR</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>
<b>Non-current assets</b>					
Goodwill	30 327	30 327	30 327	30 327	30 327
Intangible fixed assets	115	115	165	215	265
Tangible fixed assets	122	122	122	122	122
Long-term receivables	23	63	103	143	183
Deferred tax assets	954	1,548	1,297	748	50
Other non-current assets	219	219	219	219	219
<b>Total non-current assets</b>	<b>31 760</b>	<b>32 394</b>	<b>32 233</b>	<b>31 774</b>	<b>31 166</b>
<b>Current assets</b>					
Inventories	2	2	2	2	2
Prepayments and accrued expenses	7 837	8 137	8,937	9,537	9,937
Trade receivables	144	200	600	800	1,000
Prepaid income tax	70	20	50	150	250
Other trade receivables	184	276	876	1,476	1,876
Other current financial assets	-	200	200	200	200
Cash reserve	2 300	-	-	900	2 300
Cash and cash equivalents	3 065	2 800	1 913	2 480	2 935
<b>Total current assets</b>	<b>13 602</b>	<b>11 635</b>	<b>12 578</b>	<b>15 545</b>	<b>18 500</b>
<b>Total Assets</b>	<b>45 362</b>	<b>44 029</b>	<b>44 811</b>	<b>47 319</b>	<b>49 666</b>
<b>Equity</b>					
Share capital	234	234	234	234	234
Compulsory reserve	29	29	29	29	29
Other reserve	( 276)	142	142	142	142
Retained earnings	13 774	10 407	11 830	14 943	18 900
<b>Total equity</b>	<b>13 761</b>	<b>10 812</b>	<b>12 235</b>	<b>15 348</b>	<b>19 305</b>
<b>Non-current liabilities</b>					
Long term loans	9 140	7 120	6 120	5 425	4 745
Other long term liabilities	1 915	5 892	4 942	4 492	3 862
Non-current lease liabilities	83	83	83	83	83
<b>Total non-current liabilities</b>	<b>11 138</b>	<b>13 095</b>	<b>11 145</b>	<b>10 000</b>	<b>8 690</b>
<b>Current liabilities</b>					
Short term loans	5 798	6 550	6 150	5 150	3 150
Trade payables	1 961	3 545	4 254	4 800	5 600
Advances received	10 876	7 800	8 300	8 800	9 300
Income tax payable	7	6	6	100	100
Other short term liabilities and accrued expenses	1 178	1 578	2 078	2 478	2 878
Current lease liabilities	148	148	148	148	148
Other short term financial liabilities	495	495	495	495	495
<b>Total current liabilities</b>	<b>20 463</b>	<b>20 122</b>	<b>21 431</b>	<b>21 971</b>	<b>21 671</b>
<b>Total Equity and Liabilities</b>	<b>45 362</b>	<b>44 029</b>	<b>44 811</b>	<b>47 319</b>	<b>49 666</b>

No major changes are expected in the forecast of the balance sheet of „Novaturas“. The Company's fixed assets remain stable as they are based on goodwill that should not change and other fixed assets

balance sheet items does not fluctuate significantly, due to pandemic consequences, company will not during forecasting period acquire meaningful fixed assets. Changes in current assets are affected by the recovery of the company's operations, therefore the main operating items such as receivables, advances and cash determine the stable growth of current assets. Liabilities show a reduction in the company's long-term debt incurred during the pandemic crisis to mitigate the effects of the pandemic. At the same time current liabilities are growing, but same as assets due to the recovery of company activities, on the other hand there is no significant change as the increased cash flows are used to reduce short-term loans. Changes in equity are determined solely by retained earnings, which increases after the pandemic crisis downturn and begins to increase due „Novaturas“ earned profit.

