

Universidade do Minho
Escola de Economia e Gestão

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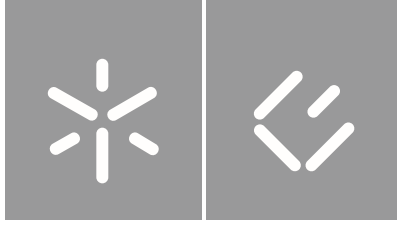
Equity Research Report of Deutsche Telekom

**Equity Research Report of
Deutsche Telekom**

Diogo Teixeira

UMinho | 2024

maio de 2024



Universidade do Minho

Escola de Economia e Gestão

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**Equity Research Report of
Deutsche Telekom**

Projeto de Mestrado

Master in Finance

Trabalho efetuado sob a orientação da

Professora Florinda Silva

maio de 2024

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Acknowledgements

This report marks the end of two very important years in my life. It is the culmination of 2 years of immense dedication, relentless work, and above all, tremendous personal growth.

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A general thank you to all friends and family who in one way or another contributed to enabling me to have the conditions that allowed me to reach the end of this Master's degree today.

STATEMENT OF INTEGRITY

I hereby declare having conducted this academic work with integrity. I confirm that I have not used plagiarism or any form of undue use of information or falsification of results along the process leading to its elaboration.

I further declare that I have fully acknowledged the Code of Ethical Conduct of the University of Minho.

Equity Research Report of Deutsche Telekom

Resumo

Este trabalho académico consiste num *Equity Research Report* sobre a empresa Deutsche Telekom AG. Este relatório segue as normas do *CFA Institute*.

O objetivo deste relatório é realizar uma análise detalhada da Deutsche Telekom AG, incluindo uma avaliação do desempenho financeiro da empresa, a sua posição competitiva, perspectivas de crescimento e outros fatores relevantes que possam impactar o valor intrínseco das suas ações.

Como um dos principais fornecedores de telecomunicações, a Deutsche Telekom AG oferece uma ampla gama de serviços de voz, dados e comunicação móvel para mais de 240 milhões de clientes na Europa e nos Estados Unidos. Com uma capitalização de mercado de aproximadamente 108 biliões de euros, a empresa é uma grande influência na indústria global de telecomunicações e mantém um portfólio diversificado de negócios, incluindo telecomunicações móveis e fixas, serviços de Tecnologias de Informação e internet de banda larga.

Com base na análise efetuada e na aplicação de métodos de avaliação, a recomendação de investimento é de compra para as ações da Deutsche Telekom AG. Esta recomendação baseia-se numa avaliação segundo o método dos Fluxos de Caixa Descontados, que produziu um valor por ação de 27.37€ que representa uma valorização de 25.24% face ao preço de 22 de março de 2024 (21.85€). É também apresentada análise de sensibilidade a possíveis alterações do Custo Médio de Capital e da Taxa de Crescimento Terminal. Como complemento, foi aplicada também uma avaliação relativa. .

Palavras Chave: Avaliação DCF, Avaliação Relativa, Telecomunicações, Avaliação de Empresas, Equity Research Report

Equity Research Report of Deutsche Telekom

Abstract

This academic work consists of an Equity Research Report on the company Deutsche Telekom AG. This report follows the standards of the CFA Institute.

The purpose of this report is to conduct a detailed analysis of Deutsche Telekom AG, which includes an evaluation of the company's financial performance, competitive position, growth prospects, and other relevant factors that may impact the intrinsic value of its stocks.

As one of the leading telecommunications providers, Deutsche Telekom AG offers a wide range of voice, data, and mobile communication services to over 240 million customers in Europe and the United States. With a market capitalization of approximately 108 billion euros, the company is a significant influence in the global telecommunications industry and maintains a diversified portfolio of businesses, including mobile and fixed-line telecommunications, IT services, and broadband internet.

Based on the analysis conducted and the application of valuation methods, the investment recommendation is to buy Deutsche Telekom AG's stocks. This recommendation is based on an evaluation using the Discounted Cash Flows method, which resulted in a per-share value of €27.37, representing a 25.24% appreciation compared to the price on March 22, 2024 (€21.85). A sensitivity analysis to possible changes in the Weighted Average Cost of Capital (WACC) and the Terminal Growth Rate is also presented. Additionally, a relative valuation was applied.

Keywords: DCF Valuation, Relative Valuation, Telecommunications, Valuation, Equity Research Report

Disclaimer

This Equity Research Report was prepared for academic purposes only by Diogo Teixeira, a student of the master's in finance at the University of Minho.

The report was supervised by a faculty member acting merely as an academic mentor. Neither the author of this report nor the supervisor are certified investment advisors. This report should be read as a pure academic exercise of a master student.

The information used to produce this report is generically available to the public from different sources and believed to be reliable by the student.

The student is the sole responsible for the information used in this report, as well as the estimates and forecasts, application of valuation methods, and views expressed.

The UMinho and its faculty members have no unique nor formal position on those matters and do not take responsibility for any consequences of the use of this report.

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DEUTSCHE TELEKOM

Table 1 - Investment Recommendation

Recommendation	BUY
Date	22/03/2024
Current Price	21.85 €
Target Price	27.37 €
Upside	25.24%
Industry	Telecom
Ticker	DTE.DE
Exchange	XETRA
Shares Outstanding (in millio	4 986
Market Cap (in millions)	108 944 €
Free Float	65%

1. Research Snapshot

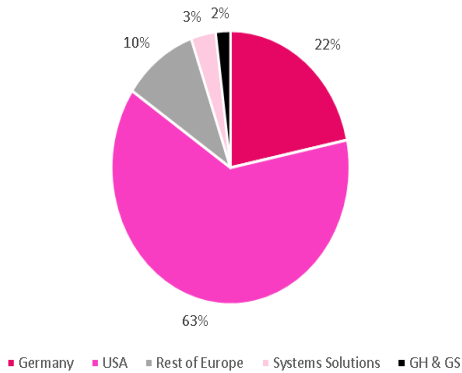
This report issues a **BUY** recommendation for Deutsche Telekom with a target price of 27.37€, value that corresponds to an upside potential of 25.24% on the market price of 21.85€ in March 22nd, 2024 (table 1). This recommendation is based on the Discounted Cash Flow valuation method. It is forecasted a continuous and sustained growth of the company's Revenue, most of that growth is forecasted to arise from the business in the United States of America (US), whilst other markets such as the German and European are also forecasted to grow, the rate of the growth is much smaller and the revenues also have a smaller significance for the overall value.

Throughout this report you will find mention to Total Revenue and Net Revenue, while Total Revenue is the total revenue of the sales of the company, Net Revenue represents the total revenue of the sales that arise from operating segments of the company. This means that the Net Revenue is part of Total Revenue, while the Total Revenue is the sum of the Net Revenue with other forms of revenues, such as Other Operating Income, Changes in Inventory and Own Capitalized Costs.

2. Business Description

Founded in 1995 after the privatization of Deutsche Bundespost, a German state-run postal service and telecommunications company, Deutsche Telekom is a German telecommunications company, being the biggest one in Europe and one of the biggest in the world, in terms of revenue. Deutsche Telekom operates in 11 European countries, either directly by their subsidiaries or with affiliated companies in which Deutsche Telekom owns a significant number of shares. It also operates in the United States of America through T-Mobile US. Deutsche

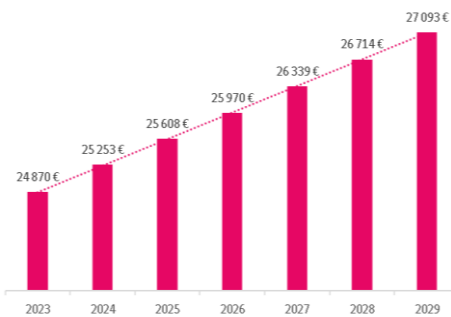
Figure 1 - Segment weight in Net Revenue 2023



Telekom bought VoiceStream Wireless in 2001 and later renamed it to T-Mobile USA, then in 2013 Deutsche Telekom merged T-Mobile USA with other American telecommunications company (MetroPCS) and T-Mobile US was born. As of today, Deutsche Telekom owns a majority stake in T-Mobile US. Even though Deutsche Telekom operates only in 12 countries, it is present in more than 50 with their brand T-Systems, a company that provides services in information technology and telecommunications. Even though Deutsche Telekom has 6 operating segments, the segment “Group Development” will most probably cease to exist in 2023, so we will only assume 5 segments: Germany, United States, Europe, Systems Solutions and Group Headquarters & Group Services.

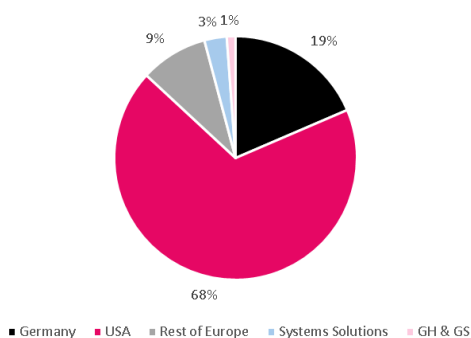
The German Market

Figure 3 - German Market Revenue Growth



The second biggest market in Deutsche Telekom’s revenue, the German market is projected to represent in 2023 22% of the Net Revenue (figure 1), a value of over 24 billion Euros (figure 2). The company is the market leader in the telecommunication industry in Germany, as of 2022, the company had over 19 million fibre-optic-based customers, over 54 million mobile customers, over 14 million broadband customers and a total of 11.2 million of fibre-optic lines used for wholesale (Deutsche Telekom AG, 2023a). Deutsche Telekom has been the market leader for many years and this position isn’t expected to change in a near future, therefore, in this report we forecast a slow and constant growth of the revenue produced in this market, since the company already has a big chunk of the market and isn’t expected a meaningful loss or gain of customers.

Figure 2 - Segment weight in Net Revenue 2029

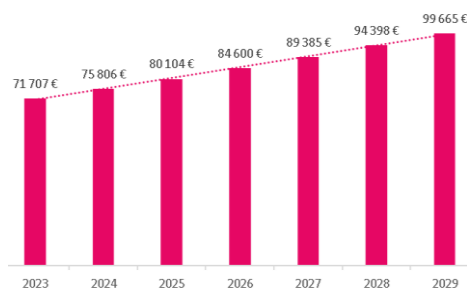


The United States Market

With a projected value of 63% for 2023 (figure 1), the United States market is the biggest contributor to the company’s Net Revenue. Deutsche Telekom operates in the US with the subsidiary T-Mobile US, of which the company owns a majority stake. As of September 2023, the US subsidiary had a total of 117.9 million customers, an increase of 4.3 million in nine months (when compared to December 2022) (Deutsche Telekom AG, 2023b). As stated by Deutsche Telekom (2023b), this 4.3 million increase derives almost all from the postpaid customers,

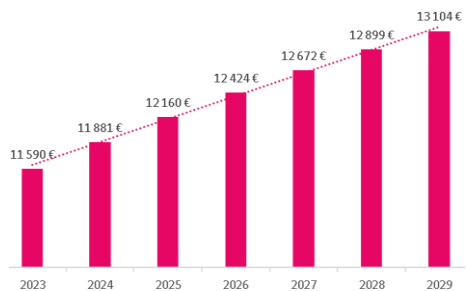
with an increase of 4.1 million, while the increase in the prepaid customers was only of 229 thousand. In this report, it is expected that the US market will represent more than 68% of the total net revenue as of 2029 (figure 3), this forecast is supported by the meaningful growth that this market has showed in the recent years. It is forecasted that the revenues from this segment will increase to a value of almost 100 billion euros by 2029 (figure 4).

