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**Daimler AG Stock Valuation by the Fundamental Analysis**

Master's thesis

**Global Business and Economics**

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# INTRODUCTION

## Significance of the research

The stock market price of Daimler AG, one of the world's long-standing, largest, and most recognizable manufacturers of luxury cars (well-known under its leading brand "Mercedes-Benz"), as of 1 October 2020, estimated at €46.61 (Daimler AG, *The Daimler Shares*). Since November 1998 (the starting stock price of €66.62 at Initial Public Offering), the company's stock price due to many economic, industry, and company-related factors highly fluctuated by reaching the lowest €17.44 (March 2009) and the highest €95.79 (March 2015) extreme points.

Daimler AG went through substantial internal transformations in the last 22 years, primarily related to a merger in 1998 and subsequent demerger in 2007 with the U.S.-based automotive company Chrysler Corporation. If considering the critical external factors, Daimler AG's financial performance and its stock market price in different periods are negatively impacted by many global economic processes. For instance, the global economic crisis in the years 2007 – 2008, the diesel emissions scandal (known as "dieselgate") with substantial legal costs, and finally the international spread of the covid-19 pandemic throughout 2020. Furthermore, Daimler AG's prospects are generally hardly predictable in the long-term horizon, considering it operates in the highly competitive and consumer-cyclical global luxury car market. On the other hand, Daimler AG possesses a robust brand portfolio and has decent technological and digitization potential by strategically emphasizing modern automotive industry trends like automated/autonomous driving and prioritizing various mobility services.

As of 2019 estimates, Daimler AG is publically traded with an average of 4.3 million stocks daily, meaning a large number of active and passive stock investors are attempting to assess its stock value. For the majority of value investors, who assume the stock's market price frequently differs from its intrinsic value, the question of whether Daimler AG's stock is currently a right candidate to buy, sell, or hold, remains unanswered. Therefore, an in-depth study of the company's strategic and financial positions by applying reliable valuation methods is essential for investors making long-term investment decisions.

## The main question of the research

If considering the stock theoretical value uncertainty, the research's central question formulated as follows: "Is Daimler AG a good stock to buy in the context of the COVID-19 pandemic as of 01.10.2020?"

### **The aim of the research**

This research aims to estimate the Daimler AG stock's intrinsic value as of 01.10.2020 for accepting or rejecting investment depending on whether the stock is overvalued, undervalued, or is fairly valued compared to its market price.

### **The objectives of the research**

- Defining the theoretical concepts of the stock's intrinsic and the market values, as well as distinguishing main strategic approaches aiming to get a superior return in the stock markets;
- Revealing the stock valuation challenges and determining the key factors affecting the stock price;
- Overview of approaches to stock valuation;
- Studying the fundamental analysis methodology and its valuation models;
- Conducting the strategic and financial analysis of Daimler AG to forecast its future cash flows and comparing the financial results to Daimler AG peers;
- Daimler AG stock intrinsic value determining to give an investment recommendation.

### **Methodological approach and research methods**

Within this master thesis framework, a mixed research method is applied that involves both qualitative and quantitative methods. The research's cornerstone is the fundamental analysis, a stock valuation method designed to estimate a stock's "intrinsic value" by assessing the company's external and internal financial and non-financial factors. The top-down approach, starting from the macro-environmental insights, followed by the industry's, and ending with the company's analysis, is selected within the fundamental analysis. The PESTLE analysis tool is used for the macro-environmental analysis, the SWOT analysis utilized to identify and analyze the internal factors of Daimler AG. Finally, the dividend discount model is utilized to estimate Daimler AG stock's value.

### **Data collection and its availability**

As a publicly-traded company, Daimler AG is regularly providing on its official website audited quarterly and annual reports (available since 1979) and the financial news and topical information related to critical corporate events. Furthermore, the company's financial information and its stock's performance are freely accessible in publicly available sources, including the official market data, research reports, analytical databases, etc. Therefore, the relevant data and all-important financial indicators for the reliable stock valuation are fully available within this research framework.

Generally, primary and secondary data are two data types generally collected for the study. The critical distinction between them is that the primary data directly collected based on the



researcher's experience. The secondary data is the information available and accessible in data sources (Rabianski, 2003). This master thesis is desk research by its nature, entirely based on the information collected in the form of secondary data. The primary secondary data sources within this research are:

➤ The audited annual reports from 2015 to 2019 and quarterly reports of Daimler AG and its competitors. These documents present the relevant financial data, and the most significant part of relevant quantitative and qualitative information directly related to the company's performance is renewed quarterly and accessible in English and German languages;

➤ Databases of the International Monetary Fund, an international organization focusing on the macroeconomic and financial sector, the International Organization of Motor Vehicle Manufacturers (OICA), the automotive association providing the statistical information regarding vehicles, production, sales, etc.

➤ Academic textbooks;

➤ Analytical reports and scientific articles.

#### **The limitations of the research**

➤ The stock valuation period in this master thesis is limited to the end of September 2020, which is covered by the latest available audited Interim Report Q3 2020 (officially released on 23.10.2020). After the cut-off date, any events are not considered to impact the stock valuation results within this master thesis. However, valuable analytical insights for the fourth quarter of 2020 are considered relevant to forecast the estimated financial performance of Daimler AG for the full financial year 2020;

➤ Daimler AG has plenty of strong competitors in the premium segment worldwide. However, only two German-based automotive corporations, including BMW Group AG and Volkswagen Group AG, were added to the peer group for benchmarking. They are mostly similar manufacturers in the premium segment by revenues, domestic market, brand value, and other considerable factors;

➤ The initial assumptions and applied valuation models strongly affect valuation results. Therefore, this master thesis prioritized the dividend discount model, which is a practically time-tested and well-standardized model for the estimation of "intrinsic value";

➤ Daimler AG operates worldwide and provides a wide range of products and services. Therefore, the scope of analysis pays more attention to the most extensive product segments and the leading markets by sales and revenues;

➤ The company's representatives and management were not approached to provide any information as the required information for conducting this master thesis is publicly available.

### **The structure of the research.**

The components are structured into five parts within a master thesis.

➤ The introduction part presents the significance, aim and objectives, methodology, and limitations of the research. It aims to give an understanding of the goals and methods for this master thesis's readers;

➤ The first section is a theoretical part introducing the concepts of intrinsic and market value, describing two approaches for profit maximization on the stock market, revealing the challenges related to the stock valuation process, and presenting the three types of factors significantly affecting the stock price. Furthermore, the section presents the benefits and shortcomings of three stock valuation approaches and introduces the fundamental analysis methodology;

➤ The second section gives an overview of Daimler AG, including its history, business nature, corporate structure, ownership structure, dividend policy, and briefly presents the main competitors in Germany and globally;

➤ The third section focuses on conducting the strategic analysis of Daimler AG to identify and the value drivers the risks affecting the company's future cash flow. It includes the macro-environmental analysis by applying the PESTEL framework, the automotive industry analysis, and Daimler AG internal factors analysis by using SWOT analytical tools;

➤ The fourth section aims to conduct the historical financial analysis, including the profitability and liquidity risk analysis of Daimler AG and its main competitors, for identifying economic growth tendencies. Furthermore, section assumes future revenues and net profit of Daimler AG based on strategic and historical financial analysis findings;

➤ The fifth section provides assumptions and inputs for stock valuation and evaluates Daimler AG stock's intrinsic value using a dividend discount model. Finally, the investment is recommended based on the difference between the stock's market value and its intrinsic value.

# 1. THE THEORETICAL FOUNDATIONS OF THE STOCK VALUATION

Before starting a broader discussion regarding the stock valuation process and its approaches and covering value investing, it is necessary to draw a line between such cornerstone concepts as the "intrinsic value" and the "market value".

## 1.1. Intrinsic value vs. Market value

Understanding the "intrinsic value" concept is essential to identify whether the market undervalues a particular stock. Graham and Dodd (2009) were the pioneers in defining the "intrinsic value" as value justified by the facts, such as assets, earnings, dividends, and definite prospects, as distinct from market quotations established by artificial manipulation distorted by psychological excesses. The authors highlight that the "intrinsic value" concept was almost worthless at the beginning of the 20<sup>th</sup> century. It was considered equivalent to a "book value," a value equal to a company's net assets.

According to James R. Hitcher (2003), intrinsic value estimations always reflect subjective investor's opinions. An "intrinsic value" concept means an asset's valuation by a person knowledgeable of its characteristics. Such definition is supplemented by the CFA Institute (2020). The same source notes that intrinsic value is continuously changing as new information becomes available for the investors.

Stephen H. Penman (2010) claims the "intrinsic value" is the investment's worth justified by its payoff information. Jordan and Miller (2009) add the "intrinsic value" is the received payoff, assuming the underlying stock price remains unchanged from its current value.

The alternative view on the "intrinsic value" is presented by Fama (1970), one of the founders of the efficient-market hypothesis, insisting the "intrinsic value" estimates are equivalent to the market prices at every point in time.

Summarizing the authors' opinion, the "intrinsic value" is a subjective and philosophical concept, which estimates the real value of a company's stock based on a set of its characteristics and which is affected by the incoming information.

Compared to the "intrinsic value," the "market value" is a less sophisticated concept. For instance, the CFA Institute (2020) describes the "market value" as "the price at which a hypothetical informed seller would trade an asset to an informed buyer." International Valuation Standards (2020) gives a comprehensive definition of the "market value" as the estimated amount on the valuation date for which an asset should exchange between a willing buyer and seller, where the parties had each acted knowledgeably. To summarize, the market value could be considered the price determined by

making equivalent and fair exchanges in the market. In this master thesis, the stock's market price is regarded as the supply and demand formed price at which stock is traded at the stock exchange on a particular date.

According to CFA Institute (2020), analysts seeking to generate favorable returns can succeed by identifying stocks for which their intrinsic value estimate differs from their market price. The stock's market price deviation from an investor's estimates of its "intrinsic value" is considered perceived mispricing.

## **1.2. Value investing vs. growth investing**

Reilly and Brown (2012) and Bodie (2014) define any investment as the current commitment of money, savings, or different types of resources to expect future benefits. There are different approaches to maximizing profits in the stock markets, broadly classified as "value investing" and "growth investing". The critical distinction between them is how they see an opportunity to outperform the market's average return over time. The value stocks are considered stocks traded below their real value and potentially have a good chance of giving a superior return, while growth stocks have great future growth potential.

Based on the World Bank statistics, the total market value of stocks traded globally on the stock markets in 2019 was nearly \$60 trillion. Arnold (2005) claims that the value investing approach has many proponents as they believe the stock markets occasionally underestimate the stock's value. Therefore, they are focused on finding undervalued stocks. Graham and Dodd (2009), who significantly contributed to the modern investment analysis and the value investment theory, agree the investors have the opportunities to identify the undervalued stocks through the mindful analysis of a particular company's financial statements.

Lee (2014) adds that value investing refers to stocks trading based on a perceived gap between their market price and intrinsic value, defined as the present value of the expected future payoffs. According to the author, value investing based on two assumptions regarding the stock prices of publicly-traded companies: a stock is a fractional of the company's claim on the future cash flows, and it is the basis of its long-term value; in the short-term period, the stock prices can deviate substantially from their long-term value.

Reilly and Brown (2012) recommend the two-step stock trading approach, starting from comparing the expected return on investment to the stock's estimated intrinsic value. The following step is the comparison of the intrinsic value to the market price. Finally, the investment decision may be taken depending on the discrepancies, meaning that the right decision is buying or holding if the

market price is below the estimated intrinsic value. Alternatively, if the market price exceeds the estimated intrinsic value, the rational solution would be not to buy a new one or sell an already owned stock.

### **1.3. The stock valuation challenges and factors affecting the stock price**

According to Gitman and Joehnk (2007), the stock valuation process determines its value by considering risk and return concepts. The authors conclude that the key objective of the stock valuation process is determining future stock price movements.

Arnold (2005) highlighted two skills essential for stock valuation: the analyst's abilities to apply valuation models and the judgment skills regarding calculations inputs. The author sees a problem that the value determinants, for instance, future cash flows, dividends, or earnings, occur in the future. Other authors, like Bodie (2014) and Olweny (2011), supports this view by adding that evaluating stock's is a more sophisticated process than for other securities (for instance, bonds) as the stock's performance is very highly dependent on a particular company's conditions and its expected performance. Furthermore, an investor should consider whether all the potential risks are fully covered by that expected return rate (Olweny, 2011).

Madura (2014) thinks the stock valuation process is challenging as many factors directly or indirectly influence the stock market prices. The author suggests classifying the factors influencing the stock prices into three broad categories, including:

➤ **Economic factors**, including various non-financial market economic factors (for instance, economic growth, interest rates, and an exchange rate) impacting long-term changes and future cash flows. The economic growth stimulates the demand for the company's products and services; therefore, this positively improves its cash flows. The key indicators to recognize economic growth are the gross domestic product (GDP), personal income, retail sales, and employment. Another substantial economic factor moving stock market prices is the risk-free interest rate. Investors should consider purchasing an asset only if the risk premium compensates for the related risk. Lastly, the investors prefer to purchase stocks when the currency traded is weak and sell at a high exchange rate.

➤ **Market-related factors**, including investor sentiment and the January effect, relate to conditions that operate within the financial market and have a short-term impact on stock prices. The investor sentiment represents investors' expectations concerning the stock market's performance, which sometimes do not correlate with the real economic environment. For instance, when most investors expect the economy's improvement in the short-term, the stock prices might increase even if the economy is objectively weak. The January effect is another significant market-related factor as

small and riskier stocks are preferred by most investors and experience above-average returns at the beginning of the year. However, close to the calendar year-end, many switch to more extensive and more stable companies.

➤ **Company-specific factors**, affecting the stock price along with the macroeconomic and market. Some companies are more dependant on their industry conditions than on general economic conditions. Investors may perceive small dividends as their expectations about weak cash flow. In contrast, higher dividends may reflect the company's expectation concerning its better performance. Investors usually raise their estimates of the company's future cash flows and stock price when a company's earnings are higher than expected and reduce when revenues are lower than expected.

#### **1.4. Overview of approaches to stock valuation**

The most important objective for all the stock market participants is predicting future stock prices. Based on the scientific literature analysis and various academic studies, there is no consensus on which stock valuation approach is the most accurate in predicting the future stock price. Scientists and researchers differently evaluate the stock valuation process by emphasizing different approaches. However, based on the overview of the studied literature, the vast majority of researchers mentioned in this part are suggesting fundamental and technical analysis as the main branches to the publicly traded companies' stock analysis. These approaches are often considered opposites in their assumptions, each representing different investment strategies and having relevant benefits and limitations. When discussing various aspects of fundamental and technical analysis, the mentioned authors also emphasize the efficient market hypothesis.

##### **1.4.1. Fundamental analysis**

Benjamin Graham and David Dodd introduced the fundamental analysis approach in their book "Analysis of Securities." It was initially published in 1934 and became classical for many generations of investors. The authors defined the fundamental analysis' theoretical principles, introduced tools and stages of its implementation. Graham and Dodd (2009) question the market pricing mechanism's effectiveness and believe it lies in investors' irrationality concerning a particular security's fair value. The authors do not deny that equilibrium is sometimes possible. However, almost every time, the stock's market price differs from its intrinsic value due to valuations' subjectivity. The authors believe the securities analysis can separate overvalued securities from undervalued ones by assessing future prices and profitability.

Table 1 presents the opinion of other researchers concerning the definition of the fundamental analysis. It should be noted that the provided opinions differ but do not contradict each other.

Table 1

*Comparison of the fundamental analysis concepts*

<b>Author</b>	<b>Definition of fundamental analysis</b>
Murphy (1999)	The fundamental analysis determines the intrinsic value by examining the economic forces and factors affecting stock prices. The intrinsic value below the current market price means overpricing, and the higher value is considered underpricing.
Bodie (2004)	Fundamental analysis is finding mispriced stocks relative to their "intrinsic value" using the company's earnings and dividend prospects and future interest rates, and risk evaluation expectations.
Jordan and Miller (2009)	Fundamental analysis is a company's financial statements and other relevant financial information examination to assess its stock value.
Gitman, Joehnk, and Smart (2010)	Fundamental analysis is the comprehensive study of financial position and business operations.
Reilly and Brown (2012)	Fundamental analysis is a tool to identify the best companies within particular industries and estimating the stock's intrinsic value.
Baresa (2013)	Fundamental analysis's primary goals are revealing the company's actual value and predicting future profits, dividends, and the risk to calculate the stock's "intrinsic value".
Bonga (2015)	Fundamental analysis is a stock trading strategy of calculating the stock's intrinsic value by analyzing the revenue, expenses, growth prospects, and competitiveness of a particular company.
Petrusheva and Jordanoski (2016)	The fundamental analysis determines the stock's intrinsic value and identifies moments when it differs from the market price.

*Source:* Author's creating based on the used sources.

Like any other theoretical concept, the fundamental analysis is based on various assumptions. Damodaran (2002) reveals that the fundamental analysis assumes the "intrinsic value" linked to a

particular company's financial characteristics, including growth prospects, risks, and cash flows. The author concludes the fundamental analysis based on the following assumptions:

- The relationship between value and the financial factors are measurable;
- The relationship is stable over time;
- Deviations from the relationship corrected in a reasonable period.

Based on Reilly and Brown (2012), Drakopoulou (2015), Petrusheva and Jordanoski (2016), the basic assumption of fundamental analysis is that the stock's price does not correspond to its value in the short-term but corrects itself in the long-term perspective. According to the authors, after the information becomes available, the undervalued stock's market price should increase to reflect its intrinsic value. Along with the period of price adjustment, the stock's realized return will exceed the required return for a stock with its risk.

Based on Reilly and Brown (2012), the fundamental analysis assumes that for the stock market, industries, or individual stocks, there is an "intrinsic value" depending on economic factors. The authors claim the investors should analyze the variables that determine value, such as future earnings or cash flows, interest rates, and risk variables.