Table 23. 2020 NWC forecast

<b>EUR'000</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>
<b>Current assets</b>	13 602	11 635	12 578	15 545	18 500
<b>Cash and cash equivalents</b>	3 065	2 800	1 913	2 480	2 935
<b>Current assets minus cash and cash equivalents</b>	10 537	8 835	10 665	13 065	15 565
<b>Current liabilities minus borrowings</b>	14 517	13 424	15 133	16 673	18 373
<b>NWC</b>	(3 980)	(4 589)	(4 468)	(3 608)	(2 808)
<b>Change in NWC</b>	5 439	( 609)	121	860	800

The NWC remains negative throughout the forecast period, as the decline caused by the COVID-19 pandemic will not be fully covered over the next few years. On the other hand, the analysis of the changes shows a positive shift, as the recovering financial flows of the company will help to reduce the incurred liabilities and increase the assets. Therefore, it can be said that the NWC will reach a positive threshold in the future, as shown by the positive changes of recent years.



Table 24. 2020 FCFF forecast

EUR ' 000	2020	2021	2022	2023	2024
EBIT	(3 564)	(3 011)	2 672	4 710	5 755
Tax rate	12.2%	15.0%	15.0%	15.0%	15.0%
Tax expenses	( 800)	( 452)	401	707	863
NOPLAT	(2 764)	(2 559)	2 271	4 004	4 892
Depreciation	441	149	164	180	198
Capex	( 24)	( 74)	( 124)	( 174)	( 224)
Change in NWC	(5 439)	609	( 121)	( 860)	( 800)
FCFF	(7 786)	(1 875)	2 190	3 150	4 066

The FCFF indicator is directly related to the company's financial performance through profit and loss. 2020-2021 period in which the COVID-19 pandemic reaches its peak, so the company's cash flow is negative and at the same time Novaturas suffers losses. EBIT becomes positive from 2022, when the company is no longer significantly constrained by the restrictions of the COVID-19 pandemic and „Novaturas“ has the opportunity to fully return to normal operations. Capex and depreciation remain stable in forecasted period as significant acquisitions of non-current assets are not considered.

Table 25. 2020 WACC estimation.

<b>Risk-free rate (Rf)</b>	0,04%	The risk-free rate is calculated on the basis of long-term bonds of the Government of the Republic of Lithuania. Source:( <a href="https://tradingeconomics.com/lithuania/government-bond-yield">https://tradingeconomics.com/lithuania/government-bond-yield</a> )
<b>Market risk premium (Rp)</b>	5.88%	Market risk premium from Damodaran in 01-2021 for Lithuania ( <a href="https://pages.stern.nyu.edu/">https://pages.stern.nyu.edu/</a> )
<b>Small stock premium (Ssp)</b>	2.8%	Source: <a href="https://www.aaii.com/investor-update/article/16189-the-small-cap-premium-is-below-its-historical-average">https://www.aaii.com/investor-update/article/16189-the-small-cap-premium-is-below-its-historical-average</a>
<b>Unlevered beta</b>	0.86	Unlevered beta, segment hotel/gaming, Damodaran ( <a href="https://pages.stern.nyu.edu/">https://pages.stern.nyu.edu/</a> )
<b>Levered beta</b>	1.21	Levered Beta = Unlevered Beta * ( 1 + D/E ( 1 - t ))
<b>Tax rate</b>	15%	Source company forecast 2021
<b>D/E ratio</b>	47.31%	D/E ratio for hotel/gaming segment by Damodaran ( <a href="https://pages.stern.nyu.edu/">https://pages.stern.nyu.edu/</a> )

<b>Cost of equity (Ce)</b>	9.93%	Cost of equity (Ce) = Rf + B (Rp) + Ssp
<b>WACC</b>	7.36%	WACC = Ce * E + Cd * D = 9.93%*67.88% + 1.93%*32.12%
<b>E/(D+E)</b>	67.88%	E/(D+E) ratio from hotel/gaming segment by Damodaran ( <a href="https://pages.stern.nyu.edu/~adamodar">https://pages.stern.nyu.edu/~adamodar</a> )
<b>D/(D+E)</b>	32.12%	D/(D+E) ratio from hotel/gaming segment by Damodaran ( <a href="https://pages.stern.nyu.edu/~adamodar">https://pages.stern.nyu.edu/~adamodar</a> )
<b>Credit spread for the company</b>	2.24%	(3.35%-1.11%)
<b>Pretax cost of debt</b>	2.28%	(2.24%+0.04%)
<b>Cost of debt (Cd)</b>	1,93%	2.28%*(1-15%)
<b>Hotel/Gaming</b>	3.35%	Cost of debt in hotel/gaming segment in Europe by Damodaran ( <a href="https://pages.stern.nyu.edu/~adamodar">https://pages.stern.nyu.edu/~adamodar</a> )
<b>Long term treasury bond rate</b>	1.11%	Long term treasury bond rate by Bloomberg at (1/31/2021) ( <a href="https://www.bloomberg.com/markets/rates-bonds/government-bonds/us">https://www.bloomberg.com/markets/rates-bonds/government-bonds/us</a> )