Figure 4 - US Market Revenue Growth



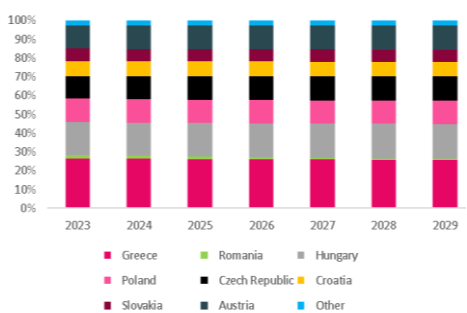
The European Market

Figure 5 - European Market Revenue Growth



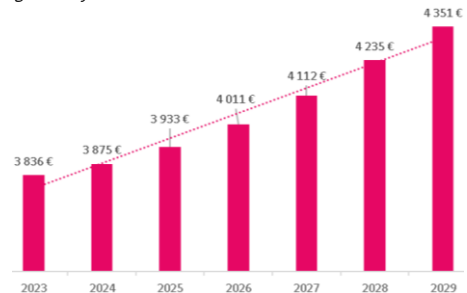
Besides Germany, Deutsche Telekom has presence in 10 more European countries, namely, Greece, Romania, Hungary, Poland, Czech Republic, Croatia, Slovakia, Austria, North Macedonia, and Montenegro. This segment is projected to represent around 10% of the Net Revenue in 2023 (figure 1). According to Deutsche Telekom (2023b), as of September 2023, the mobile customers had increase 1.3%, to a total of 47.9 million, while the fixed network customers increased by 3.5%, to a total of 6.9 million, when compared to the values of December 2022. Even though we forecast a continuous and steady growth of this segment, its importance in the Net Revenue is expected to decrease, representing around 9% in 2029 (figure 3). In this segment, there are 2 regions that in 2029 we expect to represent 44% of the segment's revenue, Greece, and Hungary (figure 5). It is also expected that Romania's revenue will decrease, reaching a level of nearing insignificance in 2029, representing only 0.06% of the segment's revenue. It is forecasted that the revenues from this segment will increase to a value of around billion euros by 2029 (figure 6).

Figure 6 - Segment Weight in the European Market



Systems Solutions

Figure 7 - Systems Solutions Revenue Growth

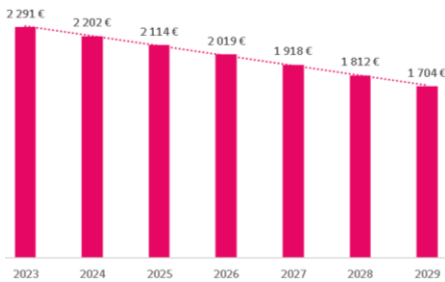


The first non-regional segment, the systems solutions segment, or "T-Systems" is a segment of digital integrated services, with four main areas, advisory, cloud services, digital enabler, and security. The company aims to become the largest provider of this kind of services in Europe (T-Systems, 2024). This segment has 4 main industries in which the company sells their services, automotive, healthcare, public sector, and public transport (Deutsche Telekom AG, 2023b). According to Deutsche Telekom, as of September of 2023, the segment represented a revenue

of 2865 million Euros, an increase of 2.5% when compared to the same timeframe in the previous year. Even though the company aims to become the major European provider, in this report we forecast a smaller growth, having the segment reaching a revenue of 4.3 billion of euros in 2029 (figure 7).

Group Headquarters & Group Services (GH&GS)

Figure 8 - GH&GS Revenue Growth



This segment, according to Deutsche Telekom (2024a), comprises all the units that cannot be directly allocated to one of the others segments, for example, the Group Headquarters that manages all the segments, the shared services that provide services to all the segments or other services such as Real Estate or Mobility. Such as the Systems Solutions, this segment is not directly related to the company's industry and therefore it is not expected to have a meaningful contribution to the company's revenue in 2029, the value forecasted is of 1%. It is expected that this segment's revenue will decrease mainly due to the introduction of the hybrid work model and some restructuring of the workforce, that will lead to decrease in the prospection of new buildings (due to the lack of need of more space to accommodate personnel), this value is forecasted to be 1.7 billion of euros in 2029 (figure 8).

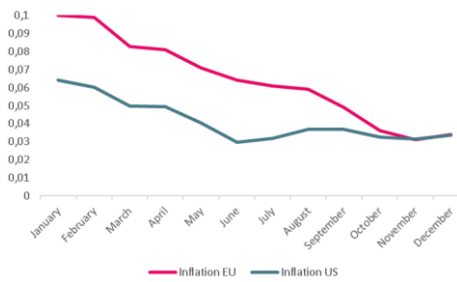
Company Strategy

Deutsche Telekom strategy has been linear over the years, and there's no reason to believe that it will change in a near future, keep growing the number of customers by providing a better service than the competitors. The company aims to keep investing in its network to fulfil the customer's needs, enabling the company to retain their customers and attract new ones. One of the mottos of the company is "Digitalize", it can either be said the Deutsche Telekom will become a software company that sells telecommunication (Deutsche Telekom AG, 2023c).

3. Industry Overview and Competitive Positioning

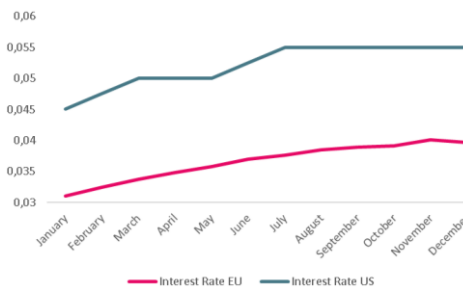
The Business Research Company (2024), forecasts the telecommunication market size to be over 3000 billion dollars, which makes the telecommunication industry one of the world's biggest revenue makers and this attracts a lot of attention meaning, that intense competition remains a hallmark of the telecommunications industry. Traditional telecommunications companies, like Deutsche Telekom, face stiff competition from cable and city network operators, as well as resellers who rely heavily on regulated wholesale products.

Figure 9 - EU and US inflation rates



Source: YCharts

Figure 10 - 2023 EU and US interest rates



Source: European Central Bank for EU and Trading Economics for US

Economic Overview

2023 was a year that saw an exponential increase in the inflation rates all over the world (figure 9). The inflation rate had a significant impact in the purchase power which led to damages in the demand rates, combined with the increase in interest rates (figure 10) that negatively impacted the financing of companies and families, slowed business's growth (Deutsche Telekom AG, 2023b). During this period there was also a considerable increase in energy prices that led to increased costs for both households and businesses, this contributed to cooling down of the economic growth. With an expected cooling of the energy prices, inflation, and interest rates in near future, we can expect some acceleration in the demand rates and in the economic growth.

Telecommunication Market Overview

The telecommunication market felt the impacts of the harsh economic situation, even though the industry kept growing in 2023, it was a slower growth than the one that was expected, mainly due to the increase in energy prices, a product that represents a meaningful part of the industry's costs. With the expected slowdown of the rise of energy it is forecasted that the telecommunication market will once again start growing in a more sustained way. Standard & Poor's (2024) forecasts for 2024 a revenue growth of 2% globally, 2.5% in the US market and 1% in the European market. It is expected that the demand for premium packages will increase, due to the introduction of new devices and to increase consumption of digitalized and mobile content, which will have an impact on the industry's

revenue. Data will be a key factor in the growth of the Telecommunication industry, a massive increase in video consumption will drive the growth of data need, being expected that in 2027, 79% of the consumption will be driven by video content, while there can be expected that the price of data will decline, it is also foreseeable that the internet access revenue will keep growing at a CAGR of 4% (2022-2027), while the cellular data is predicted to grow at a CAGR of 27% (2022-2027) (PwC, 2023).

Competitive Positioning

To analyse the competitiveness of the company it was performed a Porter's Five Forces analysis. It was concluded that both the Threat of New Entrants and Suppliers Bargaining Power have a low impact, while the Rivalry of Existing Players is high. For both the Customer Bargaining Power and Threat of Substitute Products we got a value of medium (figure 11).

Figure 11 - Porter's Five Forces Analysis



Customer Bargaining Power – Medium

Changing the telecommunication provider does not represent a huge difficulty for customers, there are a considerable number of providers and there are not that many barriers to prevent this, besides the customer loyalty periods, and even those have a fixed time frame after which the customer can freely decide to change the provider. Therefore, the customer bargaining power is classified as medium.

Threat of New Entrants – Low

Entering in the telecommunication business requires huge amounts of investment, building networks capable of providing service in so many countries, as Deutsche Telekom does, will require a huge investment by a new entrant and therefore it is considered a big barrier for entering. There is as well the difficulty of fighting already established brands in the sector, that will once again represent a big cost. Considering the investment needed just to be able to provide service, combined with the costs of fighting the already established brands, the threat of new entrants is considered low.

Rivalry of Existing Players – High

To look at Deutsche Telekom rivals it is necessary to create two divisions, the European market, and the US market. In Europe, even though that there are many companies that compete with Deutsche Telekom for a larger piece of the industry, their size and the markets they operate in are no match for the company. Deutsche Telekom is much bigger and operates in more European markets than their competitors. For sure there is a fierce competition for every piece of market share, but the European rivals don't seem to be at the same level as Deutsche Telekom. As for the US market, it is much different, there are a considerable number of rivals with a comparable size to Deutsche Telekom's and that leads to a fierce competition that can limit the company's performance. The exit barrier is also a factor to have in consideration, the exit barrier seems to be quiet high what makes the competition between rivals bigger. Considering that the US represents the biggest piece of the company's revenue we consider the rivalry between existing players high.

Suppliers Bargaining Power – Low

There are not that many companies operating in the telecommunication industry, but there are many suppliers, this means that suppliers don't own much bargaining power, since Deutsche Telekom can find a new supplier much easier than a supplier can find a new company to sell to, therefore, the suppliers bargaining power is considered to be low.

Threat of Substitute Products – Medium

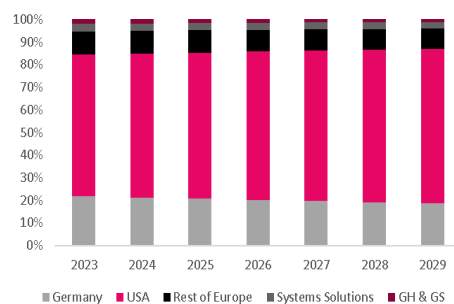
Text messages and phones calls may be substituted by online messaging and calling in a near future. Apps such as Messenger or WhatsApp may substitute the traditional SMS or Phone Call. Online video content platforms such as Youtube, Twitch, TikTok or Kick may also be a substitute in a near future to services like TV Cable or similar, and that may present a threat to Deutsche Telekom. Services like internet connection (via broadband, network, or data) or network connection are not that easily replaceable and tend to provide higher revenue to the company

than services of mobile communications, so, the threat of substitute products is regarded as medium.

4. Investment Summary

This report issues a **BUY** recommendation for Deutsche Telekom with a target price of 27.37€, value that corresponds to an upside potential of 25.24% on the market price of 21.85€ in March 22nd, 2024. This recommendation is based on the Discounted Cash Flow valuation method.