John Murphy (1999), Damodaran (2002), Bonga (2015), Petrusheva and Jordanoski (2016) note the fundamental analysis is a long time horizon approach that usually considers several years periods and is more preferred by long-term investors than by short-term traders. Based on Jordan and Miller (2009), Petrusheva and Jordanoski (2016), Bonga (2015), and others, the fundamental analysis considers the financial statements as the primary source to estimate the intrinsic value of the stock as well as to get a better understanding of the company's comparative advantages, competitors, and the market environment by analyzing the income statements, balance sheets, and cash flow statements.

The fundamental analysis as an approach for evaluating stock gives some benefits for the investors. According to Reilly and Brown (2012), the fundamental approach allows reaching above-average returns when a particular investor obtains and uses the new information quicker than the competitors. Bonga (2015) has added some arguments for conducting the fundamental analysis by naming the objectivity, long-term focus, determining fair purchase prices, and a better understanding of the company and its business as its significant advantages. Finally, Petrusheva and Jordanoski (2016) concluded that the fundamental analysis has some advantages over the technical analysis as the stocks' value is estimated by assessing the real market and economic factors. The predicted stock prices determined by the companies' performances and expected profitability and fundamental



analysis have specific investment criteria grounded on comparing the stock's market price to its intrinsic value.

Along with its benefits, the fundamental analysis has shortcomings and limitations. The majority of the previously mentioned researchers claim that the fundamental analysis mainly criticized if looking from the perspective of the technical analysis supporters and the "efficient market hypothesis."

For instance, John Murphy (1999) doubts the successful application of fundamental analysis without considering the market's technical side as it does not include a study of price action. Bodie (2004) assumes that the fundamental investors relying on publicly available earnings and industry information are not likely to be significantly more accurate in forecasts than their competitors. Reilly and Brown (2012) are generally optimistic about the fundamental analysis and consider its implementation challenges. The authors note there is no universal formula for superior estimation. Any analyst performing the fundamental analysis must have a solid understanding of the economy, the industry, and the company. Bonga (2015) and Petrusheva and Jordanoski (2016) state that the fundamental analysis is more time-consuming insufficient in the short-term perspective. The other shortcomings noticed by authors are many assumptions and insolvency to give clear buy and sell signals.

Like any scientific concept, the fundamental analysis can be and, by fact, is differently perceived by analysts and researchers. However, in the scientific literature, the essential similarities between the various definitions of fundamental analysis are observed. To conclude, the given points of view on the fundamental analysis's essence do not contradict but complement each other.

#### **1.4.2. Technical analysis**

The technical analysis is often considered an alternative approach to the fundamental analysis and is also differently defined by various authors presented in Table 2.

Table 2

*Comparison of the technical analysis concepts*

<b>Author</b>	<b>Definition of technical analysis</b>
Murphy (1999)	Technical analysis as future price trends forecasting by analyzing the market's movement.

Continuation of Table 2

Brealey (2011)	Technical analysis is a security analysis that focuses on detecting and interpreting past security price patterns.
Madura (2014)	Technical analysis is a tool forecasting future stock prices using historical stock price patterns.
Bodie, Kane, Marcus (2014)	Technical analysis is a study to identify mispriced securities that focuses on recurrent and predictable stock price patterns and proxies for buy or sell pressure in the market.

*Source:* Author's creating based on the used sources.

According to Reilly and Brown (2012), Bonga (2015), and Petrusheva and Jordanoski (2016), the technical analysis is an investment decision-making mechanism assuming the stock market predicts itself and relies on internal data, such as prices and trading volumes. The authors note that the economic, industry and company variables ignored due to a faith that past price and volume movements will signal future price movements. According to the authors, the technical analysis proponents develop technical trading rules from past price movement observations and do not consider the stock's intrinsic value.

Based on Siegel (2008), Bonga (2015), Petrusheva and Jordanoski (2016), contrary to the fundamental analysis, the technical analysis by its nature is a short-horizon trading method. Therefore, its proponents expect the prices to change quickly and focus on finding stocks traded in the short-term. The author notes the technical analysts receive information for making decisions by analyzing historical price dynamics and ignoring fundamental factors.

According to Murphy (1999), Bonga (2015), Petrusheva and Jordanoski (2016), the primary source of data for the technical analysis are price movements charts, and technical analysts believe that it contains all relevant information on a particular stock. The same authors state that the purpose of the technical analysis is trading, and the goal of fundamental analysis is an investment. The authors conclude that the technical analysis mostly used by traders looking to make short-term profits is the opposite of the fundamental analysis used by value investors buying and holding stocks for more extended periods.

According to Murphy (1999), Reilly and Brown (2012), and Bonga (2015), the assumptions of the technical analysis summarized as follows:

- Prices contain all relevant information on particular security;
- Prices move in trends;
- History repeats itself.

The technical analysis has several advantages over the fundamental analysis. Murphy (1999) distinguishes flexibility and adaptability of technical analysis to virtually any trading medium and time dimension as its great strengths. Reilly and Brown (2012) conclude that the technical analysis's significant advantage is its independence from the financial statements as a primary source of information. According to Petrusheva and Jordanoski (2016), focusing exceptionally on trading prices and volumes and ignoring the significance of economic, market, and technological factors might be considered a significant advantage of the technical analysis. The authors note that another privilege of technical analysis is a great variety of software, making the analysis easier to conduct. The last but not least advantage of technical analysis is that it ignores the analyst's personal expectations regarding a particular company.

However, technical analysis also meets challenges. Damodaran (2002) emphasizes that valuation is critical in the fundamental analysis and almost meaningless for technical analysis. Based on Reilly and Brown (2012), Petrusheva and Jordanoski (2016), most of the criticism towards technical analysis derives from the efficient market hypothesis. According to Reilly and Brown (2012), the technical analysis flaw is that the relationships between specific market variables and stock prices may not repeat. Therefore, an approach that worked before might not succeed in the future. Petrusheva and Jordanoski (2016) and Siegel (2008) sees the technical analysis's substantial shortcoming in its weak academic grounds.

### **1.4.3. Efficient market hypothesis**

The discussion regarding the efficient market hypothesis and its features should start from the definition of an "efficient market. "Based on Reilly and Brown (2012) and Madura (2014), if the market is considered efficient, the newly arriving information has an impact on the change of prices, and these prices reflect all the information relevant for an investor. According to Reilly and Brown (2012), the initial efficient capital market studies grounded on a random walk hypothesis, a theory stating that changes in stock prices occurred randomly. Fama (1970) has formalized the theory and classified the efficient market hypothesis into three forms: weak, semistrong, and strong. The main criteria distinguishing these forms are their perception of the term "all available information."

The weak-form based on the assumption the current stock prices fully reflect all the historical prices, rates of return, trading volume, and other market information (Brealey, 2011; Reilly and Brown, 2012; Madura, 2014; Bodie, 2014; Petrusheva and Jordanoski, 2016). The authors add that the weak-form admits the past return rates and the market's historical data do not correlate with future returns. They conclude that finding patterns in stock prices gives little added value as changes in

prices are random. However, Petrusheva and Jordanoski (2016) state that the weak-form recognizes a slight possibility of the fundamental approach for finding certain fundamental factors affecting the future stock price.

The semistrong-form comprises the weak-form hypothesis as all the market information is public and asserts that prices adjust instantly to all newly published information (Brealey, 2011; Reilly and Brown, 2012; Madura, 2014; Bodie, 2014; Petrusheva and Jordanoski, 2016). The authors note that public information includes all non-market information, including earnings, financial ratios, or news. The semistrong-form states that any investor should not get abnormal profits if grounds decisions on information after it becomes published.

The strong-form embodies both weak and semi-strong forms. It assumes the private and public information fully reflect in stock's prices, meaning that any investor does not have exclusive access to sensitive information affecting the prices (Brealey 2011; Reilly and Brown 2012; Madura 2014; Bodie 2014; Petrusheva and Jordanoski 2016;). They add the strong-form assumes perfect markets in which all information is available to each investor at the same moments. The authors note that strong-form excludes both fundamental or technical investors' possibility to derive superior returns. However, insider trading restricted by the law might give abnormal returns and an unfair advantage over other investors (Madura, 2014).

According to Eugene Fama, a proponent of the efficient market hypothesis, stock prices change occur randomly and therefore are not predictable (Fama, 1970). The positive side of this concept as it asserts that an asset's market price is the best available estimate of its intrinsic value and does well in explaining the functioning of the securities markets. However, it cannot adequately evaluate the stock's price, which can be considered its main weakness compared to the fundamental analysis.

#### **1.4.4. Arguments for selecting the fundamental analysis to value stock**

As a result of comparing the three approaches to stock valuation, it might be concluded that selecting the method to evaluate stocks depends on the investor's subjective understanding of how the stock market functions and his or her belief whether it is efficient or not. Assuming the stock markets are inefficient, after the theoretical review considering the benefits and limitations of fundamental and technical valuation approaches, and considering the efficient market hypothesis insights, the fundamental analysis selected as an approach for the analysis of Daimler AG stock's intrinsic value. Given the complexity of stock valuation, the fundamental analysis seems to be more concrete and measurable than technical analysis, a useful tool for price dynamics analysis. However, it is not

appropriate for a stock valuation. The same might be concluded about the efficient market hypothesis, which is advanced in explaining the securities market's functioning but cannot evaluate stocks.

Another argument for selecting the fundamental analysis framework is that this approach is designed to determine a stock's intrinsic value, which this master thesis aims. Furthermore, the fundamental analysis presupposes the comprehensive financial and non-financial analysis of the company and its environment, which is a part of the technical analysis methodology. Therefore, further theoretical and practical research related to stock valuation focused on the fundamental analysis models within its framework.

### **1.5. The methodology of the fundamental analysis**

The fundamental analysis is a comprehensive approach consisting of several stages and components. According to Reilly and Brown (2012), fundamental analysis involves a comprehensive analysis of market, industry, company, and portfolio management. Suresh (2013) reveals that the fundamental analysis framework consists of three phases, known as EIC (economy-industry-company). According to Zvi Bodie (2014), fundamental analysts start with historical earnings and examining balance sheet analysis, followed by economic and industry analysis. According to the author, the fundamental goal is to understand the advantages of its future performance before the market recognizes it. Bonga (2015) concluded that fundamental analysis covers the company, industry, and global economy analysis. The author notes that it involves examining financial data, management, and competition at the company level. The supply and demand forces for the company's products are analyzed at the industry level. Finally, fundamental analysis emphasizes the economic data to assess the economy's present and future growth at the macroeconomic level. Petrusheva and Jordanoski (2016) suggested that the fundamental analysis covers studying the economy, industry, and the company by considering its profits, assets, revenues, and expenses.

In contradistinction to previously mentioned authors, Penman (2010) has extended the number of stages to five by focusing on the company analysis and ignoring the economic and industry analysis. Based on the author, the first stage is understanding the business and its strategy. In the second step, the information analyzed, prioritizing the company's financial statements and using various sources. On developing forecasts, the author notes the payoffs (cash flows, earnings, dividends) should be specifying and the ways it is measured. According to the author, the final two steps should be converting the forecast to a valuation and taking an investment decision by comparing the security's estimated value to its price.

To summarize, most researchers emphasize that the fundamental is three stages, including analysis of the macroeconomic environment, the industry analysis, and the company analysis. Based on the review of literature, there are two approaches to the valuation process generally used within the fundamental analysis, including:

- The top-down approach;
- The bottom-up approach

According to Reilly and Brown (2012), two approaches differ by a position towards economy and industry impact on the valuation of a particular company and its stock. Proponents of the top-down approach assume that both the economy and the industry significantly impact the company and its stock's returns. In contrast, the bottom-up approach supporters believe in the possibility of finding undervalued stocks regardless of the market and industry outlook. Reilly and Brown (2012) claim that the top-down approach has a better-grounded methodology and empirical support.

It is considering that the global economy and industry conditions affect Daimler AG and its stock' performance. Therefore, in this master thesis, the fundamental analysis applied in its top-down approach, including the three-step analysis, including the global economy, the automotive industry, and Daimler AG.

### **1.6. Overview of valuation models**

As the stock assessment by its nature is a complex and versatile process, different researchers emphasize different evaluation models. According to Damodaran (2002), the valuation methods selecting process meets challenges due to the great variety of models and approaches, ranging from the simple to the sophisticated. Considering many existing approaches, CFA Institute (2020) suggests a framework in which the valuation is broadly based on the factors determining the future return, comparisons with similar assets, and estimates of immediate liquidation proceeds.

James R. Hitcher (2003) claims are valuation approaches are limited to the income approach, the market approach, and the asset approach. The author adds there are numerous methods within these approaches. Almost the same is recommended by International Valuation Standards (2020) by suggesting the market, the income, and cost approaches.

Kulišauskas and Galinienė (2015) classified the valuation methods into discounted cash flow, the income approach, and relative valuation. According to the authors, most existing methods determining a company's value also fit for stock valuation. Authors note that the stock valuation could be considered the business valuation as the stock ownership gives business control rights.

Like the previous sources, Damodaran (2002) states that the valuation methods are structured into three approaches: discounted cash flow, contingent claim, and relative valuation. Based on the author, discounted cash flow valuation links the asset's value to the expected cash flows' present value. The relative valuation estimates an asset's value by looking at the pricing of comparable assets. Lastly, the contingent claim valuation uses option pricing models to measure the value of assets that share option characteristics.

The valuation models within the fundamental analysis framework were classified by CFA Institute (2020) into absolute and relative. Absolute valuation models, also known as present value or discounted cash flow models, specify an intrinsic value compared to the market price. Relative valuation models determine an asset's value relative to another asset's value. A relative valuation involves comparing a stock's price multiple to a benchmark price multiple, based on a similar stock or the average price multiple of some group of stocks.

According to the methodology offered by CFA Institute (2020), the selecting valuation approach for a particular company should ensure whether the model complies with three main criteria:

- Consistent with the valued company's characteristics;
- Appropriate considering the data availability and quality;
- Compatible to valuation purpose.

Considering the most important and essential factors to be evaluated when valuing stocks, this master thesis emphasizes the dividend discount model, which by its nature is an absolute valuation model considering the discounted cash flows in the form of a company's dividends. The following section presents this model in detail.

### **1.6.1. The dividend discount models**

According to Damodaran (2002), Reilly and Brown (2012), Bodie, Kane, Marcus (2014), and CFA Institute (2020), the most evident and easy present value approach to stock valuing is the dividend discount model with two primary inputs, including expected dividends and equity costs. Each investor buying a stock anticipates getting dividends during the stock possession period as well as an assumed selling price. Based on Damodaran (2002), Penman (2010), and Bodie (2014), dividends' present value is equivalent to stock or equity value, as far as future dividends determine the expected price.

Penman (2010) notes that the dividend discount model has comparatively good predictability as dividends are usually stable and easily forecastable in the short-term. The author concludes that the dividend discount model best suits companies that have a fixed payout ratio. As it was previously

mentioned, Daimler AG is a stable company in regards to the dividend payout ratio amounting to 40% of the net income. According to Damodaran (2002), the dividend discount model exists in two versions, including the Gordon growth model and the two-stage growth model. Based on the author, they differ by assuming future growth.

Based on Damodaran (2002) and Penman (2010), the Gordon growth model links the stock's value to the following categories: upcoming period's dividends, cost capital, and dividends expected growth rate. Therefore, it might be applied to value a company in a sustained condition with stable growing dividends. The Gordon growth model determines the present value of a stock by the following formula:

$$\text{The present value of stock} = \frac{\text{Expected dividend per stock}_{t+1}}{\text{Cost of capital} - \text{Expected dividend growth rate}}$$

According to Damodaran (2002), estimating a sustainable growth rate should consider that other performance indicators might also be assumed to grow at the equivalent rate. Furthermore, the growth rate should be equal to or not exceed the economy's growth rate in which the company functions.

Unlike the Gordon growth model, the two-stage growth model is more complex and considers two growth stages, an initial phase with an unstable short-run growth rate followed by a steady-state with a stable long-term growth rate.

$$\text{The present value of stock} = \sum_{t=1}^{t=n} \frac{\text{Expected dividend per stock}_t}{(1 + \text{cost of capital})^t} + \frac{\text{Terminal value}}{(1 + \text{cost of capital})^t}$$

The two-stage growth model assumes that after the initial growth phase, the growth rate is going to decrease significantly. In the stable phase, the payout ratio should be larger than the growth phase as the growing company can pay fewer dividends than the stable. According to Damodaran (2002), the two-stage model has several implementation problems, including defining the extraordinary growth period length and assuming the initial period's high growth rate, which later transforms to a lower stable rate. The model can value companies expected to set small or negative growth rates for several years and afterward reverting to sustainable growth.

To summarize, the dividend discount model applicability is limited to a small number of stable dividend-paying stocks. The Gordon growth model might be successfully employed by steadily growing companies with clear dividend payout policies and growing at a rate not exceeding or similar to the overall economy's growth. The two-stage dividend discount model is more suitable for rapidly growing companies usually paying no dividends or small dividends. The dividend discount model in



the Gordon Growth model version perfectly fits for valuing Daimler AG, which is in the steady-state and has a well-established dividend payout policy targeting to pay an average 40% net profit ratio.

## 2. OVERVIEW OF DAIMLER AG

This section aims to introduce Daimler AG by presenting its company profile, history, corporate and ownership structures, dividend policy, and peer group.