Table 26. 2020 equity valuation.

<b>EUR'000</b>	2022	2023	2024	2025
<b>FCFF</b>	(1 875)	2 190	3 150	4 066
<b>Period factor</b>	1	2	3	4
<b>Present value factor</b>	0.931	0.868	0.808	0.753
<b>Discounted FCFF</b>	(1 746)	1 900	2 545	3 060
<b>Terminal growth rate</b>	0.8%			
<b>Sum of discounted FCFF</b>	5 760			
<b>Discounted terminal value</b>	35 395			

<b>Enterprise value</b>	41 155	
<b>Net debt*</b>	11 837	
<b>100% of equity value before adj.</b>	52 992	
<b>Liquidity discount**</b>	30%	
<b>EQUITY, EUR</b>	37 094	

Notes:

\*Net debt EUR 11 837 thousand, EUR 14 938 thousand net debt, EUR 3 065 thousand cash and cash equivalents at end of period 31.12.2020.

\*\*Liquidity discount rate of 30% was applied, considering the fact that the tourism-aviation sector has come to a near standstill during the peak of the pandemic and future forecasts have been completely uncertain, due to this high discount rate has been applied, as investment in this type of business was very risky at that time.

Table below summarize estimated Company's equity value sensitivity to changes in assumed level of WACC.

Table 27. Sensitivity analysis 2020

<b>Sensitivity analysis result</b>	
<b>WACC changes</b>	<b>Equity value changes</b>
-5%	3.97%
-1%	0.76%
0%	0%
1%	-0.74%
5%	-3.55%

The WACC changes can influence the level of equity value significantly, considering uncertainty in the market during COVID-19 pandemic, equity value can deviate in a short period of time.

The market value of the 100% equity of „Novaturas“ is EUR 37 094 thousand based on discounted cash flows method calculations. Business valuation was performed taking into account current

business environment. In case of any changes in the outside or inside business circumstances, the valuation might change. The valuation report has been prepared on the basis of publicly available market information.

#### **4.6. Quantitative research conclusions**

The quantitative research focused on the practical application of one of the key business valuation methods — the income method in valuing a company that was severely affected by the COVID-19 pandemic. The respondents interviewed in the qualitative study identified that the income method was the most commonly used tool to determine the value of a company because it is based on assumptions that can be applied in calculating the value of a business. According to the valuers who participated in the survey, using the income method to assess business value affected by the pandemic, it is important to reflect the uncertainty – risk, which is directly related to future cash flow projection, discount rate and liquidity discount. Therefore, this case study was designed to understand which variables are most important to consider when determining the value of a company during a pandemic and to make sure that the income method is an appropriate tool to accomplish this task.