Figure 12 - Segment Weight in Net Revenue



The United States Market

Today the United States is already the biggest stream of revenue for Deutsche Telekom, it represents 62.7% of the net revenue in 2023 and 62.3% of the total revenue (figure 12), in this report we forecast a tendency for an increase in this value, ending in a value of over 68% of the net revenue coming from the US market and 67.2% of the total revenue. Most of this revenue derives from the Service segment where is expected a growth of 61.7% from 2023 to 2029. For the Equipment segment this report projects a tendency of decrease over the years, in 2029 the segment is forecasted to represent only 5.15% of the revenue of the US market (figure 13).

Figure 13 - Segment Weight in the US Market



A Leading Company

If we look at the revenues of the major players in the telecommunications industry in the Western World, Deutsche Telekom is the biggest company in Europe and the third in whole Western World. As of 2022, when compared to their competitors in Europe, Deutsche Telekom's revenue is 272% bigger than the second largest player, Vodafone, and 278% larger than Orange's revenue. Compared to the rest of the Western players, Deutsche Telekom ended 2022 only behind AT&T, by less than 1%, and Verizon by 7.1% (figure 14). It is expected that this strong position in the industry will prevail and possibly be reinforced by the growth of the business in the US.

Figure 14 - Companies Revenues in the industry



Figure 15 - SpaceX partnership



Creating Value by innovating

Deutsche Telekom is systematically trying to find ways to innovate the way in which they do business, to ensure that they deliver the best possible service to their customers, and they set themselves apart from their competitors. In 2023 the group spent over than 16 billion Euros building and operating networks and is trying the use of AI to increase the automation of infrastructure planning and construction. The company has already announced in 2022 a joint plan between T-Mobile US and SpaceX to use Starlink satellites to enable T-Mobile US to reach customers in some areas of the US without cell tower coverage (Deutsche Telekom AG, 2024b). This means that the company will be able to provide service all the US, Puerto Rico and territorial waters.

5. Valuation

Deutsche Telekom is valued using two methods: the Discounted Cash Flow Valuation (DFC) and the Relative valuation. According to Damoradan (2012), in the DCF valuation, the value of an asset is related to the present value of expected future cash flows on that asset, while relative valuation estimates the value of an asset by comparing the price of comparable assets facing a common variable. Even though these two methods of valuation are applied, the investment recommendation is based on the DCF valuation, since it is the most reliable one.

Discounted Cash Flow Valuation

To do the DCF valuation we use a timeframe of 6 years (until 2029), using the Free Cash Flows to the Firm (FCFF) approach (Appendix 1). We forecasted the revenue using a bottom-up approach, meaning that, we divided Deutsche Telekom's revenue in 5 segments and forecasted the development of each one individually and then combined them to calculate the annual revenue. Those segments are the ones previously presented, Germany, US, Europe, Systems Solutions and GH&GS.

Figure 16 - German Market Revenues by Segments

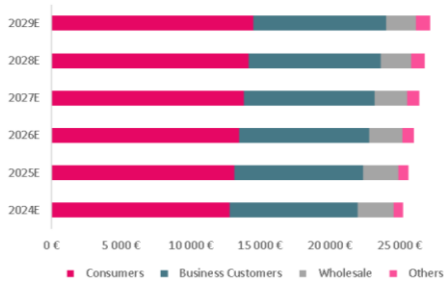


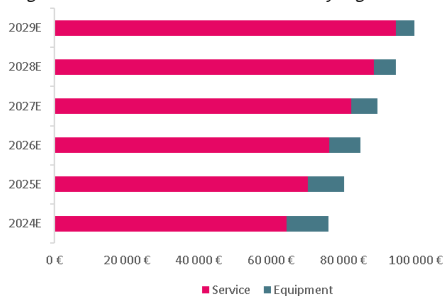
Table 2 - German Market Forecasted Revenues

Segments	Germany	Consumers	Business	Wholesale	Others
2024F	25 253 €	12 789 €	9 193 €	2 615 €	656 €
2025F	25 631 €	13 125 €	9 277 €	2 508 €	721 €
2026F	26 017 €	13 465 €	9 356 €	2 404 €	792 €
2027F	26 410 €	13 806 €	9 432 €	2 303 €	869 €
2028F	26 809 €	14 147 €	9 503 €	2 205 €	954 €
2029F	27 213 €	14 489 €	9 568 €	2 110 €	1 046 €

Germany

We forecast a CAGR of 1.5% for the revenue on the German market. This value derives from the sum of the forecasted growth for the different types of businesses operated in the country. For the Consumers it is forecasted an annual growth of 2.7%, that will decay 0.05% each year after 2024. For the Business Customers it is forecasted a growth of 1% for 2024, 0.9% for 2025 and a decay of 0.05% in the years after that. For the Wholesale, it is forecasted a negative growth of 4% annually that will keep increasing. Finally, for the Others it is forecasted an annual growth of 10% in 2024, decaying in value through 2029 (Appendix 2). As of 2029 it is expected that Consumers and Business Customers will, combinedly, represent 88% of revenue of the German segment (figure 16 & table 2).

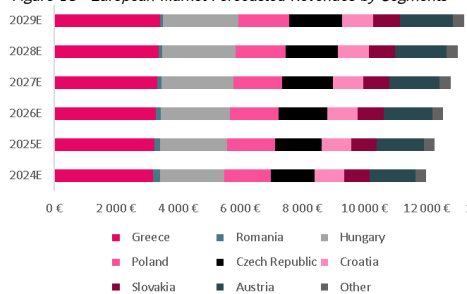
Figure 17 - US Market Forecasted Revenues by Segments



United States

A CAGR of 5.6% is assumed for the revenue on the US market. This growth is dependent on the Service's revenues since the Equipment's revenue is forecasted with a negative growth. The Service annual growth is forecasted to be 9.96%, decreasing 0.5% which year after 2024. As for the Equipment annual growth we forecasted an annual growth of -13%, decaying by 0.8% in 2025, 0.7% in 2026 and 0.5% in the next years, assuming that the sales of equipment will keep decreasing (Appendix 2). By 2029 the revenues of Equipment will represent only around 5% the segment revenue (figure 17).

Figure 18 - European Market Forecasted Revenues by Segments



Europe

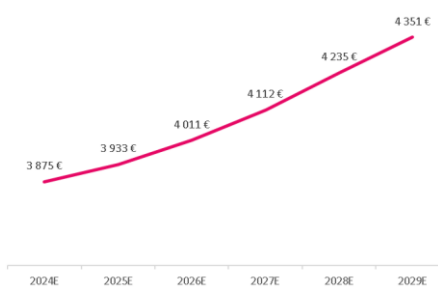
For this segment it is forecasted a CAGR of 2%. The major drivers of this growth are: Greece, Hungary, Poland, Czech Republic, and Austria (figure 18). Greece, whose growth is forecasted as 1.55%, with a decrease of 0.05% yearly, Hungary with a forecasted growth of 4.75% decreasing 0.5% each year after 2024, Poland with a growth of 2% decaying 0.2% in 2025 and 2026, 0.1% in 2027 and 0.05% in the next years, even though the yearly growth (except 2018 and 2023) is negative, the company announced a new partnership that is already producing returns in 2023, therefore we assumed a continuous growth with a decay to assume the

Table 3 - European Market Forecasted Revenues

Segments	2024E	2025E	2026E	2027E	2028E	2029E
Europe	11 881 €	12 160 €	12 424 €	12 672 €	12 899 €	13 104 €
Greece	3 167 €	3 214 €	3 261 €	3 306 €	3 351 €	3 395 €
Romania	235 €	199 €	168 €	141 €	119 €	100 €
Hungary	2 066 €	2 154 €	2 235 €	2 307 €	2 371 €	2 424 €
Poland	1 514 €	1 541 €	1 566 €	1 589 €	1 612 €	1 635 €
Czech Rep.	1 406 €	1 491 €	1 565 €	1 628 €	1 677 €	1 711 €
Croatia	955 €	965 €	974 €	983 €	991 €	999 €
Slovakia	814 €	822 €	831 €	839 €	847 €	856 €
Austria	1 474 €	1 520 €	1 567 €	1 614 €	1 662 €	1 710 €
Other	328 €	334 €	341 €	347 €	353 €	359 €
Consolidation	-78 €	-80 €	-81 €	-83 €	-84 €	-86 €

losing of value of the new investment. Czech Republic produces the biggest growth, with a forecasted value of 7%, obtained by averaging the last 3 years to reflect the recent investment made in the country, it is as well forecasted a decay of 1% yearly representing the investment going old. Austria growth is forecasted as 3.16% for 2024, decaying 0.05% yearly. In the opposite way, Romania is the only country on which the forecasted growth is negative (table 3), the trend in the previous years has been a decrease that is slowing down, therefore the growth of -15.53% in 2024 is forecasted using the average of the last 6 years, using a decaying factor of 0.05% each year (Appendix 2).

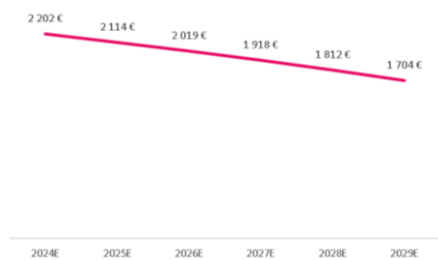
Figure 19 - Systems Solutions Forecasted Revenue Growth



Systems Solutions

For the Systems Solutions revenue we assumed a CAGR of around 2.1%. For this segment is projected a growth rate of 1% for 2024 that increase 0.5% each year till it reaches 3% in 2028 when then it will start falling 0.25% yearly. This growth is forecasted having in consideration the growth of the first 3 quarters of 2023, this growth is justified by the investment made in Electric Car Chargers Stations (Appendix 2).

Figure 20 - GH&GS Forecasted Revenue Growth



GH&GS

GH&GS is forecasted with a CAGR of -4.8%. This negative growth is explained by the introduction of the hybrid work model and some restructuring of the workforce, that leads to less people working in company's buildings and therefore less revenue is produced since there will be less prospection in buildings and terrains since there is less need to accommodate personnel which will lead to decreases in revenue coming from the Real Estate subsegment of this segment so it is expected a drop in investment in this segment. It is forecasted a growth of -3.87% in 2024, that increases to -4% in 2025 and will keep increasing 0.5% year over year, till it reaches -6% in 2029 (Appendix 2).

Cost of Revenue and Profit Margin

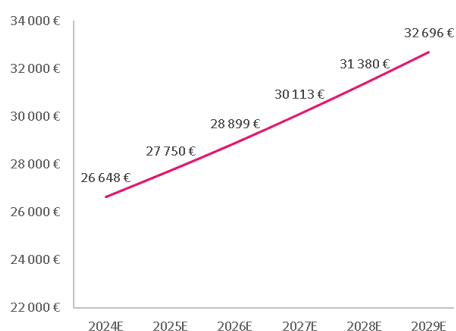
Deutsche Telekom's Cost of Revenue has been quite stable, presenting a value of around 60%. Therefore, we assume the same value for the forecasted period, using

a value of 60.78% of the Revenue (Appendix 3). Having the same Cost of Revenue each year results in a stable Profit Margin, 39.22%.