### 2.1. Company profile and a brief history of Daimler AG

Table 3

*Daimler AG company profile*

<b>Industry</b>	➤ Automotive
<b>Predecessors</b>	➤ 1890 – 1926: “Benz & Cie.” and “Daimler Motoren Gesellschaft” ➤ 1926 – 1997: Daimler Benz AG ➤ 1998 – 2007: DaimlerChrysler AG
<b>Headquarters</b>	➤ Mercedesstrasse 137, Stuttgart, 70327, Germany
<b>Geographical split</b>	➤ Global presence
<b>Number of employees</b>	➤ 291,770 (end of Q3 2020) ➤ 298,655 (end of 2019)
<b>Number of vehicles sold</b>	➤ 1,958,852 (January – September 2020) ➤ 2,434,788 (January – September 2019)
<b>Revenue</b>	➤ €107.688 billion (January – September 2020) ➤ €125.618 billion (January – September 2019)
<b>EBIT</b>	➤ €2.005 billion (January – September 2020) ➤ €3.930 billion (January – September 2019)
<b>Net profit</b>	➤ €0.420 billion (January – September 2020) ➤ €2.720 billion (January – September 2019)
<b>Market capitalization</b>	➤ €49.26 billion (end of Q3 2020) ➤ €48.81 billion (end of Q3 2019)
<b>Earnings per share</b>	➤ 0.13 (January – September 2020) ➤ 2.32 (January – September 2019)
<b>Class of shares</b>	➤ No preferred shares, ordinary shares only
<b>Number of shares</b>	➤ 1,069,837,447 free-floating shares, each having one voting right
<b>Stock Exchanges</b>	➤ Traded in Frankfurt and Stuttgart under the "DAI" symbol

*Source:* Created by the author based on annual accounts of 2019, Fact Sheet for Q3 and January-September 2020, the official websites of Daimler AG, and Frankfurt Stock Exchange.

During almost 130 years, the company was directly and indirectly impacted by many internal and external factors. Daimler AG history in this master thesis is divided into four periods, which are structured by the following criteria: the company's legal name change /with its global structural changes.

### **Incorporation and merger: 1885 – 1926**

Gottlieb Daimler and Carl Benz established the grounds for modern Daimler AG. They were extraordinary engineers considered the modern automobile inventors (Daimler AG, *Company History 1885-1886*). In the year 1886 in Germany, they independently incorporated two companies, namely "Benz & Cie. Rheinische Gasmotorenfabrik" and "Daimler-Motoren-Gesellschaft".

### **Daimler-Benz AG: 1926 – 1998**

In 1926 the companies mentioned above merged, creating Daimler-Benz AG with its corporate headquarters in Stuttgart (Daimler AG, *Company History 1920-1933*). The company has started collaborating with the Nazi regime around the middle of the 1930s, which finally lost in World War II. As a result, Daimler-Benz AG's had substantial losses by 1945 (Daimler AG, *Company History 1945-1949*). In the 1950s, the company reconstructed its properties and regained global positions due to outstanding diesel engines and Germany's economic growth. In the following decades, Daimler-Benz AG strengthened its positions as a manufacturer of premium cars, trucks, and buses (Daimler AG, *Company History 1961-1983*). In the 1980s, the company has faced the oil crisis, increased competition from Asian manufacturers, and the decreasing demand for its luxury cars. As a result, the company initiated a global restructuring by enlarging its corporate portfolio and entering technological sectors (electronics, aviation, and other) by acquiring the majority ownership at Dornier Group, AEG, and MBB in the second half of the 1980s (Daimler AG, *Company History 1984-1995*). However, the diversification was not as profitable as expected, and in the year 1995, the company sold out numerous subsidiaries.

### **Daimler Chrysler AG: 1998 – 2007**

On 7 May 1998, Daimler-Benz AG officially signed a merger with Chrysler Corporation (one of the largest North American automotive companies). The creation of a new joint venture, namely Daimler Chrysler AG, was considered by both companies to keep long-term competitiveness (Daimler AG, *Company History 1995-2007*). However, due to overall poor financial performance, the shareholders' meeting decided to rename the DaimlerChrysler AG company to Daimler AG in October 2007. Some years later, Daimler AG relinquished the 19.90% stake initially retained in Chrysler Corporation.

## Daimler AG: 2007 – present

Compared to the year 2007, the current corporate structure of Daimler AG differs due to its reorganization in the first half of 2019, when the majority of shareholders voted for restructuring the company's five divisions into three legally independent entities.

### 2.2. The corporate structure of Daimler AG

Based on the official website of Daimler AG, the company's core business is the development, production, and distribution of premium cars and commercial vehicles (including vans, trucks, and buses) and the management of the Daimler Group. In addition to its principal business, Daimler AG provides services like financing, leasing, fleet management, insurance, and mobility services (Daimler AG, *The Daimler Group*). Daimler AG operates through the three legally independent business units (Daimler AG, *Business Units*), including:

1. Mercedes-Benz AG (Mercedes-Benz Cars and Mercedes-Benz Vans);
2. Daimler Truck AG (Daimler Trucks and Buses);
3. Daimler Mobility AG (Financial and mobility solutions)

As of the end of September 2020, Daimler AG employed nearly 291,770 professionals worldwide and controlled a portfolio consisting of sixteen brands through three business units (Daimler AG, *Our Products*).

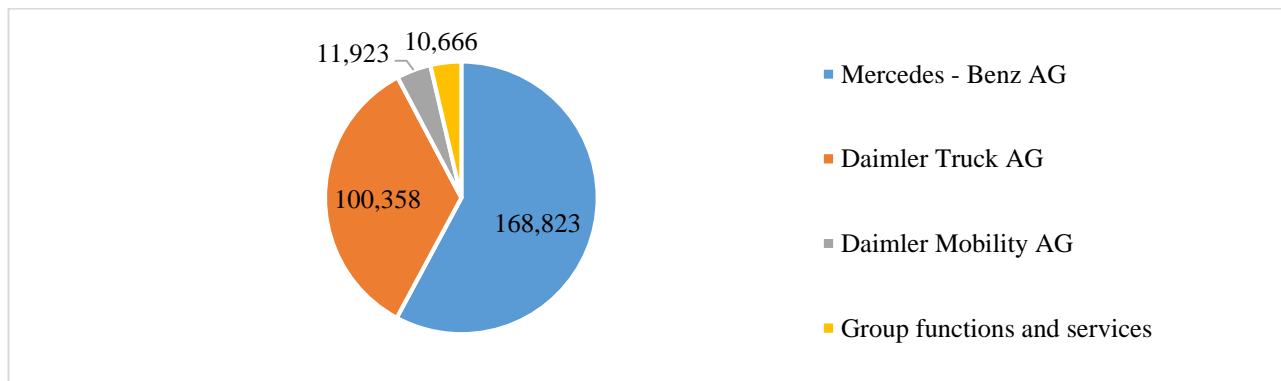


Figure 1. Employees by division as of the end of September 2020.

Source: Daimler AG, Interim Report, Q3 2020.

Compared to the same period of 2019, Daimler AG revenue decreased by 14.27% from €125,618 to €107,688 throughout the first nine months of 2020. However, the same periods' net profit changes were even more hostile, dropping down almost by 85% to €420 mln. (Daimler AG, Interim Report Q3 2020). Mercedes-Benz AG is a leading unit by sales, revenue, and employees' number.

Table 4

*Unit sales and revenue by Daimler AG divisions*

Name of business unit	Unit sales (in units)			Revenue (mln. of EUR)		
	Q1-Q3 2019	Q1-Q3 2020	Difference	Q1-Q3 2019	Q1-Q3 2020	Difference
<b>Mercedes-Benz AG</b>	<b>2,044,094</b>	<b>1,700,989</b>	<b>-17%</b>	<b>76,043</b>	<b>67,963</b>	<b>-11%</b>
Mercedes-Benz Cars	1,735,606	1,446,086	-17%	N/A	N/A	-
Mercedes-Benz Vans	308,488	254,903	-17%	N/A	N/A	-
<b>Daimler Truck AG</b>	<b>390,694</b>	<b>257,863</b>	<b>-34%</b>	<b>33,328</b>	<b>24,174</b>	<b>-27%</b>
Daimler Trucks	367,776	244,554	-34%	N/A	N/A	-
Daimler Buses	22,918	13,309	-42%	N/A	N/A	-
<b>Daimler Mobility AG</b>	N/A	N/A	-	21,112	20,428	-3%

*Source:* Created by the author based on Daimler AG, Fact Sheet for Q3 and January-September 2020.

The regions generating the highest revenue for Daimler AG from January to September 2020 include Europe (€44,334 mln. or 41.16% of total), North America (€30,304 mln. or 28.14% of total), and Asia (€27,779 mln. or 25.80% of total). The aggregated revenue for the rest of the world is €5,271 mln. (4.89% of total), which is significantly less than for any of the mentioned regions. The same proportions in revenues by regions has also dominated during the previous periods.

If considering the revenue by countries, the leaders are the USA (€26,721 mln. or 24.81% of total), Germany (€17,748 mln. or 16.48% of total), and China (€14,672 mln. or 13.62% of total), which combined amounted to nearly 55% of total revenue. Comparing the same period of 2019, during the first nine months of 2020, in all the mentioned regions and countries (except China, which grew by nearly 7%), revenue decrease varies from 4% to 30%.

### 2.2.1. Mercedes – Benz AG

Mercedes-Benz AG is the largest company's unit by revenues and size, with more than 40 plants on four continents and nearly 169,000 employees running the Mercedes-Benz Cars and Mercedes-Benz Vans businesses. The unit focuses on developing, producing, selling premium passenger cars and vans. (Daimler AG, *Mercedes-Benz AG*). The product portfolio consists of the Mercedes-Benz brand with its sub-brands, including Mercedes-AMG, Mercedes-Maybach, Mercedes me, Smart, and the EQ electric mobility brand.

Table 5

*Mercedes-Benz Cars wholesale and retail sales in the major regions and countries at Q1-Q3 2019 and Q1-Q3 2020*

Regions and countries	Wholesales (units)			Retail sales (units)		
	Q1-Q3 2019	Q1-Q3 2020	Difference	Q1-Q3 2019	Q1-Q3 2020	Difference
<b>Europe</b>	733,299	532,388	-27%	769,885	569,270	-26%
<b>North America</b>	254,573	189,554	-26%	266,108	228,409	-14%
<b>Asia</b>	686,215	678,373	-1%	713,323	721,410	1%
<b>Rest of world</b>	61,519	45,771	-26%	63,703	51,776	-19%
<b>Germany</b>	245,689	184,724	-25%	262,298	200,451	-24%
<b>USA</b>	215,422	162,975	-24%	224,696	196,822	-12%
<b>China</b>	514,786	541,585	5%	536,761	573,021	7%

*Source:* Created by the author based on Daimler AG, Fact Sheet for Q3 and January-September 2020.

As of the end of September 2020, Mercedes-Benz Cars had the highest market share in Germany (10.5%) and the European Union (6%). In the Asian markets, its presence was most significant in China (4.3%) and South Korea (4.5%). Compared to European and Asian markets, in the USA, the Mercedes-Benz Cars had a much smaller market share of 1.5% (Daimler AG, *Fact Sheet for Q3 and January-September 2020*).

Table 6

*Mercedes-Benz Vans wholesale and retail sales in the major regions and countries at Q1-Q3 2019 and Q1-Q3 2020*

Regions and countries	Wholesales (units)			Retail sales (units)		
	Q1-Q3 2019	Q1-Q3 2020	Difference	Q1-Q3 2019	Q1-Q3 2020	Difference
<b>EU 30*</b>	210,702	165,335	-22%	179,364	146,428	-18%
<b>North America</b>	38,066	36,671	-4%	36,757	38,768	5%
<b>Latin America</b>	13,520	8,155	-40%	13,459	10,270	-24%
<b>Asia</b>	28,156	25,079	-11%	12,877	13,457	5%
<b>Rest of the world</b>	18,044	19,663	9%	13,082	12,956	-1%
<b>Germany</b>	83,917	72,774	-13%	65,866	57,047	-13%
<b>USA</b>	29,116	31,953	10%	28,846	33,778	17%
<b>China</b>	21,781	20,187	-7%	9,379	10,954	17%

*Source:* Created by the author based on Daimler AG, Fact Sheet for Q3 and January-September 2020.

In the European Union (plus the United Kingdom, Switzerland, and Norway), at the end of September 2020, Mercedes-Benz Vans had a market share of 2.2% in the small segment and 16.6% in medium/large segments. If considering by countries, the largest market share Mercedes-Benz Vans had in Germany (25.8%) and the USA (nearly 10%).

### 2.2.2. Daimler Truck AG

The division, namely Daimler Truck AG and its subsidiaries, is one of the world's largest trucks and bus manufacturers, employing nearly 100,000 persons for its global business. (Daimler AG, *Daimler Trucks&Buses*). Within its structure, Daimler Truck AG comprises seven brands: Mercedes-Benz (trucks and coaches for Europe), Setra (intercity, long-distance, and premium coaches for Europe), Freightliner Trucks (trucks for North America), Western Star (heavy trucks for North America), Thomas Built Buses (light to medium buses for North America), BharatBenz (trucks and buses for India), and FUSO (trucks and buses for Asia, Middle East, Africa, Europe, and Latin America).

Table 7

*Daimler Truck and Buses wholesale volume in the major regions and countries at Q1-Q3 2019 and Q1-Q3 2020*

Regions and countries	Daimler Trucks (units)			Daimler Buses (units)		
	Q1-Q3 2019	Q1-Q3 2020	Difference	Q1-Q3 2019	Q1-Q3 2020	Difference
<b>EU 30*</b>	58,745	38,223	-35%	6,230	4,387	-30%
<b>North America</b>	155,598	97,328	-37%	2,035	1,845	-9%
<b>Latin America</b>	30,461	20,876	-31%	11,504	5,741	-50%
<b>Asia</b>	101,839	70,302	-31%	2,257	888	-61%
<b>Rest of the world</b>	21,133	17,825	-16%	1,083	1,375	27%
<b>Germany</b>	23,038	16,747	-27%	2,035	1,845	-9%
<b>USA</b>	135,276	85,235	-37%	N/A	N/A	N/A
<b>Brazil</b>	21,555	15,825	-27%	8,366	4,393	-47%

*Source:* Created by the author based on Daimler AG, Fact Sheet for Q3 and January-September 2020.

As of 30 September 2020, Daimler Trucks under the Mercedes-Benz brand had a substantial market share in the European Union (19.3%), Germany (36.2%), and Brazil (31.4%). Freightliner and

Western Star brands heavily covered the North American market, representing 33.9% of the total market in Class 6-7 and 39.5% in Class 8. In Asia, The FUSO trucks had nearly 20% of Japanese and almost 50% Indonesian markets. Finally, BharatBenz had 9.1% of India's market.

At the same date, Daimler Buses had a 27.3% market share in the European Union, United Kingdom, Switzerland, and Norway. Furthermore, it has a very noticeable presence in Germany and Brazil, with 51.6% and 51.5%, respectively.

### 2.2.3. Daimler Mobility AG

With nearly 12,000 employees worldwide, Daimler Mobility AG functions as a financial and mobility solution provider targeting private customers, companies, and cities and municipalities. The unit's services are widely diversified, involving rental, leasing, financing, insurance, payment platforms, and other services. Daimler Mobility AG finances almost half of Mercedes – Benz AG and Daimler Truck AG global sales. Its wholly-owned subsidiary, "Mercedes-Benz Bank" is one of Germany's key automotive financial institutions. Through its other brand, namely Athlon, Daimler Mobility AG is one of the European leaders in fleet management and car leasing (Daimler Mobility, *Our company*).

Table 8

*New business, contract volume, revenue, and EBIT of Daimler Mobility AG at Q1-Q3 2019 and Q1-Q3 2020*

Figure	Q1-Q3 2019	Q1-Q3 2020
<b>New business (mln. €)</b>	53,966	48,821
<b>Contract volume (mln. €)</b>	162,843	149,816
<b>Revenue (mln. €)</b>	21,112	20,428
<b>EBIT (mln. €)</b>	1,443	972

*Source:* Created by the author based on the official website of Daimler AG and Daimler AG, Fact Sheet for Q3 and January-September 2020.

New leasing and financing contracts worldwide amounted to €48,821 mln. during the first nine months of 2020 and are 10% less than the prior-year period. The total contract volume decreased by 8% from €149,816 mln. to €162,843 mln. For the same periods, the revenue decreased from €21,112 mln. to €20,428 mln. However, this 3% decline is not a significant loss if considering EBIT decrease 33% from €1,443 mln. to €972 mln.

### 2.3. Ownership structure and dividend policy of Daimler AG

As of 30 September 2020, Daimler AG had 1,069,837,447 free-floating stocks. The company's stocks are all ordinary with no preferred shares, meaning each gives one voting right for its holders.



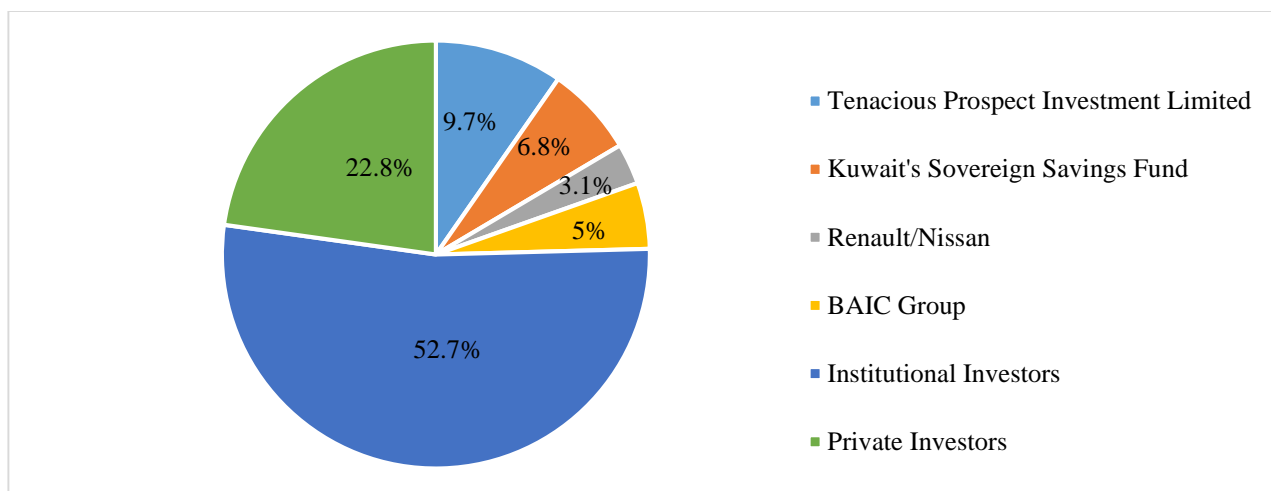


Figure 2. The ownership structure of Daimler AG (as of the end of September 2020).

Source: The official website of Daimler AG.