The „Novaturas“ company was chosen for the case study because the company's main activity is the tour operations, which had to be stopped after the start of the COVID-19 pandemic due to strict travel restrictions in order to curb the spread of the virus. In view of these characteristics, it has been decided that the „Novaturas“ company will be a good example of reflection of the situation faced by most of the companies affected by the pandemic. In order to further analyze the possibilities of applying the income method and the change in the value of the company, the value of „Novaturas“ was determined in 2022 (according to the current information as valuation date) and in 2020 when the pandemic reached its peak and uncertainty about future prospects was greatest. Therefore, different assumptions were applied based on the information on the future prospects of the tourism-aviation sector for that period also taking into account the recalculation of the indicators used in the income approach and the assessment of the business situation. The value of the „Novaturas“ company was determined at EUR 53 623 thousand for 2022 and EUR 37 094 thousand for 2020. The change in value between these two years is large, but there are objective reasons for this. First of all at the end of 2020, „Novaturas“ core business was almost at a standstill and the outlook for the next few years was very vague, making it impossible to predict the company's recovery in the coming years. For these reasons, the company began generating positive cash flows only a few years after the peak of the pandemic. At the same time, the discount rate rose to more than 7%, a change of several percent from the pre-pandemic year. The liquidity discount was also applied at a very high rate of 30%, as the tourism sector was one of the most risky with uncertain future prospects during the peak of the pandemic, so there were no opportunities to attract investors without a significant discount. In 2022, the company's situation is much better from a determined value perspective the main reason for this is the reduced uncertainty about the future guidelines of the tourism-aviation sector. Already in 2021 the tourism sector showed the clear signs of recovery, specially this was supported by the lower travel restrictions. As a result, Novaturas' cash flow projections have become more positive compared to 2020 and a faster return to pandemic volumes was expected. The discount rate remained at a similar level, which was mainly due to increased risk free rate. The liquidity discount has fallen to 10% as signs of a recovery in the company's core business are already visible and analysts predict that the tourism sector should return to full operating levels which were before the pandemic over the next few years. Sensitivity analysis results variations in both years shows that WACC changes can have significant influence on equity value change. The highest equity value change is in 2020 valuation,

in case when WACC changes by -5%, then equity value changes by 4.65%. In both periods valuations, equity value changes between range of -3.51% and 4.65%, when different WACC variations are applied. WACC changes have more significant impact on equity value in 2022 valuation, but it relates to higher WACC ratio applied for that period comparing with 2020. WACC is the main variable in income valuation method, associated with risk, due to this application of this indicator must be used with high supervision. Based on the analysis of the Novaturas case, the income approach is appropriate for assessing a business value severely affected by a crisis caused by the COVID-19 pandemic also confirming the insights of the respondents of the quantitative study that no further changes to the methodology are required, but key risk indicators cash flow projections, discount rate, liquidity discount, must be properly determined, for the value of the company calculations, which should not differ significantly from the fair value.

In summary, the COVID-19 pandemic did not have a significant impact on the application of the income approach in such a unpredictable situation. The income method itself is based on assumptions, so the pandemic situation posed additional challenges for valuers to establish reliable assumptions, but it has not significantly affected by further company value calculations. The case study only confirmed the need for a reliable assessment of the WACC, which is the basis for setting the discount rate. WACC is an indicator that consists of different components that require a variety of data sources and calculations. Therefore, the determination of the WACC depends on the assessor's ability to assess the situation and to select appropriate data sources or perform calculations that would be appropriate to assess the specific market trends of the company. There are no specific guidelines on how to properly determine the assumptions under the income approach under both normal and pandemic conditions, it is the responsibility of the valuator, so if it is not possible to set future guidelines properly, the value of the entity is generally less lower in order to hedge unforeseen future value fluctuations. The COVID-19 pandemic did not have a significant impact on the business valuation methodology, but posed a major challenge for valuers in assessing the current and future situation.

## CONCLUSIONS

The COVID-19 pandemic has a significant impact on the business valuation process. One of the key things in a business appraisal is the reliability of the information. In order to properly determine the value of the object being valued, the valuer must consider all factors that are present at the valuation date. In this case, the pandemic tends to break this rule of theory, as one of its features is the uncertainty that makes future prospects very difficult to determine, so what seems appropriate today will not necessarily be real tomorrow. To address this, valuers determine values based on different scenarios and use appropriate risk indicators to help calculate values with an existing uncertainty premium or loss.

Both under normal economic conditions and during a pandemic, there is no single business valuation model that would be most appropriate in the context of this COVID-19 pandemic. Each company in valuation is different in its own way, so the valuer has to choose between income, market and asset valuation methods. Each method has certain conditions when its application is the most appropriate and ensures the determination of a reliable value. The analysis of the literature only confirms this statement, so the valuator has full responsibility for choosing the assessment method that is most appropriate in one situation or another.