Depreciation & Amortization

In order to forecast the value of Depreciation & Amortization it is used a method where it is weighted the values of the CAPEX of both Intangible Assets (IA) and Purchase of Property, Plant & Equipment (PP&E) against the total value of the CAPEX and used that value to multiply by the average depreciation values of the last 3 years. The forecast indicates a drop in the value in 2023 mainly due to the decrease in CAPEX in 2021, 2022 and 2023, but it is expected that the value of Depreciation & Amortization will slowly increase until 2029. (Appendix 3).

Figure 21 - CAPEX Growth



CAPEX

The CAPEX is calculated adding up the CAPEX of PP&E and the CAPEX of IA. The forecast of PP&E's CAPEX is obtained by averaging the value of the previous 4 years in percentage of the Revenue, while the forecast of the IA's CAPEX is obtained using the average value of the previous 5 years, excluding 2020 since the value seems to be an outlier (Appendix 4). It is expected that the CAPEX will grow continuously until 2029, increasing from 26648€ in 2024 to 32696€ in 2029, a growth of more than 22% (figure 21).

Net Working Capital (NWC)

To forecast NWC, it is used assumptions based on historical data to foresee the values of Operating Current Liabilities and Operating Current Assets, and then it is subtracted the value Current Liabilities (Trade and Other Payables and Contract Liabilities) to the value of Current Assets (Trade Receivables, Contract Assets and Inventories) of each year, to get the forecasted NWC value for every year (Appendix 3).

Weighted Average Cost of Capital (WACC)

Table 4 - WACC Calculation

Cost of Debt	
Cost-of-Debt (4)	5.23%
Tax Rate (5)	17.66%
After-tax Cost of Debt	4.31%
Cost of Equity	
Risk-free Rate (6)	2.03%
Market Risk Premium	5.94%
Levered Beta (7)	0.5960
Cost of Equity	5.57%
WACC	4.84%

To compute the WACC we started by calculating the Cost of Debt of the company. The Cost of Debt represents the value that the company must pay in order to get financing through debt. Adding the risk-free rate to the default spread, we get the pre-tax Cost of Debt, so, firstly we had to calculate an appropriate risk-free rate, we weight the US risk-free (3.87%) and the Germany risk-free (2.03%) in terms of the weight that each the US and Europe has in the Net Revenue of 2024. Then, given that Deutsche Telekom credit rating is BBB+, what according to Damodaran's table at the time of the calculation, meant a default spread of 2%. This adds-up to a pre-tax Cost of Debt of 5.23%. To get the after-tax Cost of Debt, we calculated the tax shield, using the effective tax-rate of 17.66%, we get an after-tax Cost of Debt of 4.31%. For the Cost of Equity, we used the CAPM model. We started by computing the company's beta using a bottom-up approach, by choosing a selection of comparable firms, computing their unlevered beta (the stocks were regressed on the MSCI World Index), and then levering that value to the Debt-to-Equity value of Deutsche Telekom we get a beta of 0.5960 (Appendix 5). Then, we just have to add the value of the risk-free of Germany (2.03%) to the multiplication of the value of the beta with the value of the market-risk premium of both Germany and the US, both have the same value (according to Damodaran, 5.94%), what adds up to a cost of equity of 5.57%. Weighting both the cost of debt and cost of equity we get a WACC of 4.84% (table 4).

FCFF

Figure 22 - FCFF and CAPEX values



The Free Cash Flows to the Firm keep increasing at a steady rate throughout the forecasted period (figure 22). This growth is sustained by the increase in the CAPEX, that will keep investing in their assets to keep producing more revenue and keep gaining size. The FCFF of the company increases from 8574€ in 2024 to 10670€ in 2029 (table 5), a growth of more than 24%.

Table 5 - Forecasted FCFF

	2025F	2026F	2027F	2028F	2029F
Free Cash Flow to the Firm	9 262	9 618	9 979	10 355	10 745
WACC	4.84%	4.84%	4.84%	4.84%	4.84%
Cumulative Discount Factor	0.9538	0.9097	0.8677	0.8276	0.7894
Present Value of Free Cash Flow	8 834	8 749	8 659	8 570	8 482

Table 6 - Terminal Value & Terminal Growth Rate

Enterprise Value	
Cumulative Present Value of FCF	42 997
Terminal Value	
NOPAT ₂₀₂₉ *(1+G)*(1-RR)	10 871
g	1.88%
ROIC	5.12%
Reinvestment rate	36.76%
Terminal Value	367 223
Discount factor	0.75
Present Value of Terminal Value	276 494
% of EV	86.54%
Enterprise Value	319 491

Terminal Growth Rate

The Terminal Growth Rate is the rate that is expected the company to grow in perpetuity. This value is calculated by multiplying the Reinvestment Rate (36.76%) by the Return on Invested Capital (5.12%), both after 2029. This amount to a Terminal Growth Rate of 1.88% (table 6).

Terminal Value

The Terminal Value is the present value of the Cash Flow in perpetuity. This value is obtained by applying the growth rate to the Net Operating Profit After Tax (NOPAT) of 2029 and then multiply by the distribution rate, finally this value is divided by the WACC minus the Growth Rate (table 6).

Table 7 - Implied Equity Value & Share Price

Implied Equity Value & Share Price	
Enterprise Value	319 491
Less: Total Debt	147 061
Less: Preferred Stock	0
Less: Noncontrolling Interest	40 403
Plus: Cash and Cash Equivalents	4 418
Implied Equity Value	136 444
Fully Diluted Shares Outstanding	4 986
Implied Share Price	27.37 €
Recommendation	BUY

Enterprise Value and Implied Equity Value

This all adds up to an Enterprise Value of 319 491 million of euros, which after deducting the Debt value, the Noncontrolling interest and adding the Cash and Cash Equivalents (Appendix 6) results in an Implied Equity Value of 136 444 million of euros (table 7).

Sensitivity Analysis

We did a sensitivity analysis to see the impact that changes in WACC and/or the Terminal Growth could have on the target price. We consider changes of 0.5%, 1% and 1.5%, both positively and negatively in the WACC and 0.2%, 0.4% and 0.6% both positively and negatively in the Terminal Growth rate. With this analysis we can conclude that, nonetheless of the Terminal Growth variation, if the WACC is equal or lower than 4.84% we have a buy recommendation, whereas if the WACC is equal to 5.34% and the Terminal Growth rate is equal or lower than 1.48% we have a hold recommendation, for any other value we have a sell recommendation (table 8).

Table 8 - Sensitivity Analysis

Terminal Growth	WACC						
	3.34%	3.84%	4.34%	4.84%	5.34%	5.84%	6.34%
1.28%	66.35 €	47.90 €	35.49 €	26.56 €	19.83 €	14.58 €	10.36 €
1.48%	71.05 €	50.05 €	36.39 €	26.80 €	19.69 €	14.21 €	9.86 €
1.68%	76.89 €	52.59 €	37.43 €	27.06 €	19.53 €	13.81 €	9.31 €
1.88%	84.33 €	55.65 €	38.64 €	27.37 €	19.35 €	13.36 €	8.72 €
2.08%	94.13 €	59.41 €	40.06 €	27.71 €	19.15 €	12.87 €	8.07 €
2.28%	107.63 €	64.13 €	41.75 €	28.11 €	18.93 €	12.33 €	7.35 €
2.48%	127.40 €	70.24 €	43.81 €	28.58 €	18.68 €	11.72 €	6.56 €

Relative Valuation

Peers

To do the Relative Valuation, we started by choosing the comparable firms, we selected both companies that operate in Europe and companies that operate in the US, since at the moment there is not a company that operates in both markets, besides Deutsche Telekom. We chose the biggest revenue makers in both markets, Verizon and At&T for the US market, and Orange, Vodafone, Telefónica and Telecom Italia for Europe (Appendix 7). We did not include BT since it is a company partly owned by the England Government.

Market multiples

When we look at the metrics, only the EV/EBITDA supports our buy recommendation, considering the stock undervalued (table 9). The P/E metric seems to be not too reliable as the negative results of both AT&T and Telecom may be driving the industry average down. As expected, the company has his metrics (except the EV/EBITDA) higher than the industry averages (table 10). Having higher values than the industry average in metrics such as P/E, P/S and EV/Revenue may indicate that investors believe in the growth of the company and therefore are willing to pay a premium on the stock (Appendix 8). This adds-up to an Average Implied Share Price of 15.88€, if all the metrics are weighted the same, but, even if we weight the metrics to reduce the impact of the P/E and increase the metrics of EV (35% for the EV metrics, 10% for the P/E and 20% for P/S) we

Table 10 - Deutsche Telekom metrics

Company	Deutsche Telekom
EV/EBITDA	5.592
P/E	6.898
P/S	0.947
EV/REVENUE	2.186

still get an Average Implied Share Price of 17.90€, a value below the current market price.

Table 9 - Relative Valuation

Company	EV/EBITDA	P/E	P/S	EV/REVENUE
Deutsche Telekom	5.592	6.898	0.947	2.186
Verizon	6.205	5.934	0.946	2.271
Vodafone	7.383	2.301	0.543	1.757
At&T	6.007	-9.040	0.803	2.076
Telefónica	7.140	13.926	0.526	1.487
Orange	4.877	17.573	0.643	1.414
Telecom Italia	6.204	-3.380	0.275	1.990
Average	6.303	4.552	0.623	1.833
Implied Share Price	24.45 €	8.32 €	15.06 €	15.71 €
	Undervalued	Overvalued	Overvalued	Overvalued

6. Financial Analysis

Revenue

The Revenue of Deutsche Telekom has a forecasted CAGR of over 4.2% (figure 23). As stated before, we used a bottom-up approach to forecast the company's revenue. We forecasted every segment individually and then added the values to get the value of the Revenue. As showed throughout this report, the segment that most contributes to the company's revenue is the US segment, that has a projected CAGR of 5.6%. The other segments, Germany, Europe, Systems Solutions and GH&GS have a projected CAGR of 1.5%, 2%, 2.1% and -4.8% respectively. For the non-segmental revenues, we have Other Operating Income, Changes in Inventory and Own Capitalized Costs, that have a CAGR of 12.1%, 1.8% and 3.7% respectively. As for the Cost of Revenue, it is forecasted a CAGR of 5.5%. By 2029 the US is expected to bring more than 60% of the company's Total Revenue. Since 2020 it is possible to see a trend of increasing significance of this segment. The segment Group Development is forecasted to cease to exist in 2023 and therefore is no longer considered in the calculation the Total Revenue from 2024 onwards (figure 23).