According to the official website of Daimler AG, the company's largest shareholders are Tenacious Prospect Investment Limited (9.7%), Kuwait's Sovereign Savings Fund (6.8%), BAIC Group (5%), Renault-Nissan (3.1%). Daimler AG's ownership structure might be characterized as defragmented because no shareholder is beneficially owning more than 10%, neither share capital nor voting rights.

Daimler AG stocks are distributed globally, and the majority of investors are from Germany (34%), Europe (24.1%, which does not include Germany), Asia (16.7%), and the USA (13.2%). The other shareholders are from Kuwait (6.8%) and other countries (5.2%).

Daimler AG is a very consistent company in paying dividends to its shareholders if considering a period from 2007 to 2019. The exception was the year 2009 when the dividends were not distributed due to a financial crisis.

Table 9

*Dividends per share and payout ratios from 2015 to 2019*

Financial year	2015	2016	2017	2018	2019
Dividends per share (€.)	3.25	3.25	3.65	3.25	0.90
Dividend payout ratios (%)	40%	41%	37%	48%	40%

Source: The official website of Daimler AG.

The dividends source is the industrial free cash flow of Daimler AG, which targets to pay an average 40% ratio of the net profit (Daimler AG, *Dividend*). As of the last five years, the company slightly exceeds the target with an average of 41.2%.

## 2.4. Peer group

Many car industry manufacturers are dominating in individual models, various segments, and regions. Therefore, correctly selecting a peer group with similar characteristics for benchmarking is crucial and usually challenging at the same time. Based on Koller et al. (2010), the right criteria for choosing the competitors for comparison is finding similarities by industry, risks, cost of capital, return on invested capital, and growth rates. The authors add that sometimes companies determine their main competitors in annual reports. Daimler AG distinguished fifteen relevant competitors in its annual report for 2019, including BMW, Ford, GM, Honda, Hyundai, Isuzu, Kia, Mazda, Nissan, Paccar, Subaru, Suzuki, Toyota, Volvo, and Volkswagen (Daimler AG, *Annual Report 2019*). Out of the mentioned manufacturers, BMW and Volkswagen are closest to Daimler AG in many aspects and will be included in a peer group within this master thesis. Several arguments are supporting this decision:

- All three companies are Germany-based multinational corporations with a strong local market presence. Furthermore, they are manufacturing and exporting globally with significant sales and revenues in Europe, North America, and Asia.

- The three companies' brand and product portfolio are comprehensive, which targets the same customer group in the premium segment. BMW Group AG is consolidating three premium brands – BMW, MINI, and Rolls-Royce, while Volkswagen Group AG has a broader portfolio, including Audi, Bentley, Porsche, VW, and other brands.

- The leading brands of three companies are included in the list of the world's most valuable brands, according to Forbes ranking as 2020. Mercedes-Benz ranks 23<sup>rd</sup> with a USD 28.5 bln. brand value, BMW ranks 27<sup>th</sup> worth at USD 25.9 bln. Volkswagen is number 100, with a value of USD 7.9 bln. Its sub-brands, Audi (ranks 44<sup>th</sup>) and Porsche (ranks 57<sup>th</sup>), are also included in Forbes' top 100 list (Forbes, 2020).

- All three companies' stocks are listed on the Frankfurt Stock Exchange. They are part of the DAX index, consisting of Germany's top thirty companies traded on the Frankfurt Stock Exchange and represent nearly 80% of German stock corporations' market capitalization (DAX indices).

### **BMW Group**

The BMW Group is a multinational automobile and motorcycle manufacturer established in 1916 and headquartered in Munich, Germany. It operated as an aircraft manufacturer but reoriented its profile towards the production of motorcycles in 1923 and passenger cars in 1928. Currently, BMW Group, with 31 assembly plants in 14 countries, focuses on producing vehicles for the premium

segment under four brands, including BMW, MINI, Rolls-Royce, and BMW Motorrad. Additionally, providing a variety of financial and mobility services. During the first nine months of 2020, the company generated the highest revenue in the automotive segment amounting to nearly 70% of the total. The financial service segment is the second-largest revenue source, almost 28% of the total. Finally, the motorcycles segment is the least significant revenue source, with close to 2% of the total. BMW Group's global sales in the automotive segment cover more than 140 countries in which 1,638,167 units were sold during the nine months of 2020 (BMW Group, *Quarterly Statement, 30 September*). The largest markets are Asia (43%), Europe (39.6%), and North America (15.4%). As by countries, the most considerable are the markets of China (34.2%), Germany (12.4%), USA (12.2%), and the UK (7.25%).

### **Volkswagen Group**

The Volkswagen Group is a multinational automotive corporation incorporated in 1937 and headquartered in Wolfsburg, Germany. As one of the world's largest automotive manufacturers, it encompasses 125 production plants and 12 brands operating as independent companies, including Volkswagen (passenger and commercial vehicles), Audi, SEAT, Škoda, Bentley, Bugatti, Lamborghini, Porsche, Ducati, Scania, and MAN. The product portfolio ranging from motorcycles to small and luxury cars. Besides, the corporation produces buses, trucks, and pick-ups in the commercial segment. Furthermore, it supplies services like financing, leasing, banking, insurance activities, and fleet management (Volkswagen AG, Group). The corporation generated €155,486 mln. sales revenue by selling 6,311 mln. vehicles worldwide and from 1 January to 30 September 2020. If comparing business areas by income and sales, passenger cars are nearly 98% of total automotive sales with 68.9% of total revenue, while commercial vehicles are only 2% of automotive sales, giving 9.92% of total revenue. The rest of the income was generated by financial services (19.41%) and power engineering (1.77%) (Volkswagen AG, Interim Report January – September 2020). The major markets are Europe (43% of sales and 60% revenue), Asia-Pacific (43.7% of sales and 19.5% revenue), North America (8% of sales and 16.6% revenue). Other regions, like South America (5.1% of sales and 3.8% revenues), are small markets compared to the mentioned.

### **3. STRATEGIC ANALYSIS OF DAIMLER AG**

Forecasting Daimler AG's future profitability requires identifying the factors influencing the automotive industry, followed by a correct understanding of these factors' drivers. The strategic analysis of Daimler AG is divided into three parts. The first part analyses the Daimler AG macro-environmental condition through the PEST framework. The second part assesses the global automotive industry structure and its trends. Finally, Daimler AG's internal analysis is performed by utilizing the SWOT framework. Afterward, the strategic analysis is summarized by highlighting the most important findings.

#### **3.1. Macro-environmental analysis of Daimler AG: PEST analysis**

By employing the PEST analysis, this part distinguishes relevant long-term macroeconomic and environmental factors having a relevant impact on the Daimler AG profitability and risks (Petersen and Plenborg, 2012). According to Yüksel (2012), the PEST analysis framework helps determine the environmental conditions outside the company's control and provide the required information to predict future circumstances. In the first part of PEST, the political factors represent governmental legal initiatives influencing the macro-environment. Any particular industry or company might be legally impacted by imposing regulations or providing support. The second part of PEST represents external macroeconomic factors, for instance, the gross domestic product (GDP), customers' disposable income, inflation, interest rates, currency risk, commodity prices, unemployment rate, credit rating, and other indicators. The third part of PEST includes social factors assessing the society's needs and its readiness for innovation. Finally, in the fourth part, the technological factors represent the industry's technological progress and its ability to change its established state radically.

Table 10 presents PEST analysis, which is performed by the author based on the data from the International Monetary Fund (2020), Daimler Annual Report (2019), Daimler AG Interim Report for Q3 (2020), and Deloitte 2020 Global Automotive Consumer Study (2020).

Table 10

*PEST analysis of Daimler AG*

<b>Political factors</b>	<b>Impacts on Daimler AG</b>
1. International passenger car standards in connection with diesel exhaust emissions.	➤ High pressure on reducing fuel consumption and emissions.
2. Non-compliance with the different regional regulations (including emissions, fuel economy, and noise levels)	<ul style="list-style-type: none"> <li>➤ Large expenses on compliance according to local governments regulations;</li> <li>➤ Considerable penalties and reputational damage for non-compliance;</li> <li>➤ Vehicles certifying difficulties in some markets</li> </ul>
3. Regional market conditions (including the battery-charging infrastructure and state support)	➤ Dominating proportions in electric-drive cars unit sales
<b>Economic factors</b>	<b>Impacts on Daimler AG</b>
1. Overall economic development and GDP growth rates	<p>➤ The largest Daimler AG's markets by sales and revenues are reviewed by considering historical and future GDP growth. Appendix 2 presents and compares the data from 2016 to 2023, including the historical and forecasted GDP growth of Daimler AG key markets, including the United States, China, and Germany growth trends. Furthermore, the world's and the European Union's GDP performance has also been considered relevant. Throughout 2020, the COVID-19 crisis significantly harmed the entire world economy. The major markets of Daimler AG were impacted at different levels, including:</p> <ul style="list-style-type: none"> <li>• <b>Germany</b>, the EU's largest economy and a company's domestic market, has a relatively modest historical growth rate, especially in 2018 and 2019, and is assumed to have an almost 6% GDP decline in 2020. Furthermore, its future growth prospects are more pessimistic than the world and EU average.</li> <li>• <b>China</b>, the largest market for Daimler AG passenger cars, has the best historical GDP growth among the key markets.</li> </ul>

	<p>Furthermore, it is the only country out of three Daimler AG top markets with an optimistic forecast for 2020 and the highest GDP growth rates until 2023.</p> <ul style="list-style-type: none"> <li>• <b>The USA</b>, the third-largest company's market for passenger cars and the leading market for trucks, on average grew faster than Germany and the EU in 2018-2019 and is expected to have a smaller fall in 2020 than Germany, the EU, and the world's average. However, the USA has a more gloomy growth scenario for the upcoming years based on IMF estimates.</li> </ul>
2. China – USA trade wars	<ul style="list-style-type: none"> <li>➤ The possibility of additional import tariffs imposed by the USA on vehicle manufacturers from Europe and other regions;</li> <li>➤ An uncertainty in case both countries will apply additional protectionist measures, including specific access barriers.</li> </ul>
3. Oil prices	<ul style="list-style-type: none"> <li>➤ Uncontrollable oil price rising might significantly increase inflation and thus negatively impact global growth.</li> </ul>
<b>Social factors</b>	<b>Impacts on Daimler AG</b>
1. Growing environmental conscious of the consumers	<ul style="list-style-type: none"> <li>➤ Increasing supply for hybrid and electrified vehicles of various type</li> </ul>
2. Increasing customer demand for model series with lower profit margins	<ul style="list-style-type: none"> <li>➤ Reduction in the transport total cost.</li> </ul>
<b>Technologic factors</b>	<b>Impacts on Daimler AG</b>
1. Increasing technical complexity, the electrification of the automobile	<ul style="list-style-type: none"> <li>➤ Innovative technical solutions and development, including further improvements related to fuel consumption and emissions;</li> </ul>
2. Remarkably demanding targets for CO2 reductions	<ul style="list-style-type: none"> <li>➤ High transitional expenses to CO2-neutral vehicles.</li> <li>➤ Potential for the new market with automated and CO2-neutral vehicles</li> </ul>

*Source:* Created by the author.

All the factors presented in the PEST analysis potentially can negatively impact Daimler AG's business operations to a certain degree and shape both financial positions and reputation. It might be concluded that the number of negative economic factors prevails over positive ones. Furthermore,

considering the combination of the circumstances mentioned above, the prevalence of adverse effects on the company over favorable ones is noted. To conclude, this demonstrates a high level of persistence and effectiveness of Daimler AG policies and management.

**3.2. Automotive industry structure and trends**

The majority of automotive companies are global corporations not limited to a domestic market. This part analyzes the automotive industry's production in recent years, global sales from 2005 to 2019, and automotive manufacturers' market share in 2019. Furthermore, the part presents the global trends along with Daimler AG's strategy.

**3.2.1. Automobile production and sales worldwide**

As illustrated in figure 3, based on the International Organization of Motor Vehicle Manufacturers, comparing the first three quarters of 2020 to the analogous period of 2019, the global automotive production volume decreased from 136,757,736 to 101,002,864 units or by 26.14%. The highest difference of 32.41% in production amounts was observed between the second quarters of 2019 and 2020. During the same years, the distinctions between the first and the third quarters are approximately 23%.

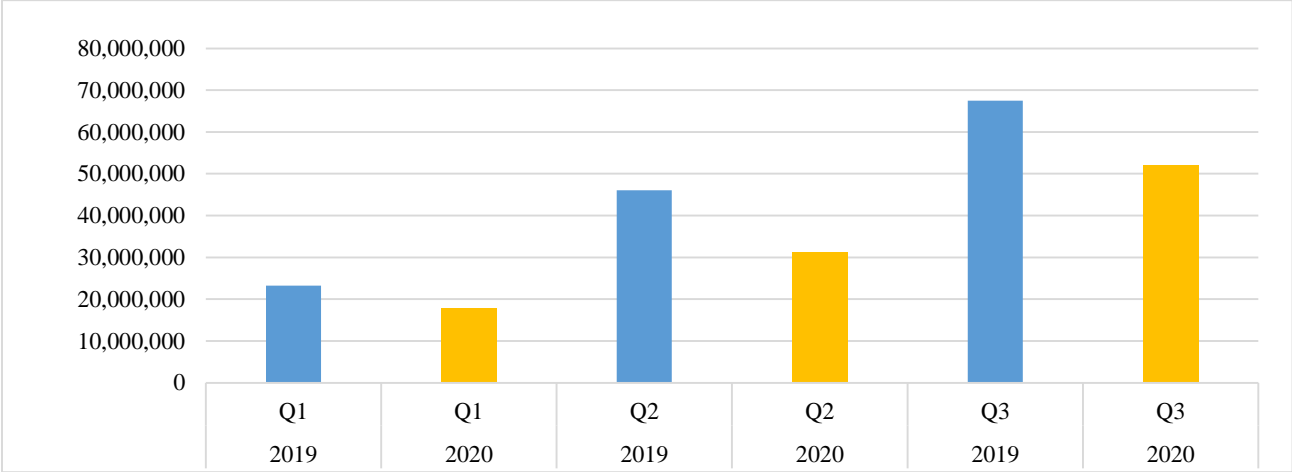


Figure 3. Production volume of all vehicles in Q1-Q3 2019 and Q1-Q3 2020 (in units).

Source: Created by the author based on OICA statistics.

Figure 6 represents the overall global sales of automobiles over the period 2005 to 2019. Figure 4 refers to passenger car sales, and figure 5 reveals commercial vehicles' sales, including light vehicles, heavy trucks, buses, and coaches.

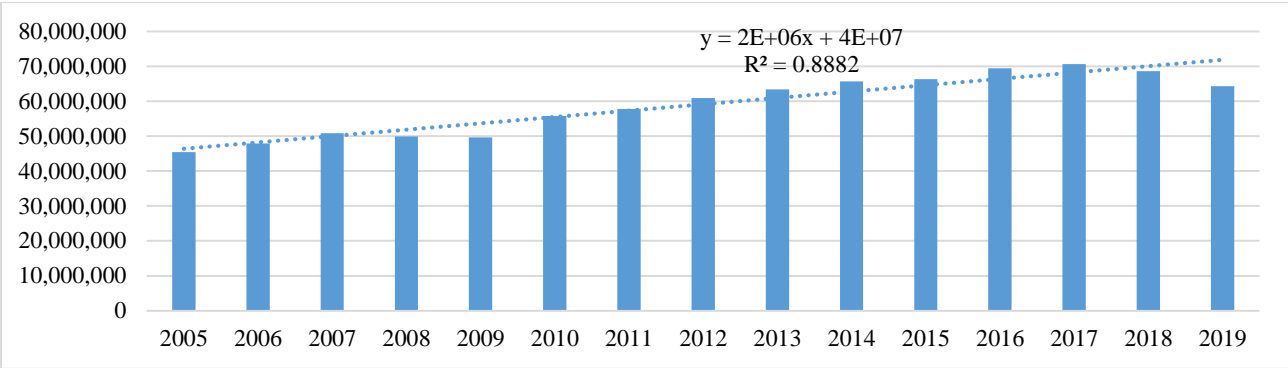


Figure 4. Passenger car sales worldwide from 2005 to 2019.

Source: Author's creation based on OICA statistics.

According to figure 4, the total units of passenger cars sold from 2005 to 2019 increased from 45,407,298 to 64,341,693 or 41.7%. Several decrease trends in passenger car sales were observed in 2007 – 2009 and 2017 – 2019. During the first period the demand fell by 2.32%, and almost 9% during the second. The longest and the most significant growth interval was 2010 – 2017, when the demand recovered from 49,654,985 to 70,694,834 units, which is an incredible 42.37% increase.

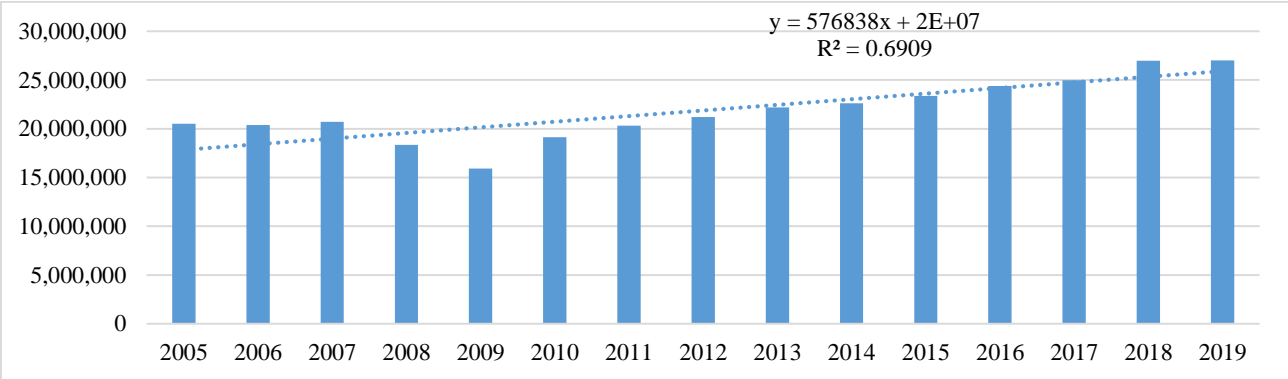


Figure 5. The volume of global sales of commercial vehicles from 2005 to 2019 (in units).