The analysis of the methodological part confirmed one fact that the pandemic strongly affected all 3 main business valuation methods. From an income approach perspective, there is a need for additional forecasts to include pessimistic, realistic and optimistic options, as historical information makes it very difficult to set reliable guidelines for the future simply because the pandemic has changed the economic environment in a very short time. Using the comparative approach, valuers faced the challenge of finding suitable comparable transactions. During the peak of the pandemic, the economy has stopped, causing business transactions between different counterparties to come to a standstill and appraisers face a very serious challenge in finding comparable transactions. The appraisers solved this situation by choosing another method of business valuation that would not apply under casual economic conditions. The asset-based approach has remained basically unchanged, as it was used before the pandemic in specific situations where the value of a company is based on existing assets or the business is being liquidated. As a result, this method has only become more common, as most companies have experienced financial difficulties, and the valuation has been used to determine the appropriate sale value or to assess the assets in liquidation.

The results of the qualitative study highlighted that the income method was the most widely used approach of business valuation during a pandemic. The key question the valuers were trying to answer was whether there was a possibility to determine future cash flows, if not, then the asset-based approach was selected as the main tool for valuation. Although the impact of the pandemic on business valuation during the pandemic is very significant, it has not had a significant impact on the business valuation methodology itself. The evaluators used standard techniques that were widely used before the pandemic, but focused on indicators or variables that relate to risk transmission, such as the discount rate. Other changes in business valuation procedures relate primarily to standard international valuation guidelines, which are distinguished in order to disclose valuation assumptions and present the impact of a pandemic on valuation.

A quantitative study was based on „Novaturas“ company case study. This case study sought to understand if one of the main methods of business valuation - the income method can be used to

evaluate a company severely affected by a pandemic. The value of „Novaturas“ was estimated at EUR 54 million in 2022 and EUR 37 million in 2020. As mentioned in the literature analysis and in the results of the quantitative study, the main challenge in applying the income method during a pandemic is to establish a reliable forecast and to calculate the discount rate. During the analysis of the case, it was possible to calculate this data on the basis of the analysis of aviation market research and historical indicators. Based on the obtained result, it can be concluded that standard business valuation methods are appropriate for use during a pandemic. One of the main tasks of the evaluation is to forecast future results, only during the pandemic the evaluator has to take into account more variables, and to evaluate the corporate business sector more broadly in order to understand future prospects.

Based on the results of the qualitative and quantitative studies, there several aspects that must be considered in the field of valuation during a pandemic. The business valuation process is based on assumptions that can never guarantee complete accuracy of forecasts. The reliability of the assumptions used in the assessment of the businesses affected by the COVID-19 pandemic is much lower compared to the businesses not affected. Therefore, business valuation in context of a pandemic must to focus on forecasting future cash flows and use different scenarios when reliability is low, because it is more difficult to predict the company's future cash flows as it have declined critically since the start of the pandemic and it is difficult to predict when cash flows will recover. As the business valuation methodology itself does not change in the context of a pandemic, the risk of cash flows is expressed as a discount rate. Reliable application of this variable is crucial in order to calculate risk associated cash flows. Another important component in business valuation in the context of a pandemic is the liquidity discount. Additional attention must be paid to this indicator, as it is also possible to express the risks associated with the business and assess the market conditions for the realization of such business.

Summarizing the impact of the COVID-19 pandemic on the business valuation process, same as in the most of business sectors, there have been additional challenges, which forced valuers to adapt to the existing situation. Although the impact of the pandemic on business valuation seems strong from a general perspective, it can be seen in detail that the processes have remained largely unchanged, but requires more variety of tests to ensure the reliability of the results obtained. The application of the basic methods, as before the pandemic, remained conditional, so it is not possible to determine the suitability of one basic method in all cases. As the business valuers personal experiences describes, business valuation services have become more complex but have remained within the same framework, suggesting that the pandemic impact on the business valuation process has been managed and reliable valuation is possible, only involving more processes to reduce existing uncertainty.

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