Profitability

Both the Operating Margin and the Profit margin will remain quite stable in the forecasted period. The Operating Margin increases from 11.57% (in 2017) to 16.63%, while the Profit Margin will increase from 6.75% (in 2017) to 8.75% (figure

Figure 23 - Revenue Growth

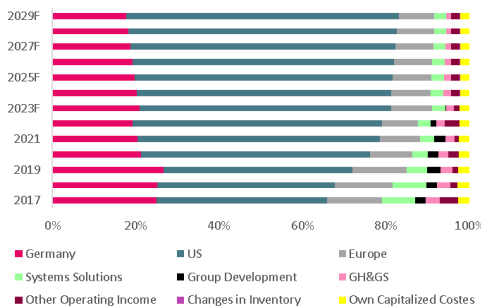


Figure 24 - Margins Growth

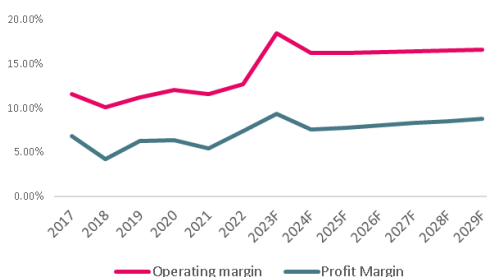
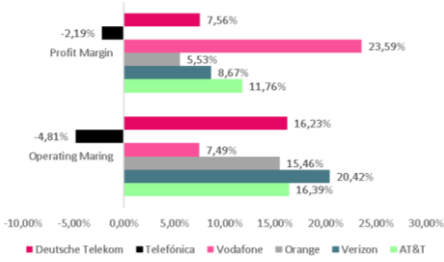
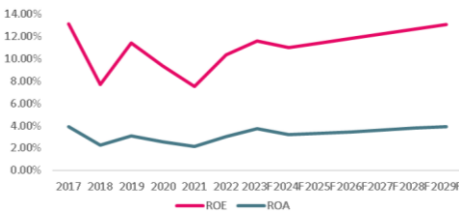


Figure 25 - Margins Comparison



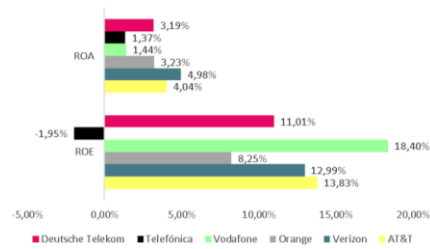
24). The growth of the Profit Margin relies in the fact that while the Net Income keeps increasing, the financing expenses stays the same. When compared to the competitors, the company seems to be in a similar position to their competitors. In 2024 the company has a lower Profit Margins than 3 of their 5 selected competitors, while for the Operating Margins are only surpassed by the 2 US competitors (figure 25).

Figure 27 - ROE and ROA Growth



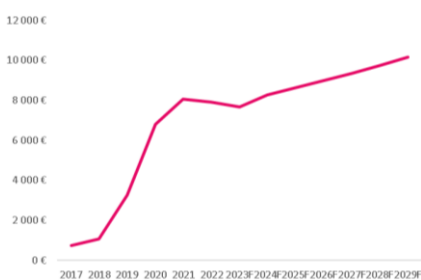
As of what the Return on Equity (ROE) and Return on Assets (ROA) concerns, while the ROA tends to be somewhat stable through the periods, the ROE shows constants ups and downs with a small tendency to stabilize in the most recent years. The ROE decrease from 13.07% in 2017 to 13.02% in 2029, but this value is an increase when compared to the value of 2023, 11.57%. While the ROA stays at the same value in 2029 that it was in 2017, 3.93%, this value represents an increase when compared to the value of 2023, 3.73% (figure 26). For an industry like Telecommunications having a ROA that seems “low” like 3.93% is quite normal since it is an industry that needs tons of investment in infrastructures, and therefore has a high value of assets. Since the industry requires much investment, it is usual that the book value of equity is low compared to the value of the liabilities because companies in the industry get external financing quite often in order to finance this investment needs and therefore, since it does not rely that much in equity financing, it is usual to see a ROE such as the one Deutsche Telekom has. This is proven when comparing the ROE and ROA of the company’s competitors, where every company (except Telefónica) has a ROE much higher than the ROA (figure 27).

Figure 26 - ROE and ROA Comparison



Changes in NWC

Figure 28 - Changes in NWC



Looking into the NWC, we can see that the value of NWC has been experiencing huge increases in the past, with a somewhat stabilization period after 2021, where the values have suffered small decreases in 2022 and 2023, but it is forecasted a small continuous growth until 2029 (figure 28), this means that the company has a surplus of value of its operational current assets against its operational current liabilities, this implies that the company can keep funding its activities and keep investing in growing.

Liquidity

The company has high liquidity ratios, meaning that the company could, in case of need, pay pretty much all its current liabilities by liquidating its current assets. The current liquidity ratio of the company will surpass the mark of 100% in 2027. This happens mainly due to the continuous investment in assets, alongside with good operational results, and the assumption that the company will not acquire much more current liabilities in a near future.

Activity Ratios

The asset turnover ratio of the company had a big decrease from 2017 to 2020, this means that the company lost capacity of turning their assets into revenue. It is forecasted that the company will slowly increase this ratio throughout the forecasted period (figure 29). This ratio is still low, meaning that the company can only generate yearly less than half the value of their assets as revenue. As said before, this industry needs high amounts of assets, but it is still necessary that the company keeps trying to improve this ratio, either producing more revenue with the same value of assets or decreasing the value of the assets without losing revenue.

Figure 29 - Asset Turnover Ratio

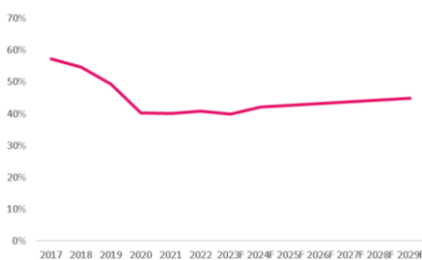
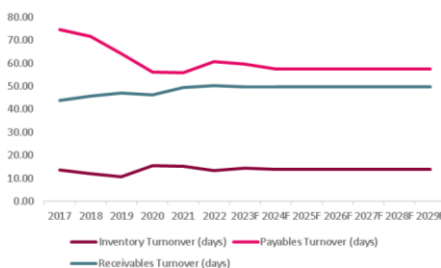


Figure 30 - Receivables and Payables turnover

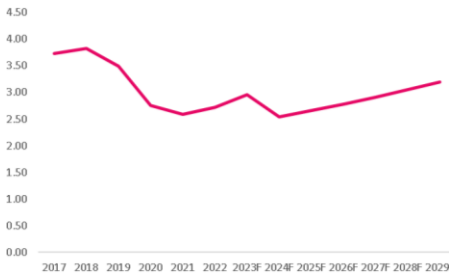


When taking a look at the Receivables and Payables turnover, we can clearly see that the company receives from its clients earlier than pays its suppliers, this is a good thing since it helps the company's treasury. But this difference has been decreasing since 2017, where the company used to pay their suppliers in 75 days and receive from their costumers in 44 days, as of 2024 the company in average receives from its customers in 50 days, while pays its supplier in average in 58 days, it is expected that this difference will stay stable in the forecasted period (figure 30).

The inventory turnover show that the company sold and replaced its inventory 26.46 times, that corresponds to a 14 day hold on each inventory (figure 30). Even though the company is mainly a Service company, it is good that the goods that the company sell have a high rotation.

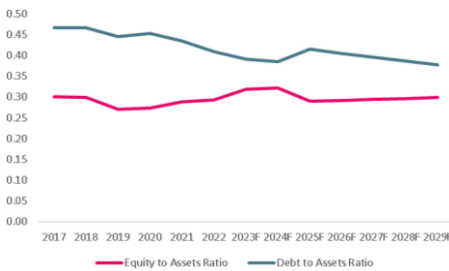
Solvency Ratios

Figure 31 - Interest Coverage Ratio Analysis



The Interest Coverage Ratio of Deutsche Telekom (even though it fell to lower value than those of 2017) is always higher than 2.50, meaning that the company should have to worry about its capacity to pay their interest expenses. It is forecasted that this value will grow, and it is expected to reach a value of 3.20 in 2029 (figure 31).

Figure 32 - Equity to Assets Ratio and Debt to Assets Ratio



As for the Equity to Assets Ratio, it has been somewhat stable in value of around . . .30 and it is expected to stay like that for the forecasted period. Even though that 0.30 is not a high value for this ratio, it is also not a low one, meaning that the company has a healthy Equity to Assets Ratio. As for the Debt to Assets Ratio, the company’s ratio has been decreasing and it is expected to keep decreasing to a value of 0.38 by 2029 (figure 32). A value of 0.38 is nothing to worry about, therefore we can say that the company does not have to worry about meeting its obligations.

More detailed information about all this ratios is presented in the Appendix 9.

7. Investment Risks

Figure 33 - Risk Matrix

		Impact			
		Low	Medium	High	Very High
Probability	Very High			MUS	
	High				
	Medium		OS ER	OUS	
	Low	RR CI	OG MG CR		

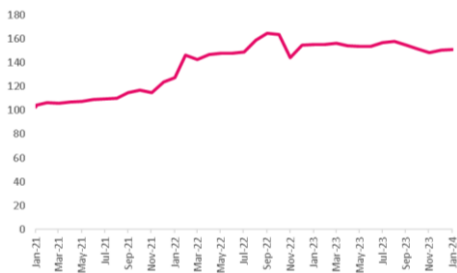
As a major player in the telecommunications industry, Deutsche Telekom encounters a diverse range of uncertainties, transformations, and risks (figure 33). We live in an uncertain global economy, factors like the war in Ukraine, the tension between China and Taiwan and rise in inflation rate may have repercussions in the telecommunications market once they may impact the supply of energy or the demand for the services.

Operational Risks

OG. Operational Germany, Deutsche Telekom relies heavily in technology and technologic infrastructures, such as clouds or networks. Even though shortages or failures in these infrastructures may not be ruled out, the company owns almost all the infrastructures it uses and has teams constantly working in guaranteeing these infrastructures remain operational, therefore, this risk has a **low** probability, with **medium** impact.

OUS. Operational US, like Germany, Deutsche Telekom in the US, also relies heavily on the infrastructures mentioned before, but opposite of what happens in Germany, in the US, a considerable part of the infrastructures used are not owned by the US subsidiary. Not being able to guarantee that these infrastructures remain operational constitutes a risk to the company, therefore, this risk has a **medium** probability, with a **very high** impact, since the US market has such a high weight on the company's revenue.

Figure 34 - Energy Prices in Germany Jan21-Feb24



Source: YCharts

OS. Operational Supply, Risks regarding the supplying of products and services to the company cannot be ruled out, this risk is especially concerning when it concerns to energy or suppliers from countries where there may be geopolitical concerns, such as China or Russia (figure 34). This risk has a **medium** probability, with a **medium** impact.

Market Risks

MG. Market Germany, in Germany the company has a very strong position as the market leader in the industry, but risks arising from competitors taking some of the market share of the company, even though it may be unlikely to happen, cannot be ruled out. There is also the risk of the online video services starting to move people away from Cable TV, that may result in losses in the network segment, therefore this risk has a **low** probability, with a **medium** impact.

MUS. Market US, T-Mobile US gain a lot of attention and market share lately by offering better conditions, prices and offers than their competitors, but this position cannot be taken as a guarantee since the market in the US has many competitors and it is a very intense and tough market, therefore we have to take into account that the company may lose some of its share to a competitor. In this market is also needed to consider the existence of Mobile Virtual Network Operators, that don't have infrastructures, these companies rent infrastructures from other companies to provide its services and therefore can offer lower prices. Just like as the German Market, there is also the risk of the online video services, so, this risk has a **medium** probability, with a **very high** impact.

Economic Risks

ER. Economic Risks, the economic environment it is always a risk to take into account, just like what happened in 2023 with the rises in inflation and interest rates, or in 2022 with the start of the war in Ukraine and the rising tensions between Taiwan and China, or in 2020 with the pandemic, events like this shake the economic environment leading this shortages of demand, increases in cost of goods and difficulties in getting financing. This risk has a **medium** probability, with a **medium** impact.