Source: Author's creation based on OICA statistics

As for the commercial vehicle's demand, the same positive growth trend is noticed for passenger car sales. However, commercial vehicles' total sales growth of 31.68% in 2005 – 2019 is comparatively smaller. Furthermore, the decrease in sales from 20,728,868 to 15,913,844 units or 23.22% was very significant from 2007 to 2009. After the significant recovery in 2010, the stable upward growth until 2019 with no downturns. In total, the sales increased by 69.76% in the recent decade, with an average annual growth rate of 6.97%.



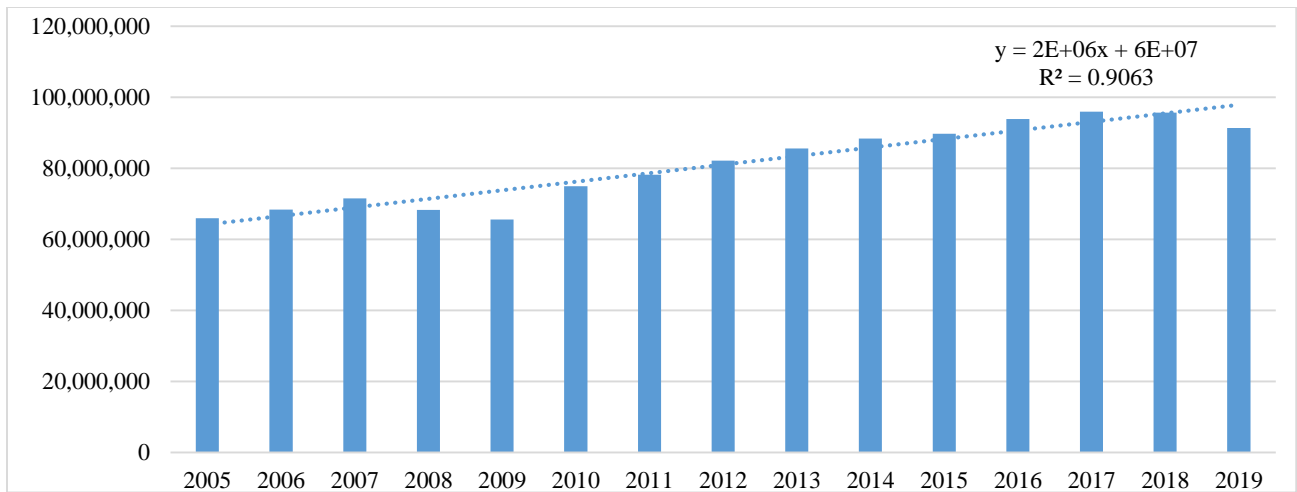


Figure 6. The total volume of global sales of new vehicles from 2005 to 2019 (in units).

Source: Author's creation based on OICA statistics.

Figure 6 shows that the total new vehicle sales in 2005 – 2019 increased from 65,923,794 to 91,358,457 units or 38.58%. The overall demand growth is mainly based on the rise of passenger car sales by 41.7%, described in figure 4. The most significant sales fluctuations are noticed in 2007 – 2009, when the demand decreased radically, affected by the global economic crisis (Daimler AG, *Annual Report, 2009*). As a result of government-funded packages, the central banks' expansive monetary policies, and the substantial Chinese and other emerging markets' demand for cars, perceptible recovery started by the end of 2009 and continued throughout 2010 (Daimler AG, *Annual Report, 2010*). After the recovery reached in 2010, the sales continued growing at moderate rates.

### 3.2.2. Automotive market share and trends

The global automotive market consists of hundreds of independent manufacturers with numerous brands incorporated under their complex structures. Figure 7 illustrates the world's top 10 largest automotive manufacturers' market share by sales for 2019. Based on the statistics, Daimler AG is the ninth manufacturer worldwide with a market share amounting to 2.94%. Compared to its peer group, Daimler AG is a little bit ahead of the BMW Group, which globally ranks tenth with a market share of 2.62%. On the other hand, another significant competitor Volkswagen Group with its numerous brands, has a significantly larger market share worldwide, amounting to 7.59%, which makes it the second-largest manufacturer by overall sales.

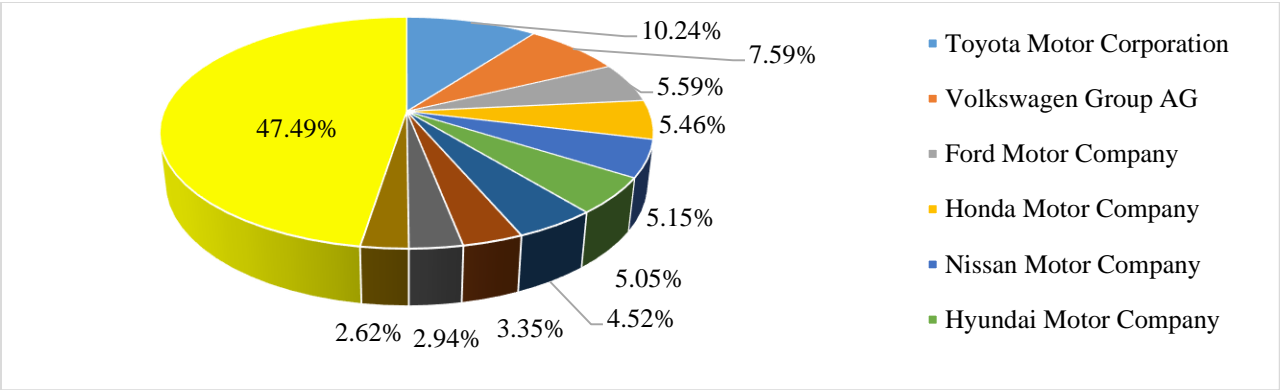


Figure 7. Market share per automotive manufacturer in 2019.

Source: Author’s creation based on data from Statista (2020).

Business models of contemporary automotive industry manufacturers are heavily influenced by an extensive digitalization and therefore adjust from product-focused original equipment manufacturers to mobility services providers. Table 11 presents the five trends shaping the future automotive industry's transformation. According to PwC (2018), the younger generations (primarily Chinese users) will make the automotive industry more flexible, comfortable, and customized from the customers' perspective. Furthermore, by the year 2030, shared and autonomous mobility will heavily increase worldwide based on PwC estimations. It is expected to reach approximately 40% of private individuals' mileage in Europe. Moreover, it is anticipated that new vehicle sales should rise in Europe by 30%, with more than half of them fully electrified.

Table 11.

*Dominating trends transforming the automotive industry*

Trend	Key takeaways
Electrified	The automotive industry transforms into „emissions-free” mobility, which gradually becomes a worldwide initiative. Renewable sources are becoming crucial to produce the electricity required to ensure CO2-neutral mobility.

Continuation of Table 11

Autonomous	Impetuous development of artificial intelligence and neural networks created excellent grounds for developing autonomous vehicles, which might handle sophisticated traffic situations without human control. Furthermore, new individual mobility platforms and application scenarios are becoming a reality.
Shared	The massive introduction of autonomous vehicles will make car-sharing concepts economically better grounded. Besides, the “on-demand” service will become more convenient with an opportunity to order cars without searching for them in the nearby area.
Connected	The “Connected Car” concept covers the car's networking with other cars or the transport infrastructure and the passengers' connection with the external world. The possibilities to work, communicate, browse the internet, and use multi-media services while traveling in the car will become a reality in the foreseeable future.
Yearly updated	The traditional automotive industry typically had model cycles of five to eight years. The innovation rate should increase due to all the previously mentioned trends. The innovation cycles will be shortened to annual updates to integrate the latest hardware and software developments in current conditions.

*Source:* Author’s creation based on PwC report (2018).

In its development strategy, Daimler AG seven pillars, including an increasing commitment to CO<sub>2</sub> neutrality, growing the core business, improving the customer's experience, prioritizing electric driving in all divisions, promoting automated and autonomous driving and mobility services, exploiting the strong potential of digitization, and emphasizing agile culture among the employees. The financial position's constant improvement is the cornerstone of Daimler AG's sustainable business strategy. Daimler AG strategy intends achieving future goals by focusing on three priorities:

- Finding a balance between sustainability and modern luxury in the passenger car business and providing the customers with innovative and highly efficient commercial vehicles in the transportation business;
- The continuing growth of the company's profitability and strengthening its global positions;

➤ The necessary skills developing to deal with new challenges with an agile team willing to learn.

Daimler AG assumes the luxury segment's continuous expansion in the automotive sector and believes the transportation of individuals and commercial goods demand has excellent potential for increase (Daimler AG, *The Daimler Group*). Furthermore, the company considers the development of financial services, fleet management, and digital mobility solutions as good opportunities for further growth.

### **3.3. SWOT analysis of Daimler AG**

SWOT is a strategic analysis final part summarizing a company's strengths, weaknesses, opportunities, and threats. According to Reilly and Brown (2012), the strengths and weaknesses correspond to the internal factors, while opportunities and threats represent external, such as economic tendencies, competitive forces, new technologies, and government regulations.

The first component of SWOT, the strengths, are factors giving the company privilege over similar companies. SWOT considers perceived strengths as a strong brand, customer loyalty, high-quality products, market leadership, good customer service, innovations, or substantial financial resources. Opposite to strengths, weaknesses represent the factors putting the company at a disadvantage relative to competitors. Another SWOT component is opportunities, which consider components the company potentially might employ to its benefits. In SWOT, opportunities might include a growing market, decreasing competition, potentially new products and markets, etc. Finally, threats include any relevant factors potentially creating difficulties for achieving the company's strategic goals. Examples of potential threats might be a slowing economy, rigorous government regulation, increased competition, entry threats, increasing buyers' or suppliers' bargaining power, and alternative technologies. Table 12 summarizes the SWOT analysis of Daimler AG based on previous findings and other relevant sources.

Table 12

SWOT analysis of Daimler AG

Strengths	Weaknesses
<p>➤ <b>Daimler AG's leading brand high value and reputation</b></p> <p>"Mercedes-Benz" has an outstanding reputation worldwide, ranking the world's 23<sup>rd</sup> most valuable and reputable brand among 100 major multinational corporations (Forbes, 2020). Furthermore, it is the most valuable Germany's and the automotive premium segment brand as of 2020.</p> <p>➤ <b>The world's third-largest automotive company</b></p> <p>According to <i>Fortune Global 500</i> estimates as of the year 2020, Daimler AG globally ranks third (after Volkswagen Group and Toyota Motor Company) largest car manufacturers by assets, revenues, and employees number.</p> <p>➤ <b>Geographically diversified risks</b></p> <p>Daimler AG's strength is a global presence as it generates the highest revenues in the USA, China, and Germany for passenger cars and commercial vehicles. (Daimler AG, Interim Report Q3 2020). Therefore, Daimler AG's geographic risks are well diversified and not critically influenced by any single region's downturn.</p> <p>➤ <b>High priority for research and development</b></p>	<p>➤ <b>High competition in the premium segment</b></p> <p>Daimler AG's global market share of 2.94% is similar to its principal peer BMW Group (2.62%) and is almost 2.6 times less compared to Volkswagen Group (7.59%) in 2019 (Statista, 2020). As the manufacturers' number and the competition level are high, there are many alternatives for selecting the premium segment cars, like Audi, BMW, Porsche, and others.</p> <p>➤ <b>The strong impact of labor unions</b></p> <p>Daimler AG has a heavily unionized workforce in Germany. Based on the German Co-determination Law, the employees' representatives constitute 50% of twenty supervisory board members. (Daimler AG, <i>The Supervisory Board of Daimler AG</i>). The company's profit potentially might be negatively shaped due to limited flexibility in salaries, work rules, and regulations. Furthermore, additional difficulties might occur when investors and labor interests are at variance.</p> <p>➤ <b>Legal proceedings in the USA regarding diesel emissions</b></p> <p>Together with its subsidiary, namely Mercedes-Benz USA LLC, Daimler AG are under legal proceedings in the USA related to nearly 250,000 diesel vehicles' emission control systems. Daimler AG expects EUR 1.27 bln costs for the US authorities and EUR 592 mln for the</p>

<p>Research and development expenditures account for nearly 5-6% of Daimler AG's annual revenues to meet its customers' high standards and expectations for electrified, autonomous, and environmentally friendly vehicles (Daimler AG, Annual Report 2019).</p>	<p>class action settlement (Daimler AG, US authorities approve settlement). As a result, Daimler AG assumes a slight negative impact on the free cash flow from industrial business until 2023.</p>
<p><b>Opportunities</b></p>	<p><b>Threats</b></p>
<p>➤ <b>Higher sales and market share in China</b>  As of the end of September 2020, Mercedes-Benz Cars had a market share of 4.3% in China, the most important market with a significant growth area and business opportunities based on passenger car sales statistics. Optimistic forecasted China's GDP growth for 2020 and the upcoming three years potentially might positively affect AG passenger cars demand in the long-run (IMF, World Economic Outlook Database, October 2020).</p> <p>➤ <b>Emphasizing CO2-neutral mobility</b>  Daimler AG puts substantial efforts into CO2-neutral mobility transformation and advanced cell technologies development by signing a strategic partnership with Chinese battery-cell manufacturer Farasis Energy (Ganzhou) Co., Ltd. in July 2020 (Daimler AG, Interim Report Q3 2020).</p>	<p>➤ <b>The slump for the global economy due to COVID-19</b>  The COVID-19 pandemic significantly harmed the world's economy throughout 2020. Furthermore, a massive second wave of infection might lead to lockdown measures negatively impacting sales, production, and the supply chain. However, various regions and countries were impacted at different levels. All of Daimler AG's important markets (if not considering China) GDP have pessimistic forecasts for 2020 and much lower recovery rates than China for the upcoming years (IMF, World Economic Outlook Database, October 2020).</p>

*Source:* Created by the author.

### **3.4. Summary of strategic analysis**

The strategic analysis, containing Daimler AG's macro-environmental condition, global automotive industry structure and its trends, Daimler AG's internal analysis, has shown that both the industry and company are influenced differently by external and internal factors. Their development heavily depends on the overall economic growth and many political, social, and technological trends.

PEST analysis political part has shown that due to changes in international standards and regulation on diesel exhaust emissions, the automotive companies are pressured to reduce emissions and spend more on compliance. Furthermore, this stimulates the industry to prioritize CO<sub>2</sub>-neutral mobility. The economic part emphasizes the global and regional downturn in 2020 caused by COVID-19 and uncertainties regarding the oil prices development and the China – USA trade wars. The social and technological factors shape the automotive industry to emphasize the development and increasing demand for electrified vehicles.

The automotive industry review revealed the new vehicle sales overall growth by 38.58% throughout 2005 – 2019. In the mentioned period, passenger car sales increased by 41.7%, while commercial vehicle sales grew by 31.68%. As of 2019 estimates on vehicle sales, Daimler AG is the ninth largest manufacturer worldwide with a market share amounting to 2.94%. An effort to estimate Daimler AG stock's intrinsic value should consider the automotive industry business models transforming into mobility services providers by emphasizing vehicle electrification, autonomous driving, and frequent updates trends. In parallel, the customer's expectations are continually growing, which leads to considerable expenses for research and development. Daimler AG respects the dominating trends in its development strategy by emphasizing CO<sub>2</sub> neutrality, prioritizing electric driving in all divisions, and promoting automated, autonomous driving, as well as mobility services.

The SWOT analysis presented the strengths, weaknesses, opportunities, and threats that might impact the future Daimler AG performance. The most substantial company's sides include its leading brand's "Mercedes-Benz" remarkable reputation and the highest value in the automotive premium segment. Furthermore, the company is the third-largest automotive manufacturers if considering disposable assets and revenues with perfectly geographically diversified risks throughout sales in all continents. Finally, the company strongly focuses on advanced research and development to meet its high expectations through inventing new technologies by emphasizing CO<sub>2</sub>-neutral mobility in cooperation with strategic partnerships in China and other countries. The company has good opportunities to increase its market share in China, which is the key market for Daimler AG passenger car sales, and has very optimistic development expectations forecasted by the IMF.

On the other hand, the SWOT analysis has demonstrated that Daimler AG faces intense competition in the premium segment. Furthermore, the company's weakness related to the fact is heavily impacted by labor unions in Germany and involved in the legal proceedings regarding diesel emissions in the USA, which costs Daimler nearly €2 bln. in total. Lastly, the further spread of COVID-19 might negatively impact Daimler AG sales, production, and supply chains.



## 4. FINANCIAL ANALYSIS AND FORECASTING OF DAIMLER AG

This chapter aspires to estimate both the historical and future financial performance of Daimler AG. As valuation incorporates future growth forecasting, the historical Daimler AG's development trends are crucial in determining future cash flows. The historical financial performance analysis part focusing on profitability and liquidity risk analysis is grounded on Daimler AG's and its peers' official annual reports from December 2015 until September 2020, which give a comprehensive company's revenue and expense structure understanding. Consequently, the strategic analysis and the historical performance analysis findings are utilized to forecast Daimler AG's future profitability.

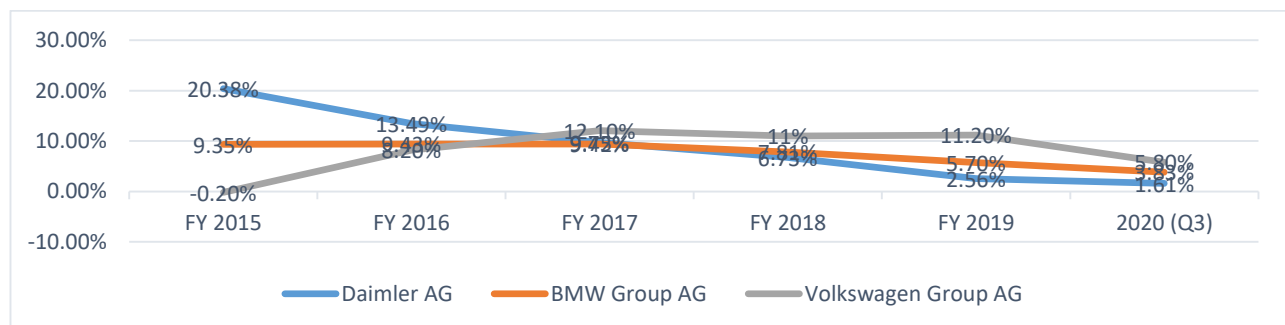
### 4.1. Profitability analysis

This part assesses Daimler AG's performance key drivers by comparing its historical financial performance to selected competitors. It is expected to give a more in-depth view of its financial condition by emphasizing the return on invested capital (ROIC) and return on equity (ROE). According to Reilly and Brown (2012); and Petersen and Plenborg (2012), these are the most material profitability ratios if looking from the shareholders' and investors' perspective. Furthermore, for benchmarking with peers, the common-size (or vertical analysis) will be employed to assess Daimler AG's historical financial performance.

#### 4.1.1. Return on invested capital (ROIC)

Return on invested capital is a ratio disclosing the company's effectiveness to produce returns by employing a disposable capital. Usually, it is applied by being compared to the weighted average cost of capital (WACC). Figure 8 demonstrates the development of the historical return on invested capital from 2015 until September 2020 in parallel with its main competitors.

*Figure 8.* Return on invested capital development of Daimler AG and its peers from December 2015 to September 2020.



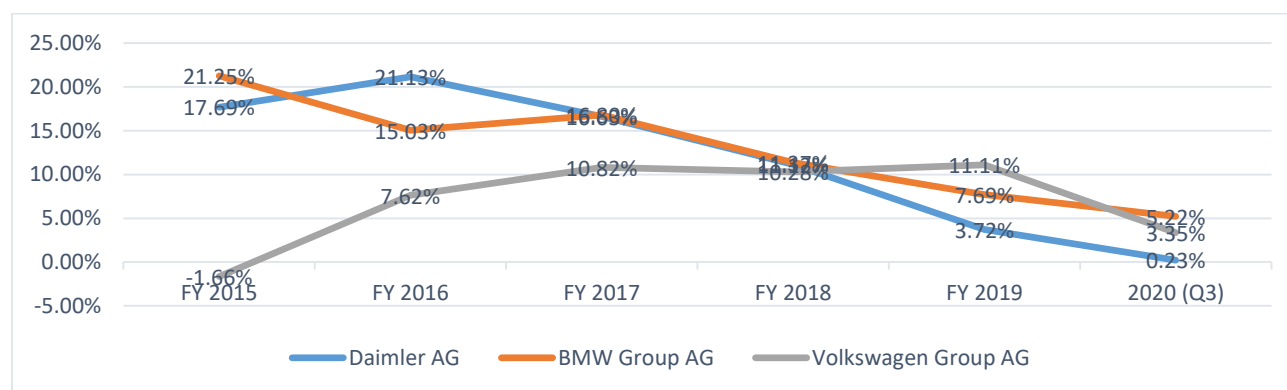
*Source:* Author's creation based on the companies annual accounts 2015-2019 and 2020 Quarter 3 Interim Reports.

At the end of 2015, Daimler AG had a substantial advantage over key competitors with an incredible return in invested capital amounting to 20.38%. At the same point in time, BMW Group AG and Volkswagen Group AG had only 9.35% and -0.20%, respectively. However, at the end of the analyzed term, the situation has changed radically. With the return in invested capital of only 1.61%, which is low compared to 3.83% of BMW Group AG and 5.80% of Volkswagen Group AG, the company has turned into an outsider from being an undisputed leader. These circumstances might be explained by a sharp decline in Daimler AG's net income in 2017 and the first six months of 2020. On the other hand, Volkswagen Group AG has recovered from the substantial 2015-2016 financial losses and had a relatively stable period with a return on invested capital rate exceeding 10% until December 2019.

#### 4.1.2. Return on equity (ROE)

The return of equity ratio assesses profitability by focusing on both operating profitability and the company's financial leverage. Based on figure 9, in a period from December 2015 to September 2020, Daimler AG's return on equity decreased crucially from 17.69% to 0.23%. It might be concluded that the added value received by Daimler AG shareholders has also been strongly negatively impacted.

Figure 9. Return on equity development of Daimler AG and its peers from December 2015 to September 2020.



Source: Author's creation based on the companies annual accounts 2015-2019 and 2020 Quarter 3 Interim Reports.

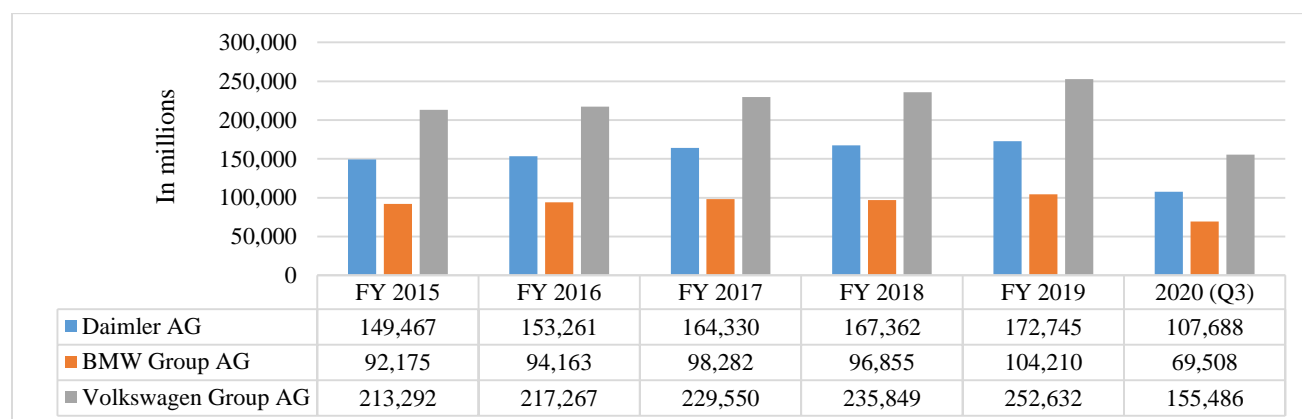
Throughout the considered period, BMW Group AG and Volkswagen Group AG generally have demonstrated a better return on equity performance than Daimler AG and gave their shareholders more value at the end of September 2020. However, both companies have also suffered from decline, especially BMW Group, whose investment return fell from 21.25% in December 2015 to 5.22% in September 2020. The Volkswagen Group AG had a negative return on equity ratio of -1.66% in

December 2015 due to negative net income and financial fines caused by the emissions scandal, better known as Dieselgate, in September 2015. However, from 2016 to 2019, the company's net income significantly recovered, resulting in a return on equity at 11.11% in December 2019.

### 4.1.3. Profit margin

This section reviews the development of the profit margin of Daimler AG. The cornerstone for the positive development of the profit margin is the increasing efficiency, which relies on two sources: growth in incomes and a decrease in expenses (Petersen & Plenborg, 2012). Therefore, the most significant components of Daimler AG and its peers' income statements (including the revenue development, cost of sales, personnel expenses, research and development expenses, and the EBITDA-margin) will be assessed by the common-size, which sometimes called vertical analysis. In its framework, each highlighted component (please refer to Annexes 3, 4, and 5) is presented as a total revenue percentage and showing its relative weight. In contrast, the revenue is presented in actual numbers.

*Figure 10.* Revenue development of Daimler AG and its peers from December 2015 to September 2020.



*Source:* Author's creation based on the companies annual accounts 2015-2019 and 2020 Quarter 3 Interim Reports.

As figure 10 illustrates, Daimler AG's revenues grew up in the selected period, starting in December 2015 and ending 2019 by 15.57%, from €149,467 mln. to 172,745 mln. However, due to the negative impact of coronavirus on the sales volumes in 2020, it is unlikely to expect total revenue comparable by volume to 2019 despite a rebound in sales throughout the third quarter of 2020 (Daimler AG, Interim Report Q3 2020). Similar tendencies were observed in BMW Group AG and Volkswagen Group AG revenue growth until 2019. Both companies' vehicle sales volumes were also

negatively impacted by coronavirus spread during the first half of 2020 but increased in the third quarter.

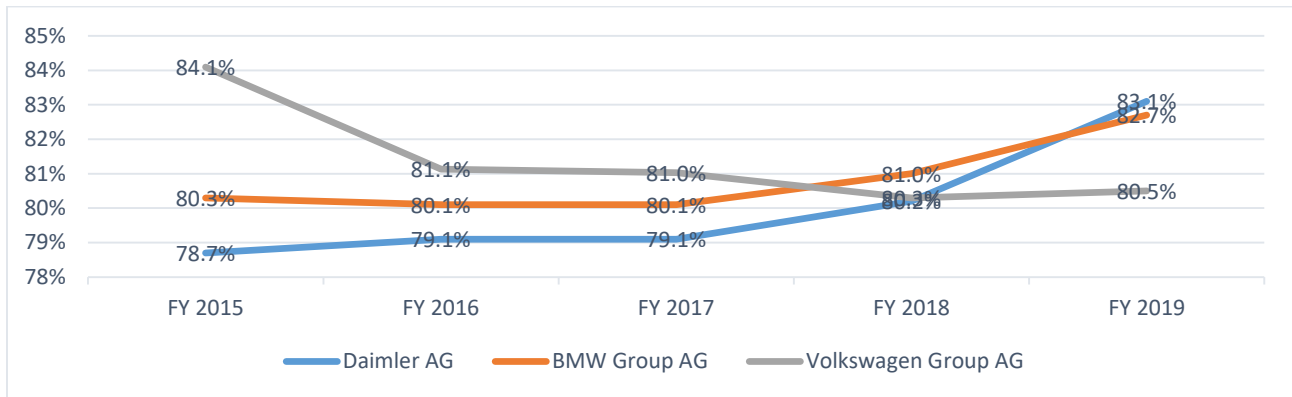


Figure 11. Cost of sale of Daimler AG and its peers from December 2015 to 2019.

Source: Author's creation based on the companies annual accounts 2015-2019 and 2020 Quarter 3 Interim Reports.

Figure 11 presents the sales cost, representing the company's direct costs related to the goods production and services provision. As shown above, Daimler AG's sales cost at the end of 2015 reached 78.7% and was lowest compared to BMW Group AG with 80.3% and Volkswagen Group AG having the highest proportion of 84.1%. However, the mentioned situation had changed radically by the beginning of 2018, when both Daimler AG and BMW Group AG's sales skyrocketed. The Volkswagen Group AG started successfully reducing sales costs related to total revenue until the end of 2019. According to the latest available estimates as of December 2019, Daimler AG's performs worse than its main competitors in terms of the sales cost, amounting to 83.1% compared to the revenue.

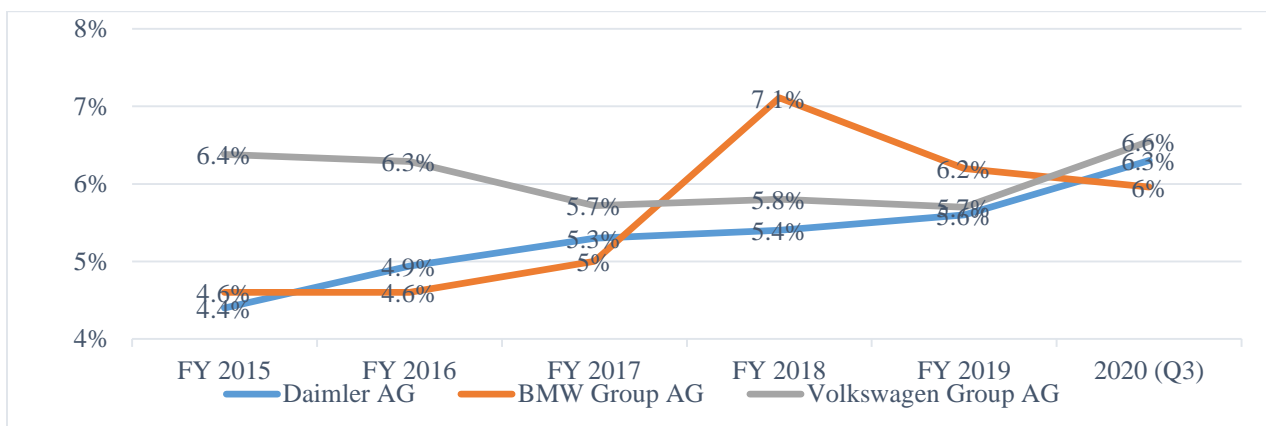
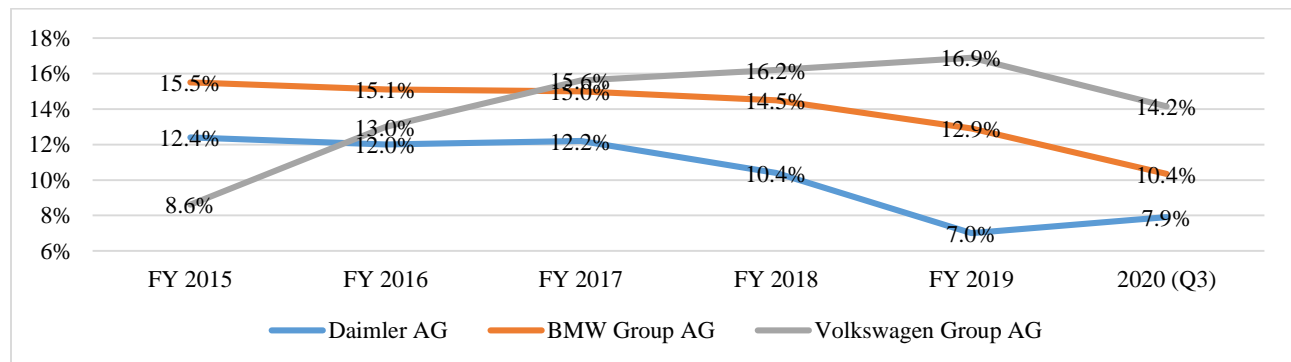


Figure 12. Research and development expenses of Daimler AG and its peers from December 2015 to September 2020.

*Source:* Author’s creation based on the companies annual accounts 2015-2019 and 2020 Quarter 3 Interim Reports.

Another substantial part of the automotive company’s expenses is research and development, which must be respected to improve technologies and compete with other leading manufacturers. The Daimler AG and its peer's historical expenses for research and development from December 2015 to September 2020 are presented in figure 12. According to the statistics, average spendings on all three companies' research and development are nearly 5-6% of their total revenue. A relatively stable ratio of these types of expenses might be explained by analyzed companies' high steadiness.



*Figure 13.* EBITDA-margin development of Daimler AG and its peers from December 2015 to September 2020.

*Source:* Author’s creation based on the companies annual accounts 2015-2019 and 2020 Quarter 3 Interim Reports.

The company’s operational results as a part of its total income are assessed through the EBITDA margin (earnings before interest, taxes, depreciation, and amortization), which indicates a capacity to create profits after considering all the operational expenses. Furthermore, it gives reasonable grounds to compare a particular company’s performance to its rivals within an industry (Petersen & Plenborg, 2012). EBITDA is a useful tool for analyzing more capital intensive companies, compared to EBIT, which does not consider depreciation and amortization and is more suitable for analyzing the service sector,

Figure 13 features the EBIDTA margin of Daimler AG and its competitors, considering from December 2015 to September 2020. At the beginning of the analyzed period, Daimler AG, with an EBITDA margin of 12.4%, was in between its competitors, including 15.5% of BMW Group AG and only 8.6% of Volkswagen Group AG, which was negatively impacted by the dieselgate scandal. However, Daimler AG’s EBITDA margin decreased significantly between 2018 and 2019 by reaching a historical minimum of 7% at the end of 2019. To compare, at the same point in time, competitors

had impressive margins amounting to 16.9% (Volkswagen Group AG) and 12.9% (BMW Group AG). The reasons behind the downturn in EBITDA margin are mainly related to costly legal proceedings involving Daimler AG and its measures concerning a large number of diesel vehicles (Daimler AG, Annual Report 2019).

## **4.2. Liquidity risk analysis**

The main reason behind conducting the liquidity risk analysis for a particular company is determining its capacity to meet obligations (Petersen and Plenborg, 2012). Disregarding liquidity analysis might significantly impact the company's operational flexibility or, in the worst scenario, lead to the company's insolvency. It should be considered in valuation as the liquidity risk impact Daimler AG's capability to attract required capital. In case the automotive development expenses outreach expectations Daimler AG will be forced to raise more capital.

According to Petersen and Plenborg (2012), liquidity risk is estimated by looking from short-term and long-term perspectives. The fundamental difference between them is that short-term analysis determines the ability to meet current liabilities, whereas the long-term analysis considers long-term obligations coverage ability.

### **4.2.1. Short term liquidity risk**

Daimler AG's capabilities of meeting short-term obligations might be assessed through several ratios. The most widely applied ratios are the current ratio and quick ratio, which measures a company's financial health (Reilly and Brown, 2012). However, there are minor differences as the quick ratio contains fewer components than the current ratio. The idea behind the current ratio is an examination of the relationship between the company's current assets and current liabilities, which might be expressed by the following formula:

$$\text{Current ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Despite the current ratio being the best-known liquidity measure, considering total current assets to evaluate a company's ability to meet the current obligation might sometimes be irrational as some other assets and inventories might have low liquidity. Therefore, some analysts prefer the quick ratio, which relates current liabilities to highly liquid assets like cash and accounts receivables. The following formula calculates the quick ratio:

$$\text{Quick ratio} = \frac{\text{Cash} + \text{Short-term Investment} + \text{Receivables}}{\text{Current Liabilities}}$$

Based on Petersen and Plenborg (2012), a liquidity ratio exceeding 1 is usually considered normal, while the ratio exceeding 2 represents a low liquidity risk.

Table 13

*Short-term liquidity ratios of Daimler AG from 2015 to 2019*

<b>Ratio</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
<b>Current ratio</b>	1.19	1.21	1.23	1.24	1.21
<b>Quick ratio</b>	0.88	0.91	0.93	0.94	0.93

*Source:* Author's creation based on Appendix 1.