Regulation Risks

RR. Regulation Risks, the telecommunication industry faces a lot of industry-specific regulations. Even though national authorities may create laws to try to regulate more the market, its regulatory power seems to be limited, but laws regarding the limitation of prices or taxes regarding earnings cannot be ruled out. This risk presents a **low** probability with a **low** impact.

Financial Risks

CR. Credit and Rating Risks, debt is an important factor in the company and its good rating is a major factor that has to be taken into account, even though it seems highly unlikely that the company may have its rating lowered, the impact a lower rating may have cannot be overlooked since it can increase the costs of financing (table 11), therefore this risk is regarded with a **low** probability with a **medium** impact.

CI. Currency and Interest Rate Risks, being a company that operates in various markets, means that the company is exposed to currency and interest rates fluctuations. The company hedges most of its risks regarding foreign currencies and having subsidiaries in various countries allows the company to get financing at the most beneficial interest rate, thus, this risk is regarded as **low** probability with **low** impact.

Table 11 - Default Spread by Rating

>	≤ to	Rating is	Spread is
-100000	0.199999	D2/D	20.00%
0.2	0.649999	C2/C	17.50%
0.65	0.799999	Ca2/CC	15.78%
0.8	1.249999	Caa/CCC	11.57%
1.25	1.499999	B3/B-	7.37%
1.5	1.749999	B2/B	5.26%
1.75	1.999999	B1/B+	4.55%
2	2.249999	Ba2/BB	3.13%
2.25	2.499999	Ba1/BB+	2.42%
2.5	2.999999	Baa2/BBB	2.00%
3	4.249999	A3/A-	1.62%
4.25	5.499999	A2/A	1.42%
5.5	6.499999	A1/A+	1.23%
6.5	8.499999	Aa2/AA	0.85%
8.50	100000	Aaa/AAA	0.69%

Source:Aswath Damodaran

8. Environmental, Social & Governance (ESG)

Deutsche Telekom has a good positioning when it comes to compare ESG practices with their competitors. The company is the best scorer (or joint best scorer) in every field (table 12). Social is where the company gets its higher score, but it is in the Governance sector that the company outmatch the most the competitors.

Environmental

Table 12 - ESG Rating

Company	Overall Score	Environmental Score	Social Score	Governance Score
Deutsche Telekom	A	A	A+	A-
Vodafone	A	A-	A+	A-
AT&T	A-	A-	A+	C
Verizon	B+	B+	A	B+
Orange	A-	A	A	B-

Source: Refinitiv Eikon

Deutsche Telekom is dedicated not just to reducing the ecological and climate impact of the business operations, but also to leveraging the possibilities of digitalization for sustainable growth. Deutsche Telekom (2023a) states that the company aims to reach climate neutrality across the company by 2025, and by 2040 reach net zero CO2 emissions. Since 2021, the Deutsche Telekom Group has covered 100% of its electricity requirement with renewable energy and the Group expects to have invested by 2030, 3 trillion USD in innovative solutions. The Group has developed a special program to help strategic suppliers introducing business practices that are both socially and ecologically acceptable while remaining economically efficient, this program is showing positive results to this day.

Social

Table 13 - Board of Management

Members	Department
Timotheus Höttges	Chair of the Board (CEO)
Adel Al-Saleh*	T-Systems
Birgit Bohle	HR and Legal Affairs
Srini Gopalan	Germany
Dr. Christian P. Illek	Finance (CFO)
Thorsten Langheim	USA and G. Development
Dominique Leroy	Europe
Claudia Nemat	Technology and Innovation

*Replaced as of 2024 for Dr. Ferri Abolhassan

Source: Deutsche Telekom

Deutsche Telekom is committed to social responsibilities, in 2022 when the war in Ukraine began, the company sent free prepaid SIM cards with free calls and data to Ukrainian refugees over multiple European countries, the Hungarian subsidiary gave free phones to the refugees, calls to the Ukrainian dialing codes were free in Germany and the US, among other aids that the company provided. Deutsche Telekom is also committed to respecting human rights, that apply not only to the company, but also to their business partners and suppliers. The company has also some initiatives in Slovakia where they support schools and teachers with innovative teaching approaches. They also have a contest in the US where they fund ideas for equal opportunities, environmental issues and better coexistence in digital participation.

Governance

Table 14 - Supervisory Board

Members of the Supervisory board

Dr. Frank Appel
Odysseus D. Chatzidis
Eric Daum
Constantin Greve
Katja Hessel
Lars Hinrichs
Dr. Helga Jung
Dagmar P. Kollmann
Petra Steffi Kreusel
Harald Krüger
Kerstin Marx
Dr. Reinhard Ploss
Frank Sauerland
Christoph Schmitz-Dethlefsen
Susanne Schöttke
Nicole Seelemann-Wandtke
Karl-Heinz Streibich
Margret Suckale
Karin Topel
Stefan Wintels

Source: Deutsche Telekom

Deutsche Telekom's Board of Management includes 8 persons (Appendix 10), 4 of them managing cross-functional areas, such as Chair of the Board of Management, Human Resources and Legal Affairs, Finance and Technology and Innovation, and 4 of them managing segments of the business, T-Systems, Germany, USA and Group Development, and Europe (Deutsche Telekom AG, 2024b) (table 13) . According to Deutsche Telekom (2024b), there is a Supervisory Board that advises the Board of Management and oversees its management of business. It is composed of 20 members, 10 representing the shareholders and 10 the employees (table 14).

According to Deutsche Telekom (2023d), in addition to reimbursement for cash expenses and value-added tax paid on remuneration and expenses, the members of the Supervisory Board shall receive fixed annual remuneration amounting to 100,000€. The Chairman of the Supervisory Board receives an extra 100,000€, in addition to the previous value, while the Deputy Chairman receives an additional 50,000€. The members of the Supervisory Board also receive additional remuneration for working on Supervisory Board committees, the values are the following: The Chairman of the Audit Committee receives the amount of 100,000€ while all other Audit Committee members receive the amount of 40,000€. The Chairman of the General Committee receives the amount 70,000€, while all other General Committee members receive 30,000€. The Chairman of the Nomination Committee receives the amount 25,000€, while all other Nomination Committee members receive 12,500€. The Chairman of another committee receives 40,000€, and all other members of a committee receive 25,000€. Finally, the members also receive a value for attending the meetings, this value amounts to 2,000€ per meeting (Appendix 11).

To combat any sort of corruption and to be as transparent as possible, the company's compliance management system is specifically designed to forestall corrupt practices. The company has developed a system that follows a model called "Three lines of defense". The operational units and their operational management are the first line of defense, and they are responsible for identifying,

assessing, and continuously monitoring risks, while the internal control system, the risk and opportunity management system, and the compliance management system are responsible for manage and monitor the first line of defense. Finally, the third line of defense is the Internal Audit, which ensures the first and second lines of defense are audited and advised objectively and independently (Deutsche Telekom AG, 2023a).

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Appendices

Appendix 1 - DCF Valuation

DCF	2023F	2024F	2025F	2026F	2027F	2028F	2029F
Revenue	115 049 €	120 564 €	125 552 €	130 748 €	136 243 €	141 972 €	147 930 €
% growth	▼ -5.5%	4.8%	4.1%	4.1%	4.2%	4.2%	4.2%
Cost of Revenue	-65 115 €	-73 279 €	-76 311 €	-79 470 €	-82 810 €	-86 292 €	-89 913 €
Gross Profit	49 934 €	47 284 €	49 241 €	51 279 €	53 434 €	55 681 €	58 017 €
% margin	86.8%	39.2%	39.2%	39.2%	39.2%	39.2%	39.2%
Operating Expenses	-4 965 €	-5 313 €	-5 533 €	-5 762 €	-6 004 €	-6 257 €	-6 519 €
EBITDA	44 969 €	41 971 €	43 707 €	45 516 €	47 429 €	49 424 €	51 498 €
% margin	▼ 39.1%	34.8%	34.8%	34.8%	34.8%	34.8%	34.8%
Depreciation & Amortization	-23 739 €	-22 409 €	-23 276 €	-24 152 €	-25 044 €	-25 960 €	-26 904 €
EBIT	21 231 €	19 562 €	20 431 €	21 365 €	22 385 €	23 464 €	24 594 €
% margin	▼ 18.5%	16.2%	16.3%	16.3%	16.4%	16.5%	16.6%
Income Taxes	-3 676 €	-6 142 €	-6 415 €	-6 709 €	-7 029 €	-7 368 €	-7 722 €
NOPAT	17 555 €	13 420 €	14 016 €	14 656 €	15 356 €	16 096 €	16 871 €
Depreciation & Amortization	23 739 €	22 409 €	23 276 €	24 152 €	25 044 €	25 960 €	26 904 €
Capital Expenditures	18 905 €	26 648 €	27 750 €	28 899 €	30 113 €	31 380 €	32 696 €
Δ in non cash Net Working Capital	-150 €	607 €	343 €	357 €	377 €	393 €	409 €
Free Cash Flow to the Firm	22 239	8 574	9 199	9 552	9 910	10 283	10 670
WACC	4.84%	4.84%	4.84%	4.84%	4.84%	4.84%	4.84%
Cumulative Discount Factor			0.9538	0.9097	0.8677	0.8276	0.7894
Present Value of Free Cash Flow			8 774	8 690	8 599	8 511	8 423

Appendix 2 - Operating Segments

Operating Segments	2023Q1/3	2023Q4	2024E	2025E	2026E	2027E	2028E	2029E
Germany	18 583 €	6 287 €	25 253 €	25 631 €	26 017 €	26 410 €	26 809 €	27 213 € a)
Consumers	9 310 €	3 138 €	12 789 €	13 125 €	13 465 €	13 806 €	14 147 €	14 489 € a1)
Business Customers	6 784 €	2 318 €	9 193 €	9 277 €	9 356 €	9 432 €	9 503 €	9 568 € a2)
Wholesale	2 028 €	696 €	2 615 €	2 508 €	2 404 €	2 303 €	2 205 €	2 110 € a3)
Others	461 €	135 €	656 €	721 €	792 €	869 €	954 €	1 046 € a4)
USA	53 455 €	18 252 €	75 806 €	80 104 €	84 600 €	89 385 €	94 398 €	99 665 € b)
Service Revenues	43 508 €	14 936 €	64 267 €	70 157 €	76 096 €	82 157 €	88 290 €	94 528 € b1)
Equipment Revenues	9 947 €	3 316 €	11 539 €	9 946 €	8 504 €	7 229 €	6 108 €	5 137 € b2)
Europe (Excluding Germany)	8 678 €	2 912 €	11 881 €	12 160 €	12 424 €	12 672 €	12 899 €	13 104 € c)
Greece	2 334 €	784 €	3 167 €	3 214 €	3 261 €	3 306 €	3 351 €	3 395 € c1)
Romania	209 €	70 €	235 €	199 €	168 €	141 €	119 €	100 € c2)
Hungary	1 479 €	493 €	2 066 €	2 154 €	2 235 €	2 307 €	2 371 €	2 424 € c3)
Poland	1 113 €	371 €	1 514 €	1 541 €	1 566 €	1 589 €	1 612 €	1 635 € c4)
Czech Republic	982 €	332 €	1 406 €	1 491 €	1 565 €	1 628 €	1 677 €	1 711 € c5)
Croatia	709 €	236 €	955 €	965 €	974 €	983 €	991 €	999 € c6)
Slovakia	602 €	204 €	814 €	822 €	831 €	839 €	847 €	856 € c7)
Austria	1 068 €	361 €	1 474 €	1 520 €	1 567 €	1 614 €	1 662 €	1 710 € c8)
Other	241 €	80 €	328 €	334 €	341 €	347 €	353 €	359 € c9)
Consolidation Effects	-59 €	-20 €	-78 €	-80 €	-81 €	-83 €	-84 €	-86 € c10)
Systems Solutions	2 865 €	971 €	3 875 €	3 933 €	4 011 €	4 112 €	4 235 €	4 351 € d)
Group Development	108 €	n/a	n/a	n/a	n/a	n/a	n/a	n/a e)
Group Headquarters & Group Services	1 718 €	573 €	2 202 €	2 114 €	2 019 €	1 918 €	1 812 €	1 704 € f)
Intersegment Revenue	-2 806 €	-935 €	-3 892 €	-4 053 €	-4 222 €	-4 400 €	-4 586 €	-4 780 € g)
Net Revenue	82 601 €	28 059 €	115 125 €	119 888 €	124 849 €	130 097 €	135 567 €	141 256 €

a) The values of the segments are achieved by adding the sub-segments in the segment. For all the sub-segments, the 4Q of 2023 is calculated using the value of the previous quarters divided by 3, with an increase of 1.45%.