Table 13 illustrates that Daimler AG's historical short-term liquidity ratios from December 2015 to 2019. An average value of 1.22 for the current ratio and 0.92 for the quick ratio. Based on two are relatively stable liquidity measures, it might be concluded that Daimler AG does not have issues with short-term liquidity risk throughout the previous five years.

#### **4.2.2. Long-term liquidity risk**

Determining the company's long-term liquidity is a more complicated process as it considers the company's financial structure. Long-term liquidity risk ratios measure the degree to which the company's employed capital has been financed through share capital and retained earnings by shareholders or third parties by taking loans. Petersen and Plenborg (2012) state that the financial leverage ratio and interest coverage ratio (ICR) are frequently employed to assess long-term liquidity risk. The debt-to-equity ratio is a widely used financial leverage ratio that compares total liabilities to shareholders' total equity. The debt-to-equity ratio might be generally expressed as:

$$\text{Debt to Equity Ratio} = \frac{\text{Total Liabilities}}{\text{Total Equity}}$$

Another long-term liquidity measuring Daimler AG interest expense coverage capabilities is the Interest coverage ratio, which compares EBIT to the interest expense. The Interest coverage ratio low level means that debts highly pressure the company, and its ability to cover interest is doubtful if this indicator amounts to 1.5 or fewer. The Interest coverage ratio's formula presented as:

$$\text{ICR} = \frac{\text{EBIT}}{\text{Interest Expense}}$$

Table 14

*Long-term liquidity ratios of Daimler AG from 2015 to 2019*

<b>Ratio</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
<b>Debt-to-equity ratio</b>	2.98	3.29	2.92	3.26	3.81
<b>Interest coverage ratio</b>	41.80	40.20	34	14.40	3.80

*Source:* Author's creation based on Appendix 1.

The long-term liquidity risk is considered low under the conditions when the leverage ratio is low and the interest coverage ratio is high. As presented in Table 14, Daimler AG has increased its borrowings throughout the considered period. From December 2015 to 2019, Daimler AG's interest coverage ratio averaged 26.8, while its median amounted to 34. Simultaneously, the top value of 41.8 was registered in December 2015 and the minimal at 3.8 in December 2019. The reason explaining the significant difference lay in decline at EBIT level and increased interest expense.

To summarize the liquidity risk analysis, Daimler AG has a good potential of meeting short-term liabilities based on an excellent historical, current ratio and quick ratio. However, from December 2015 to 2019, the growth of debt-to-equity ratio from 2.98 to 3.81 and an extreme decrease in interest coverage ratio from 41.80 to 3.80 means a higher chance of encountering issues in a longer perspective.

#### **4.3 Forecasting of Daimler AG future revenues and significant costs**

The total revenue of Daimler AG has grown at a 3.68% compound annual growth rate from December 2015 to 2019. However, during the first nine months of 2020, compared to the same period in 2019, it decreased by almost 14%, mainly due to the covid-19 pandemic. If considering the divisions' decreased level, the most significant passenger cars and vans segment's revenues fell by 11%. Furthermore, the trucks and buses generated 27% fewer revenues. Daimler AG assumes that the mentioned losses will only be partially recovered by the end of 2020, which overall is expected to be lower than the previous years (Daimler AG, Interim Report Q3 2020). The author anticipates there will not be significant shifts in sales and revenues for the leading markets in different segments in the upcoming years. As a result, China remains the number one market for Mercedes-Benz passenger cars. The USA most likely be the leader for purchasing the trucks, and the European countries (mostly Germany) will buy the majority of the company's buses.

Based on the author's observations relying on Daimler AG report of third-quarter 2020 (Daimler AG, Interim Report Q3 2020), the critical risks concerning the sales and revenues in all segments (including passenger and commercial cars, trucks, buses, and mobility solutions), are firmly dependant on the coronavirus spread scenarios throughout the fourth quarter of 2020 and entire 2021. The additional and strict lockdown measures in a pessimistic scenario, caused by COVID-19 pandemic significant growth in numbers, might lead to the negative consequences for Daimler AG not only by decreasing sales and revenues in 2021 and later, but also due to production-related issues caused by delays in the procurement and supply chains worldwide. Assuming the COVID-19 pandemic ending might give the right stimulus for increasing sales and production volumes in a more



optimistic scenario. The author assumes and supports the favorable forecast scenario resulting in Daimler AG sales and revenues in 2021.

According to the author's opinion, Daimler AG in the short-term period cannot significantly decrease operating costs due to an active transition to CO2-neutral mobility. For instance, Daimler AG scheduled investing nearly €19 bln. in research and development initiatives and roughly €14 bln. in property, plant, and equipment, mostly throughout 2020 and less in 2021. However, in a longer perspective, Daimler AG anticipates a gradual reduction in expenses related to research and development and traditional drive systems. Furthermore, the company intends to reach higher profitability by emphasizing material-cost savings, adjusting production portfolio, optimizing processes through digitization, and other initiatives (Daimler AG, Annual Report; Daimler AG, Interim Report Q3 2020).

In a forecasted consolidated income statement, please refer to Appendix X, the author forecasts the revenues, main costs, and net income based on Daimler AG official reports from 2015 to 2019, Interim Report Q3 2020, estimations of „MarketScreener.com“ (provider of financial tools, investing tips, in-house technical and fundamental analysis, dynamics charts, and so on) on Daimler AG revenues for the financial year 2020. This step was taken as there is no official information from the company relating to its financial performance in the fourth quarter of 2020. Furthermore, the author used a vertical analysis of the income statement by expressing relevant items as a total revenue's average percentage throughout 2015 – 2019. The percentages of items are applied to calculate them by relating to the forecasted revenue until the end of 2023. As a result, the proportion out of total revenue calculated for the following items of Daimler AG consolidated income statement, including:

- „Cost of sales“ – 80.15%;
- “General administrative expenses” – 10.14%;
- “Research and development” – 3.61%;
- Other net operating income – 0.38%;
- Income taxes – 4.76%;

Other items, like „Other net non-operating income“, „Investment income“, „Interest expense“, „Interest income“, „Minority interest“ are constant and does not depend on total revenue changes. Furthermore, it should be noted that in the year 2020, items „General administrative expenses“ and “Research and development” were increased by the author as they are higher than the historical average due to the company's substantial investment into the research and development and property, plant, and equipment throughout 2020.

#### **4.4. Summary of the financial analysis and forecasting of Daimler AG**

Daimler AG was assessed in the historical financial analysis part by comparing it to selected peers, BMW Group AG and Volkswagen Group AG, by many aspects considering the historical period from December 2015 to September 2020 (or December 2019, if the information is missing). All the historical indicators (except revenue) in the profitability analysis part are presented compared to revenue by using a vertical income statement analysis.

If considering the revenue development dynamics, all companies report similar growth tendencies. After the positive growth from December 2015 to 2019, the situation has changed since 2020 due to the COVID-19 spread, which negatively impacted the sales volumes in the first two quarters of 2020. However, all companies reported sales rebounds in the third quarter of 2020. Besides, Daimler AG and its peers were almost on the same level related to research and development by spending approximately 5-6% of the analyzed period's total revenue.

However, it might be concluded that considering other growth indicators and costs, Daimler AG's performance has shown a downward trend by significantly worsening its results in many areas if comparing the start of the studied period to its ending. Furthermore, the company's historical financial results are below its peer's level throughout the period under review. For instance, return on invested capital (ROIC) decreased from 20.38% in December 2015 to 1.61% in September 2020. In parallel, the return on equity (ROE) decreased drastically from 17.69% to 0.23%. Besides, the cost of sales increased from 78.7% in December to 83.1% in December 2019. Finally, the EBITDA margin decreased significantly between 2018 and 2019 by reaching a historical minimum of 7% at the end of 2019. The EBITDA margin's downturn is primarily affected by legal proceedings in the USA involving Daimler AG and its measures concerning diesel vehicles.

The historical liquidity risk analysis part revealed that Daimler AG could successfully deal with short-term liabilities due to the healthy current ratio and quick ratio values. On the other hand, the company with a considerable decrease in debt-to-equity ratio and interest coverage ratio is not as strong in meeting long-term liquidity risks.

The forecasted revenue anticipates that future cash flows for the nearest few years are highly dependant on the COVID-19 further development scenario. Furthermore, its operating costs are heavily dependant on the transition to CO2-neutral mobility in the coming years, which requires substantial investment in research and infrastructure development. Nevertheless, in the longer horizon, Daimler AG plans to cut costs by reducing investment in its research and development and

other related processes. Finally, the company proposes becoming more profitable by emphasizing material-cost savings, adjusting production portfolio, optimizing processes through digitization.

## 5. VALUATION AND RESULTS

The valuation is the final part, which established Daimler AG stock's intrinsic value after considering strategic, historical financial analysis and forecasting the future performance. The author selected to assess Daimler AG stock's intrinsic value by the dividend discount model in the Gordon growth model version, which links the stock's intrinsic value to upcoming period's dividends, capital cost, and dividends expected growth rate. It is assumed to be an excellent model to be applied to value a company in a sustained condition with dividends growing at a stable rate. The mentioned model cannot be appropriately applied for valuation without considering the underlying assumptions, which are always an expression of subjectivity.

According to and Damodaran (2002) and Koller et al. (2010), the risk-adjusted rate consists of two factors constituting almost any company's capital, including equity and debt. A weighted average cost of capital represents the company's equity owners and debt holders' return rates and indicates a company's capital cost. The WACC is a weighted average of two different variables, the cost of debt ( $K_d$ ) and the required return to equity ( $K_e$ ), where the weights come from the company capital structure market values. The following formula calculates the company's WACC (referred to as the company's cost of capital):

$$WACC = \frac{D}{D + E} * K_d * (1 - T) + \frac{E}{D + E} * K_e$$

Where,

D = company's debt market value;

E = company's equity market value;

K(d) = Cost of debt capital;

K(e) = Cost of equity capital;

T = corporate tax rate.

Based on Koller et al. (2010), two methods are frequently applied to estimate the company's debt capital cost. Firstly, the yield to maturity of the outstanding bonds might be applied to the company's pre-tax cost of debt capital estimations. Secondly, utilizing the company's credit rating and the associated default spread. The cost of debt capital is estimated after-tax as interest expenses are tax-deductible to the company. Damodaran (2002) notes that the marginal tax rate needs to be employed to calculate debt capital's after-tax cost. Another component, the cost of equity capital, combines some elements (including the risk-free rate, the market risk premium, and the stock-specific risk). It is calculated by employing the capital asset pricing model (CAPM) utilized to estimate. In

this master thesis, the capital cost is derived from investors' minimum return rates on their invested capital. Based on table 15, from 2015 to 2019, the WACC of Daimler AG amounted to an average of 8% (after taxes), comprising its equity and debt costs.

Table 15

*The weighted average cost of capital for Daimler AG from 2015 to 2019*

<b>Financial year</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
<b>WACC</b>	8%	8%	8%	8%	8%

*Source:* Author's creation based on Daimler AG annual accounts 2015 – 2019.

Another crucial input for the Gordon growth model is the growth rate expected for dividends. As mentioned before, the most important Daimler AG markets in recent years for passenger and commercial vehicle sales and generating the highest revenues are China, the United States, and Germany. If combining the revenue from these three countries throughout the first nine months of 2020, it amounts to nearly 55% of total revenue in the most significant passenger cars and vans segment. Other markets are also rather substantial for the company's sales and revenues but are much smaller than those mentioned. However, as Daimler AG operates worldwide, it would be more rational to rely on the world's forecasted GDP growth from 2020 until 2023. Based on the International Monetary Fund estimates (please refer to Appendix 2), the forecasted compounded annual growth rate of the world's GDP for the considered period is amounting to 2.13%. The estimated growth of the world's GDP for the upcoming years is considered a growth rate for expected Daimler AG future dividends. Therefore, it will be applied for an input for the Gordon Growth model. As it was mentioned based on Damodaran (2002), the company's growth rate should not be higher than its operating environment's growth.

As mentioned in the company's overview part, Daimler AG has 1,069,837,447 free-floating stocks. Based on the Daimler AG dividend payout ratio policy briefly described, Daimler AG, for an extended period, targets paying a stable dividend to its shareholders, which amounts to 40% of its annual net income. It was estimated that the constant growth rate expected for dividends is 2.13%, while the Daimler AG cost of capital is 8%. Finally, the forecasted net income for the upcoming periods is taken from Appendix 6, and calculations are presented in table 16.

Table 16

*Calculations of the Gordon Growth model inputs and outputs*

<b>Financial year</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>
<b>Net income (in millions €)</b>	7,679	7,784	7,890
<b>Income per share (€)</b>	7.18	7.27	7.37
<b>Dividend per share (40%)</b>	2.87	2.91	2.95
<b>Stock price (€) in 2020</b>	<b>48.93</b>		

*Source:* Created by the author based on previously obtained inputs.

Based on the Gordon Growth model, the final calculations of the Daimler AG stock's present value, as well as its intrinsic value, is the following:

$$\begin{aligned} \text{The intrinsic value of stock} &= \frac{\text{Expected dividend per stock}_{t+1}}{\text{Cost of capital} - \text{Expected dividend growth rate}} = \\ &= \frac{\text{€}2.87}{0,08 - 0.0213} = \frac{\text{€}2.87}{0,0587} = \text{€}48.93 \end{aligned}$$

Applying the Gordon Growth model for Daimler AG stock valuation, its intrinsic value amounts to €48.93 for 2020. The estimated amount is higher than the Daimler AG stock market price at €46.61 (as of 1 October 2020), meaning that the Daimler AG stock is undervalued by nearly 4.98% to this date. Comparing the calculated value to the historical extreme points, it is almost 95.79% below its historical maximum achieved in March 2015 and 180% above its historical minimum after the economic crisis in March 2009.

## CONCLUSIONS

This master thesis's main concern was assessing the Daimler AG stock's intrinsic value of 01.10.2020 and comparing it to a market price amounting to €46.61 for giving an investment recommendation. The reason for choosing Daimler AG is the longstanding history and remarkable reputation as a premium segment vehicles manufacturer. The company offers an interesting case to evaluate how it operates, influenced by modern automotive industry trends and growing competition. Furthermore, many current or potential value shareholders are interested in knowing what might be expected from the company in the foreseen future. Therefore, to reach this goal, Daimler AG evaluated from strategic and financial analysis positions.

The strategic analysis within this master thesis framework was conducted to identify the underlying drivers affecting the automotive industry. To achieve this goal, the Daimler AG macro-environmental condition and automotive industry trends were overviewed. Also, Daimler AG's internal analysis is conducted.

The PEST analysis revealed the importance of the transition to CO<sub>2</sub>-neutral mobility if looking from the political, social, and technological perspectives. Furthermore, it emphasized the impact of COVID-19 on Daimler AG sales and the economic development of its key markets.

The automotive industry review has shown the increasing demand for new passenger car commercial vehicles from 2015 to 2019. Furthermore, the automotive industry manufacturers transform their business models into mobility services providers and prioritize such trends as electrification and autonomous driving. On the other hand, customers expect more from modern vehicles, which forces manufacturers to pay more attention to research and development. Daimler AG respects these trends in its strategic development.

The SWOT analysis revealed the strong and weak aspects related to Daimler AG. The significant strengths representing Daimler AG are the reputation and value of “Mercedes-Benz” brand, significant capacities if considering the company’s assets and revenues size, geographically diversified risks, and high focus on research and development aspects. Furthermore, the company has excellent potential to increase its presence in China, the biggest passenger car market, and make further rapid progress related to CO<sub>2</sub>-neutral mobility. Nevertheless, Daimler AG's weaknesses are related to substantial competition, the strong impact of German labor unions on the company’s management, and fines amount nearly €2 bln. as a result of the legal proceedings regarding diesel emissions in the USA. Finally, the potential spread of COVID-19 is considered the most significant threat for Daimler AG sales volumes, production, and supply chains in the next few years.

The historical financial analysis has shown that Daimler AG experienced an overall downturn from December 2015 to September 2020. Furthermore, the company's peers have demonstrated better results in the majority of analyzed financial ratios and had fewer costs in relation to revenues. Like its peers, Daimler AG increased revenues until the end of 2019. However, the COVID-19 has negatively affected its sales and revenues throughout the first two quarters of 2020. The third quarter of 2020 became the start of recovery for Daimler AG and its competitors. Another aspect in which Daimler AG performed closely to BMW Group AG and Volkswagen Group AG is 5-6% spending on research and development. However, as of the end of September 2020, Daimler AG is behind the competitors if considering a return in invested capital (ROIC), the return on equity (ROE), and the EBITDA margin. Based on the historical liquidity risk analysis, Daimler AG could be considered stable in meeting short-term liabilities. However, the debt-to-equity ratio's growth and a significant decrease in interest coverage ratio are not considered positive long-term signals.

It is anticipated that Daimler AG's future cash flows will be highly dependent on the COVID-19 spread on the short-term horizon. Due to prioritizing the CO<sub>2</sub>-neutral mobility, research and development expenses are expected to take a considerable part of revenues in the following years. However, Daimler AG plans to cut in a longer perspective.

Following the fundamental analysis methodology and employing the Gordon Growth model, the intrinsic stock value of €48.93 was estimated within this master thesis. Considering that stock is moderately undervalued by approximately 4.98% compared to its market price amounting to €46.61 (as of 1 October 2020), the author proposed the buy recommendation.



# **SUMMARY**

Denis Songin

## **DAIMLER AG STOCK VALUATION BY THE FUNDAMENTAL ANALYSIS**

Final Master Thesis

Academic supervisor: Assoc. prof. Rasa Subačienė

Vilnius University, Faculty of Economics and Business Administration

Global Business and Economics

Vilnius, 2021

Size: 77 pages, 13 figures, 16 tables, 6 appendixes, 64 references

The stock market price of any publically-traded company influenced by many economic, industry, and company-related factors might highly fluctuate by reaching its lowest and highest extreme points. Therefore, investors should estimate the stock's intrinsic value to make a successful long-term investment.