a1) For the periods 2024-2029 it is calculated a value of yearly growth of 2.7% (average of the years 2021 and 2022, because the growth was stable and in line with the position on the company in market), that will decay 0.05% each year after 2024. The value of 2.7% is obtained by averaging the growth of the years 2021 and 2022, years where the growth is stable and in line with the position of the company in the market.

a2) For the periods 2024-2029 it is forecasted a growth of 1% for 2024, 0.9% for 2025 and a decay of 0.05% in the years after that. This values were obtained by averaging both the previous full 5 years and 2 years, since the values were very similar.

a3) For the periods 2024-2029 it is calculated a value of yearly growth of -4%, that will increase -0.1% in 2025, -0.05% in 2026 and 2027 and finally -0.06% in both 2028 and 2029. The value is obtained using the value of 2022, since even though we see a clear pattern of decrease in the revenue, the decreases are unstable, therefore we chose to stick with the most recent value since it seems adequate to the company's reality.

a4) For the periods 2024-2029 it is forecasted an annual growth of 10% in 2024, decaying 0.1% in 2025, 0.05% in both 2026 and 2027 and 0.06% in 2028 and 2029. This value has calculated using the averages of the years of 2018,2020 and 2022, since both 2021 and 2019 present outliers.

b) The values of the segments are achieved by adding the sub-segments in the segment. For all the sub-segments, the 4Q of 2023 is calculated using the value of the previous quarters divided by 3, with an increase of 2.43%.

b1) For the periods 2024-2029 it is forecasted an annual growth of 9.96%, decreasing 0,.5% yearly after 2024, this value is obtained using the average of 2021,2022 and 2023 due to the lack of information available.

b2) For the periods 2024-2029 it is forecasted a growth of -13% for 2024, decaying by 0.8% in 2025, 0.7% in 2026 and 0.5% in the next years. This value is obtained using the values of 2022 and 2023, assuming that the sales of equipment will keep decreasing.

c) The values of the segments are achieved by adding the sub-segments in the segment. For all the sub-segments, the 4Q of 2023 is calculated using the value of the previous quarters divided by 3, with an increase of 0.65%

c1) For the periods 2024-2029 it is forecasted an annual growth of 1.55%, with a decrease of 0.05% each year. This growth is achieved by averaging the growth of the previous 6 years (2018,2019,2020,2021,2022 and 2023) because the values are very similar each year, so we can confidently trust this value.

c2) For the periods 2024-2029 it is forecasted an annual growth of -15.53%, that increases -0.5% yearly. Forecasted using the average of the last 6 years (2018,2019,2020,2021,2022 and 2023).

c3) For the periods 2024-2029 it is forecasted an annual growth of 4.75% decreasing 0.5% each year after 2024. this growth is forecasted using the average of the last 3 years because the company has made a new investment in the country in the latter years and is still producing considerable returns.

c4) For the periods 2024-2029 it is forecasted an annual growth of 2% decaying 0.2% in 2025 and 2026, 0.1% in 2027 and 0.05% in the next years. The company announced a new partnership that is already producing returns in 2023, therefore we assumed a continuous growth with a decay to assume the losing of value of the new investment.

c5) For the periods 2024-2029 it is forecasted an annual growth of 7%, obtained by averaging the last 3 years (2021,2022 and 2023) to reflect the recent investment made in the country, with is as well forecasted a decay of 1% yearly representing the investment going old.

c6) For the periods 2024-2029 it is forecasted an annual growth of 1.05% decaying 0.05% yearly. This value is calculated using the last 3 years (2021,2022 and 2023) because the previous periods contain a decreasing trend that no longer seems to be happening.

c7) For the periods 2024-2029 it is forecasted an annual growth of 1%, because in the last years there is a trend of the growth value being around 1%.

c8) For the periods 2024-2029 it is forecasted a growth of 3.16% for 2024 (average of the 3 previous years, because it is the only period where the growth is somewhat stable) decaying 0.05% yearly after that.

c9) For the periods 2024-2029 it is forecasted a growth of 2% for 2024 with a decay of 0.05% yearly.

c10) To eliminate consolidation effects it is added this line, to get the value of this line it is applied a value of 0.65% to the value pre-consolidation.

d) The value of the 4Q of 2023 is calculated using the value of the previous quarters divided by 3, with an increase of 1.7%. The growth rate is forecasted as 1% for 2024, value that increase 0.5% each year till it reaches 3% in 2028 when then it will start falling 0.25% yearly. This growth is forecasted having in consideration the growth seen in the first 3 quarters of 2023, the growth is justified mostly by the investment made in Electric Car Chargers Stations.

e) This segment contains the sales of subsidiaries. It is assumed that by the end of 2023 this segment will no longer be active due to the finalization of the sale of the Netherland's subsidiary.

f) The value of the 4Q of 2023 is calculated using the value of the previous quarters divided by 3. It is forecasted an annual growth of -3.87% in 2024, that increases to -4% in 2025 and will keep increasing 0.5% year over year, till it reaches -6% in 2029. This value is obtained by averaging the values of the years 2021, 2022 and 2023, assuming a increasing value due to the optimization and increase in the hybrid work model and some restructuring of the workforce.

g) To eliminate intersegment revenue, it is added this line. It is forecasted an annual growth of 2.95% that will steadily decrease till it reaches 2% in 2029.

Appendix 3 - Income Statement

Income Statement	2017	2018	2019	2020	2021	2022	2023F	2024E	2025E	2026E	2027E	2028E	2029E
Revenue	81 081 €	79 568 €	84 101 €	106 637 €	112 955 €	121 728 €	115 049 €	120 564 €	125 552 €	130 748 €	136 243 €	141 972 €	147 930 €
Net Revenue	74 947 €	75 656 €	80 531 €	100 999 €	108 794 €	114 197 €	110 660 €	115 125 €	119 888 €	124 849 €	130 097 €	135 567 €	141 256 € a)
Other Operating Income	3 819 €	1 491 €	1 121 €	2 879 €	1 299 €	4 653 €	1 631 €	2 644 €	2 753 €	2 867 €	2 987 €	3 113 €	3 244 € b)
Changes in Inventory	21 €	-14 €	29 €	-15 €	-6 €	26 €	36 €	33 €	34 €	35 €	37 €	38 €	40 € c)
Own Capitalized Costes	2 292 €	2 433 €	2 418 €	2 774 €	2 868 €	2 852 €	2 722 €	2 763 €	2 877 €	2 996 €	3 122 €	3 254 €	3 390 € d)
Cost of Revenue	-53 665 €	-54 596 €	-53 679 €	-63 527 €	-68 146 €	-72 297 €	-65 115 €	-73 279 €	-76 311 €	-79 470 €	-82 810 €	-86 292 €	-89 913 € e)
Gross Profit	27 416 €	24 972 €	30 422 €	43 110 €	44 809 €	49 431 €	49 934 €	47 284 €	49 241 €	51 279 €	53 434 €	55 681 €	58 017 €
Gross Margin	34%	31%	36%	40%	40%	41%	87%	39%	39%	39%	39%	39%	39%
Operating Expenses	-3 445 €	-3 135 €	-3 302 €	-4 477 €	-4 270 €	-6 382 €	-4 965 €	-5 313 €	-5 533 €	-5 762 €	-6 004 €	-6 257 €	-6 519 € f)
EBITDA	23 971 €	21 837 €	27 120 €	38 633 €	40 539 €	43 049 €	44 970 €	41 971 €	43 707 €	45 516 €	47 429 €	49 424 €	51 498 €
Depreciation & Amortization	-14 586 €	-13 836 €	-17 663 €	-25 829 €	-27 482 €	-27 635 €	-23 739 €	-22 409 €	-23 276 €	-24 152 €	-25 044 €	-25 960 €	-26 904 € g)
EBIT (Operating Income)	9 385 €	8 001 €	9 457 €	12 804 €	13 057 €	15 414 €	21 232 €	19 562 €	20 431 €	21 365 €	22 385 €	23 464 €	24 594 €
Interest Expenses	-2 517 €	-2 094 €	-2 712 €	-4 638 €	-5 052 €	-5 679 €	-7 175 €	-7 689 €	-7 689 €	-7 689 €	-7 689 €	-7 689 €	-7 689 € h)
Interest Income	320 €	277 €	348 €	414 €	451 €	387 €	666 €	521 €	521 €	521 €	521 €	521 €	521 € i)
Other Financial Income/Expenses	-2 194 €	-1 032 €	167 €	97 €	-538 €	855 €	-288 €	-428 €	-428 €	-428 €	-428 €	-428 €	-428 € j)
EBT (Earnings before taxes)	4 994 €	5 152 €	7 260 €	8 677 €	7 918 €	10 977 €	14 435 €	11 966 €	12 835 €	13 768 €	14 789 €	15 868 €	16 998 €
Income Taxes	559 €	-1 823 €	-1 992 €	-1 929 €	-1 815 €	-1 938 €	-3 676 €	-2 854 €	-3 061 €	-3 284 €	-3 528 €	-3 785 €	-4 054 € k)
Net Income	5 553 €	3 329 €	5 268 €	6 748 €	6 103 €	9 039 €	10 759 €	9 112 €	9 773 €	10 484 €	11 261 €	12 083 €	12 943 €

- a) See Appendix 2
- b) In % of Net Revenue, value calculated using the average between 2018-2022.
- c) In % of Net Revenue, value calculated using the average between 2021-2022.
- d) In % of Net Revenue, value calculated using the average between 2021-2022.
- e) In % of Revenue, value calculated using the average between 2019-2022.
- f) In % of Sales, value calculated using the average between 2020-2022.
- g) In % of PP&E + IA, value calculated using the average between 2017-2022.
- h) Using the cost of debt.
- i) Average Growth between 2018-2022.
- j) In % of Other Financial Assets, value calculated using the average of between 2018-2022.
- k) See Appendix 12