This research aims to estimate the Daimler AG stock's intrinsic value as of 01.10.2020 for accepting or rejecting investment depending on whether the stock is overvalued, undervalued, or is fairly valued in relation to its market price.

Based on the fundamental analysis approach to stock valuation, the research focuses on the strategic analysis of Daimler AG, involving the macro-environmental analysis, the automotive industry analysis, and Daimler AG internal factors analysis. Furthermore, based on the data from the official annual and quarterly reports of Daimler AG, the research concentrates on historical financial analysis by comparing its financial performance to selected peers, including BMW Group AG and Volkswagen Group AG, and forecasts future cash flows based on strategic and historical financial analysis findings. Onwards, Daimler AG stock's intrinsic value is determined by applying a dividend discount model. Finally, the investment recommendation is given based on the difference between the stock's market value and its intrinsic value.

# SANTRAUKA

Denis Songin

## DAIMLER AG AKCIJOS VERTINIMAS FUNDAMENTINE ANALIZE

Baigiamasis magistro darbas

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Globalus verslas ir ekonomika

Vilnius, 2021

77 puslapiai, 13 paveikslai, 16 lentelės, 6 priedai, 64 literatūros šaltiniai

Bet kurios viešai prekiaujamos bendrovės akcijų rinkos kaina, įtakojama daugybės ekonominių, industrijos šakos ir su pačia įmone susijusių veiksnių, gali reikšmingai svyruoti pasiekdama žemiausius ir aukščiausius vertės taškus. Dėl šios priežasties, investuotojai norintys daryti sėkmingas ilgalaikes investicijas turi teisingai nustatyti akcijos vidinę arba tikrąją vertę.

Šiuo tyrimu siekiama įvertinti aktualią 01.10.2020 datai „Daimler AG“ akcijos vidinę vertę, siekiant priimti investavimo sprendimą, arba jį atmesti, atsižvelgiant į tai, ar akcija yra pervertinta, nepakankamai įvertinta ar vertinama panašiai lyginant su jos rinkos kaina.

Remiantis fundamentinės analizės metodu akcijų vertinimui, tyrimas sutelktas į „Daimler AG“ strateginę analizę, apimančią makroaplinkos analizę, automobilių pramonės analizę ir „Daimler AG“ vidinių veiksnių analizę. Oficialių „Daimler AG“ metinių ir ketvirčių ataskaitų duomenų pagrindu, tyrimas sutelktas į istorinę finansinę analizę, lyginant įmonės finansinius rezultatus su pasirinktais konkurentais, kurie yra „BMW Group AG“ ir „Volkswagen Group AG“, ir prognozuoja būsimus pinigų srautus, pagrįstus strateginės ir istorinės finansinės analizės įžvalgomis. „Daimler AG“ akcijų vidinė vertė nustatoma taikant dividendų diskontavimo modelių. Darbo pabaigoje, pateikiama rekomendacija dėl investavimo remiantis skirtumu tarp nustatytos vidinės akcijos vertės ir jos rinkos kainos.

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## APPENDIXES

### Appendix 1. The summary of Daimler AG financials from 2010 to 2019

Amounts in millions €	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<b>From the statements of income</b>										
Revenue	97,761	106,540	114,297	117,982	129,872	149,467	153,261	164,154	167,362	172,745
Personnel expenses	16,454	17,424	18,002	18,753	19,607	20,949	21,141	22,186	22,432	22,657
Research and development expenditure	4,849	5,634	5,644	5,489	5,680	6,564	7,572	8,711	9,107	9,662
EBIT	7,274	8,755	8,820	10,815	10,752	13,186	12,902	14,348	11,132	4,329
Operating margin (%)	7.4	8.2	7.7	9.2	8.3	8.8	8.4	8.7	6.7	2.5
Profit (loss) before income taxes	6,628	8,449	8,116	10,139	10,173	12,744	12,574	13,967	10,595	3,830
Net operating profit (loss)	5,120	6,240	7,302	9,173	7,678	9,007	9,007	10,880	7,963	3,068
Net profit (loss)	4,674	6,029	6,830	8,720	7,290	8,711	8,784	10,617	7,582	2,709
Net profit (loss) per share (€)	4.28	5.32	6.02	6.4	6.51	7.87	7.97	9.61	6.78	2.22
Total dividend	1,971	2,346	2,349	2,407	2,621	3,477	3,477	3,905	3,477	963
Dividend per share (€)	1.85	2.2	2.2	2.25	2.45	3.25	3.25	3.65	3.25	0.9
<b>From the statements of financial position</b>										
Property, plant and equipment	17,593	19,180	20,599	21,779	23,182	24,322	26,381	27,981	30,948	37,143
Leased equipment	19,925	22,811	26,058	28,160	33,050	38,942	46,942	47,074	49,476	51,482
Other non-current assets	41,309	45,023	48,947	48,138	56,258	62,055	67,613	73,394	79,582	86,013
Inventories	14,544	17,081	17,720	17,349	20,864	23,760	25,384	25,686	29,489	29,757
Liquid assets	10,903	9,576	10,996	11,053	9,667	9,936	10,981	12,072	15,853	18,883
Other current assets	31,556	34,461	38,742	42,039	46,614	58,151	65,687	69,138	76,271	79,160
Total assets	135,830	148,132	163,062	168,518	189,635	217,166	242,988	255,345	281,619	302,438
Shareholders' equity	37,953	41,337	39,330	43,363	44,584	54,624	59,133	65,159	66,053	62,841
Equity ratio Group (%)	26.5	26.3	22.7	24.3	22.1	23.6	22.9	24	22.2	20.5
Equity ratio industrial business (%)	45.8	46.4	39.8	43.4	40.8	44.2	44.7	46.4	42.8	36.7
Non-current liabilities	44,738	51,940	65,016	66,047	78,077	85,461	99,398	102,562	117,614	133,795
Current liabilities	53,139	54,855	58,716	59,108	66,974	77,081	84,457	87,624	97,952	105,802
Net liquidity industrial business	11,938	11,981	11,508	13,834	16,953	18,580	19,737	16,597	16,288	10,997
Net assets (average)	29,338	31,426	37,521	40,648	40,779	44,796	47,054	48,446	53,809	63,746
<b>From the statements of cash flows</b>										
Investments in property, plant and equipment	3,653	4,158	4,827	4,975	4,844	5,075	5,889	6,744	7,534	7,199
Depreciation and amortization	3,364	3,575	4,067	4,368	4,999	5,384	5,478	5,676	6,305	7,751
Cash provided by (used for) operating activities	8,544	-696	-1,100	3,285	-1,274	222	3,711	-1,652	343	7,888
Cash provided by (used for) investing activities	-313	-6,537	-8,864	-6,829	-2,709	-9,722	-14,666	-9,518	-9,921	-10,607
Cash provided by (used for) financing activities	-7,551	5,842	11,506	3,855	2,274	9,631	12,009	13,129	13,226	5,628
Free cash flow of the industrial business	5,432	989	1,452	4,842	5,479	3,960	3,874	2,005	2,898	1,368
<b>From the stock exchanges</b>										
Share price at year-end (€)	50.73	33.92	41.32	62.9	68.97	77.58	70.72	70.8	45.91	49.37
Average shares outstanding (in millions)	1,050.80	1,066.00	1,066.80	1,068.80	1,069.80	1,069.80	1,069.80	1,069.80	1,069.80	1,069.80
Average annual number of employees	258,120	267,274	274,605	275,384	279,857	284,562	284,957	289,530	298,465	301,839

Source: Daimler AG, Ten-Year Summary



**Appendix 2. Historical and forecasted GDP of Daimler AG key markets**

<b>Region/Country</b>	<b>Historical GDP growth (%)</b>				<b>Forecasted GDP growth (%)</b>			
	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>
<b>World</b>	3.27	3.81	3.51	2.80	-4.36	5.15	4.19	3.84
<b>European Union</b>	2.11	2.98	2.27	1.69	-7.60	5.04	3.31	2.48
<b>Germany</b>	2.23	2.60	1.27	0.56	-5.98	4.18	3.06	1.79
<b>China</b>	6.85	6.95	6.75	6.11	1.85	8.24	5.80	5.73
<b>USA</b>	1.71	2.33	3	2.16	-4.27	3.08	2.94	2.26

*Source:* Created by the author based on the data from the International Monetary Fund, Economic Outlook Database, October 2020

### Appendix 3. Common-size of Income Statement of Daimler AG

<b>Income Statement</b>	<b>2015</b>	<b>%</b>	<b>2016</b>	<b>%</b>	<b>2017</b>	<b>%</b>	<b>2018</b>	<b>%</b>	<b>2019</b>	<b>%</b>	<b>2020*</b>	<b>%</b>
Revenue	149,467	100%	153,261	100%	164,330	100%	167,362	100%	172,745	100%	107,688	100%
Cost of sales	117,670	78.7%	121,298	79.1%	129,999	79.1%	134,295	80.2%	143,580	83.1%	N/A	N/A
<b>Gross profit margin</b>	<b>31,797</b>	<b>21.3%</b>	<b>31,963</b>	<b>20.9%</b>	<b>34,331</b>	<b>20.9%</b>	<b>33,067</b>	<b>19.8%</b>	<b>29,165</b>	<b>16.9%</b>	<b>N/A</b>	<b>N/A</b>
Personnel expenses	20,949	14%	21,141	13.8%	22,186	13.5%	22,432	13.4%	22,657	13.1%	N/A	N/A
Research and development	6,564	4.4%	7,572	4.94%	8,711	5.3%	9,107	5.4%	9,662	5.6%	6,735	6.3%
<b>EBITDA</b>	<b>18,570</b>	<b>12.4%</b>	<b>18,380</b>	<b>12.0%</b>	<b>20,024</b>	<b>12.2%</b>	<b>17,437</b>	<b>10.4%</b>	<b>12,080</b>	<b>7.0%</b>	<b>8,458</b>	<b>7.9%</b>
Depreciation and amortization	5,384	3.6%	5,478	3.6%	5,676	3.5%	6,305	3.8%	7,751	4.5%	6,453	6.0%
<b>EBIT</b>	<b>13,186</b>	<b>8.8%</b>	<b>12,902</b>	<b>8.4%</b>	<b>14,348</b>	<b>8.7%</b>	<b>11,132</b>	<b>6.7%</b>	<b>4,329</b>	<b>2.5%</b>	<b>2,005</b>	<b>1.9%</b>
<b>Net profit</b>	<b>8,711</b>	<b>5.8%</b>	<b>8,784</b>	<b>5.7%</b>	<b>10,617</b>	<b>6.5%</b>	<b>7,582</b>	<b>4.5%</b>	<b>2,709</b>	<b>1.6%</b>	<b>420</b>	<b>0.4%</b>

Source: Daimler AG annual reports (2015-2019), \*Interim Report Q3 2020.

#### Appendix 4. Common-size of Income Statement of BMW Group AG

Income Statement	2015	%	2016	%	2017	%	2018	%	2019	%	2020*	%
Revenue	92,175	100%	94,163	100%	98,282	100%	96,855	100%	104,210	100%	69,508	100%
Cost of sales	74,043	80.3%	75,442	80.1%	78,744	80.1%	78,477	81.03%	86,147	82.7%	60,668	87.28%
<b>Gross profit margin</b>	<b>18,132</b>	<b>19.7%</b>	<b>18,721</b>	<b>19.9%</b>	<b>19,538</b>	<b>19.9%</b>	<b>18,378</b>	<b>18.97%</b>	<b>18,063</b>	<b>17.3%</b>	<b>8,840</b>	<b>12.72%</b>
Personnel expenses	10,870	11.8%	11,535	12.3%	12,052	12.3%	12,479	12.88%	12,451	11.9%	N/A	N/A
Research and development	4,271	4.6%	4,294	4.6%	4,920	5%	6,890	7.11%	6,419	6.2%	4,140	5.96%
<b>EBITDA</b>	<b>14,252</b>	<b>15.5%</b>	<b>14,192</b>	<b>15.1%</b>	<b>14,721</b>	<b>15%</b>	<b>14,046</b>	<b>14.50%</b>	<b>13,428</b>	<b>12.9%</b>	<b>7,195</b>	<b>10.35%</b>
Depreciation and amortization	4,659	5.1%	4,806	5.1%	4,822	4.9%	5,113	5.28%	6,017	5.8%	4,562	6.56%
<b>EBIT</b>	<b>9,593</b>	<b>10.4%</b>	<b>9,386</b>	<b>10.0%</b>	<b>9,899</b>	<b>10.1%</b>	<b>8,933</b>	<b>9.22%</b>	<b>7,411</b>	<b>7.1%</b>	<b>2,633</b>	<b>3.79%</b>
<b>Net profit</b>	<b>6,396</b>	<b>6.9%</b>	<b>6,910</b>	<b>7.3%</b>	<b>8,675</b>	<b>8.8%</b>	<b>7,064</b>	<b>7.29%</b>	<b>5,022</b>	<b>4.8%</b>	<b>2,177</b>	<b>3.13%</b>

Source: BMW Group AG annual reports (2015-2019), \*Interim Report Q3 2020.

## Appendix 5. Common-size of Income Statement of Volkswagen Group AG

Income Statement	2015	%	2016	%	2017	%	2018	%	2019	%	2020*	%
Revenue	213,292	100%	217,267	100%	229,550	100%	235,849	100%	252,632	100%	155,486	100%
Cost of sales	179,382	84.10%	176,270	81.13%	186,001	81.03%	189,500	80.3%	203,490	80.5%	132,156	85%
<b>Gross profit margin</b>	<b>33,910</b>	<b>15.90%</b>	<b>40,997</b>	<b>18.87%</b>	<b>43,549</b>	<b>18.97%</b>	<b>46,349</b>	<b>19.7%</b>	<b>49,142</b>	<b>19.5%</b>	<b>23,330</b>	<b>15%</b>
Personnel expenses	36,268	17.00%	37,017	17.04%	38,950	16.97%	41,158	17.5%	42,913	17.0%	N/A	N/A
Research and development	13,612	6.38%	13,672	6.29%	13,141	5.72%	13,640	5.8%	14,306	5.7%	10,191	6.55%
<b>EBITDA</b>	<b>18,392</b>	<b>8.62%</b>	<b>28,216</b>	<b>12.99%</b>	<b>35,838</b>	<b>15.61%</b>	<b>38,204</b>	<b>16.2%</b>	<b>42,795</b>	<b>16.9%</b>	<b>22,001</b>	<b>14.15%</b>
Depreciation and amortization	19,693	9.23%	20,924	9.63%	22,165	9.66%	22,561	9.6%	24,439	9.7%	19,747	12.70%
<b>EBIT</b>	<b>-1,301</b>	<b>-0.60%</b>	<b>7,292</b>	<b>3.36%</b>	<b>13,673</b>	<b>5.96%</b>	<b>15,643</b>	<b>6.6%</b>	<b>18,356</b>	<b>7.3%</b>	<b>2,254</b>	<b>1.45%</b>
<b>Net profit</b>	<b>-1,361</b>	<b>-0.63%</b>	<b>5,379</b>	<b>2.48%</b>	<b>11,463</b>	<b>4.99%</b>	<b>12,153</b>	<b>5.2%</b>	<b>14,029</b>	<b>5.6%</b>	<b>1,731</b>	<b>1.11%</b>

Source: Volkswagen Group AG annual reports (2015-2019), \*Interim Report Q3 2020.

## Appendix 6. The forecasted income statement of Daimler AG

Items in € mln.	Financial year					Forecasted			
	2015	2016	2017	2018	2019	2020f*	2021f	2022f	2023f
<b>Total revenue</b>	149,467	153,261	164,154	167,362	172,745	153,308	168,148	170,453	172,759
Cost of sales	118,017	121,298	129,626	134,295	143,580	122,879	134,773	136,621	138,469
<b>Gross profit</b>	<b>31,450</b>	<b>31,963</b>	<b>34,528</b>	<b>33,067</b>	<b>29,165</b>	<b>30,429</b>	<b>33,374</b>	<b>33,832</b>	<b>34,290</b>
General administrative expenses	15,510	15,645	16,759	17,103	16,851	18,086	17,058	17,292	17,526
Research and development	4,760	5,257	5,938	6,581	6,586	7,500	6,068	6,151	6,234
Other net operating income	1,559	1,052	1,216	868	-1,632	582	638	647	656
<b>Operating income</b>	<b>12,739</b>	<b>12,113</b>	<b>13,047</b>	<b>10,251</b>	<b>4,096</b>	<b>5,425</b>	<b>10,886</b>	<b>11,035</b>	<b>11,185</b>
Other net non-operating income	-27	275	-210	210	-262	-3	-3	-3	-3
Investment income	464	502	1,498	656	479	720	720	720	720
<b>EBIT</b>	<b>13,176</b>	<b>12,890</b>	<b>14,335</b>	<b>11,117</b>	<b>4,313</b>	<b>6,142</b>	<b>11,603</b>	<b>11,752</b>	<b>11,902</b>
Interest expense	602	546	582	793	880	681	681	681	681
Interest income	170	230	214	271	397	256	256	256	256
<b>Net income before taxes</b>	<b>12,744</b>	<b>12,574</b>	<b>13,967</b>	<b>10,595</b>	<b>3,830</b>	<b>5,718</b>	<b>11,178</b>	<b>11,327</b>	<b>11,477</b>
Income taxes	4,033	3,790	3,350	3,013	1,121	2,908	3,189	3,233	3,277
<b>Net income after taxes</b>	<b>8,711</b>	<b>8,784</b>	<b>10,617</b>	<b>7,582</b>	<b>2,709</b>	<b>2,810</b>	<b>7,989</b>	<b>8,094</b>	<b>8,200</b>
Minority Interest	287	258	339	333	332	310	310	310	310
<b>Net income (shareholders)</b>	<b>8,424</b>	<b>8,526</b>	<b>10,278</b>	<b>7,249</b>	<b>2,377</b>	<b>2,500</b>	<b>7,679</b>	<b>7,784</b>	<b>7,890</b>

Source: Daimler AG annual reports (2015-2019), Interim Report Q3 2020, MarketScreener.com, author's estimates.