Appendix 4 - NWC and CAPEX

NWC	2017	2018	2019	2020	2021	2022	2023F	2024F	2025F	2026F	2027F	2028F	2029F
Revenue	81 079 €	79 566 €	84 101 €	106 637 €	112 955 €	121 728 €	115 049 €	120 564 €	125 552 €	130 748 €	136 243 €	141 972 €	147 930 €
Cost of Revenue	-53 665 €	-54 596 €	-53 679 €	-63 527 €	-68 146 €	-72 297 €	-65 115 €	-73 279 €	-76 311 €	-79 470 €	-82 810 €	-86 292 €	-89 913 €
Operational Current Assets													
Trade receivables	9 723 €	9 988 €	10 846 €	13 523 €	15 299 €	16 766 €	15 418 €	16 468 €	17 149 €	17 859 €	18 609 €	19 392 €	20 205 €
Contract assets	n. a.	1 765 €	1 876 €	1 966 €	2 034 €	2 410 €	2 838 €	2 429 €	2 529 €	2 634 €	2 745 €	2 860 €	2 980 €
Inventories	1 985 €	1 790 €	1 568 €	2 695 €	2 855 €	2 639 €	2 156 €	2 770 €	2 885 €	3 004 €	3 130 €	3 262 €	3 399 €
Total Operational Current Assets	11 708 €	13 543 €	14 290 €	18 184 €	20 188 €	21 815 €	20 412 €	21 666 €	22 563 €	23 497 €	24 484 €	25 514 €	26 584 €
Operational Current Liabilities													
Trade and other payables	10 971 €	10 735 €	9 431 €	9 760 €	10 452 €	12 035 €	10 657 €	11 565 €	12 044 €	12 542 €	13 070 €	13 619 €	14 191 €
Contract liabilities	n. a.	1 720 €	1 608 €	1 625 €	1 668 €	1 868 €	2 083 €	1 823 €	1 898 €	1 977 €	2 060 €	2 146 €	2 236 €
Total Operational Current Liabilities	10 971 €	12 455 €	11 039 €	11 385 €	12 120 €	13 903 €	12 740 €	13 388 €	13 942 €	14 519 €	15 129 €	15 765 €	16 427 €
Net Working Capital	737 €	1 088 €	3 251 €	6 799 €	8 068 €	7 912 €	7 672 €	8 278 €	8 621 €	8 978 €	9 355 €	9 748 €	10 158 €
% sales	1%	1%	4%	6%	7%	6%	7%	7%	7%	7%	7%	7%	7%
(Increase)/Decrease in NWC		351	2 163	3 548	1 269	-156	-240	607	343	357	377	393	409

CAPEX	2017	2018	2019	2020	2021	2022	2023Q1/3	2023Q4	2024F	2025F	2026F	2027F	2028F	2029F
Purchase of PP&E	11 266 €	10 644 €	15 734 €	15 461 €	18 215 €	12 173 €	9 990 €	3 794 €	17 884 €	18 624 €	19 394 €	20 209 €	21 059 €	21 943 € a)
Intangible assets	3 989 €	6 649 €	6 836 €	13 778 €	8 752 €	5 897 €	3 711 €	1 409 €	8 764 €	9 127 €	9 505 €	9 904 €	10 320 €	10 754 € b)
Total	15 255	17 293	22 570	29 239	26 967	18 070	13 701	5 204	26 648	27 750	28 899	30 113	31 380	32 696

a) in % of Revenue, average 2020-2022

b) in % of Revenue, average 2018,2019,2021,2022 (2020 excluded since it appears to be an outlier)

Appendix 5 – Beta Calculation

Betas:		Each company beta is obtained using a linear regression using the company's stock return as the dependent variable and MSCI World Index's return as the independent variable.
AT&T Beta	0.47067	
Orange Beta	0.132992	
Verizon Beta	0.169937	
Vodafone Beta	0.825519	
Telefónica Beta	0.942537	
Average Levered Beta	0.508331	
Adjusted Sector D/E	117.72%	
Effective Tax Rate	6.62%	
Unlevered Beta	0.242147	
DT D/E	134.99%	
DT LEVERED BETA	0.596028	

Appendix 6 - Balance Sheet

Balance Sheet	2017	2018	2019	2020	2021	2022	2023F	2024F	2025F	2026F	2027F	2028F	2029F
Assets													
Current Assets													
Cash and cash equivalents	3 312 €	3 679 €	5 393 €	12 939 €	7 617 €	5 767 €	8 886 €	4 418	6 844	9 072	11 158	13 043	14 868
Trade receivables	9 723 €	9 988 €	10 846 €	13 523 €	15 299 €	16 766 €	15 418 €	16 468 €	17 149 €	17 859 €	18 609 €	19 392 €	20 205 € In days of Revenue, average 2021-2022
Contract assets	0 €	1 765 €	1 876 €	1 966 €	2 034 €	2 410 €	2 838 €	2 429 €	2 529 €	2 634 €	2 745 €	2 860 €	2 980 € % of Revenue Average 2018-2022
Current recoverable income taxes	236 €	492 €	481 €	349 €	321 €	213 €	161 €	181	188	196	204	213	222 % of Revenue, 0,15%
Other financial assets	3 329 €	2 847 €	3 253 €	3 224 €	4 051 €	4 866 €	5 204 €	4 943	5 273	5 622	5 995	6 389	6 657 % of Revenue, % value of 2022, increasing 0,1% yearly
Inventories	1 985 €	1 790 €	1 568 €	2 695 €	2 855 €	2 639 €	2 156 €	2 770	2 885	3 004	3 130	3 262	3 399 % of Revenue Average 2017-2022
Other assets	1 646 €	1 164 €	1 175 €	1 484 €	1 766 €	1 800 €	2 149 €	1 874	1 951	2 032	2 117	2 206	2 299 % of Revenue Average 2017-2022
Non-current assets and disposal groups held for sale	161 €	145 €	97 €	1 113 €	4 856 €	4 683 €	250 €	262	273	284	296	309	322 % of Revenue, % value of 2023
Total Current Assets	20 392 €	21 870 €	24 689 €	37 293 €	38 799 €	39 144 €	37 063 €	33 344 €	37 093 €	40 703 €	44 255 €	47 674 €	50 952 €
Non Current Assets													
Intangible assets	62 865 €	64 950 €	68 202 €	118 066 €	132 647 €	140 600 €	130 469 €	129 112 €	128 189 €	127 684 €	127 586 €	127 881 €	128 557 € Intangible assets Last Year + Purchase of IA - Depreciation
Property, plant and equipment	46 878 €	50 631 €	49 548 €	60 975 €	61 770 €	65 729 €	64 951 €	70 547 €	75 943 €	81 196 €	86 363 €	91 488 €	96 605 € Property, plant and equipment Last Year + Purchase of PP&E - Depreciator
Right-of-use assets	0 €	0 €	17 998 €	30 302 €	30 777 €	33 727 €	34 536 €	33 727 €	33 727 €	33 727 €	33 727 €	33 727 €	33 727 € 33 727 €
Capitalized contract costs	0 €	1 744 €	2 075 €	2 192 €	2 585 €	3 205 €	3 490 €	3 205 €	3 205 €	3 205 €	3 205 €	3 205 €	3 205 € 3 205 €
Investments accounted for using the equity method	651 €	576 €	489 €	543 €	938 €	1 318 €	5 299 €	1 318 €	1 318 €	1 318 €	1 318 €	1 318 €	1 318 € Same as 2022
Other financial assets	5 716 €	1 585 €	3 996 €	6 416 €	4 836 €	5 044 €	5 115 €	5 044 €	5 044 €	5 044 €	5 044 €	5 044 €	5 044 € Same as 2022
Deferred tax assets	4 013 €	2 949 €	2 704 €	7 972 €	7 906 €	8 316 €	6 303 €	7 837 €	7 837 €	7 837 €	7 837 €	7 837 €	7 837 € 7 837 €
Other assets	819 €	1 070 €	971 €	1 158 €	1 369 €	1 507 €	1 354 €	1 709 €	1 779 €	1 853 €	1 931 €	2 012 €	2 096 € % of Revenue Average 2017-2022
Total Non Current Assets	120 942 €	123 505 €	145 983 €	227 624 €	242 828 €	259 446 €	251 517 €	252 498 €	257 043 €	261 863 €	267 011 €	272 512 €	278 389 €
Total Assets	141 334 €	145 375 €	170 672 €	264 917 €	281 627 €	298 590 €	288 580 €	285 842 €	294 135 €	302 567 €	311 266 €	320 185 €	329 340 €
Equity & Liabilities													
Current Liabilities													
Financial liabilities	8 358 €	10 527 €	11 463 €	12 652 €	12 243 €	14 389 €	7 803 €	11 605 €	11 605 €	11 605 €	11 605 €	11 605 €	11 605 € % of PP&E average 2018-2022
Lease liabilities	0 €	0 €	3 987 €	5 108 €	5 040 €	5 126 €	5 448 €	5 502 €	5 923 €	6 332 €	6 735 €	7 135 €	7 534 € % of PP&E, same value as 2022
Trade and other payables	10 971 €	10 735 €	9 431 €	9 760 €	10 452 €	12 035 €	10 657 €	11 565 €	12 044 €	12 542 €	13 070 €	13 619 €	14 191 € In days of Cost of Revenue, average 2020-2022
Income tax liabilities	224 €	328 €	463 €	690 €	549 €	801 €	904 €	609 €	634 €	660 €	688 €	717 €	747 € % of Revenue Average 2017-2022
Other provisions	3 372 €	3 144 €	3 082 €	3 638 €	3 902 €	4 411 €	4 199 €	4 266 €	4 443 €	4 627 €	4 821 €	5 024 €	5 235 € % of Revenue Average 2019-2022
Other liabilities	4 440 €	2 654 €	2 850 €	3 213 €	3 584 €	3 412 €	3 360 €	3 789 €	3 946 €	4 109 €	4 282 €	4 462 €	4 649 € % of Revenue Average 2018-2022
Contract liabilities	0 €	1 720 €	1 608 €	1 625 €	1 668 €	1 868 €	2 083 €	1 823 €	1 898 €	1 977 €	2 060 €	2 146 €	2 236 € % of Revenue Average 2020-2022
Liabilities directly associated with non-current assets and dispos.	0 €	36 €	29 €	449 €	1 365 €	3 347 €	0 €	0 €	0 €	0 €	0 €	0 €	0 €
Total Current Liabilities	27 365 €	29 144 €	32 913 €	37 135 €	38 803 €	45 389 €	34 453 €	39 159 €	40 492 €	41 852 €	43 260 €	44 708 €	46 197 €
Non Current Liabilities													
Financial liabilities	49 171 €	51 748 €	54 886 €	94 456 €	99 223 €	98 641 €	94 520 €	97 440 €	97 440 €	97 440 €	97 440 €	97 440 €	97 440 € % of Debt Value average 2020-2022
Lease liabilities	0 €	0 €	15 848 €	27 607 €	28 094 €	33 666 €	34 987 €	33 387 €	35 941 €	38 426 €	40 872 €	43 297 €	45 719 € % of PP&E average 2020-2022
Provisions for pensions and other employee benefits	8 375 €	5 502 €	5 831 €	7 684 €	6 134 €	4 150 €	3 444 €	4 110 €	4 280 €	4 458 €	4 645 €	4 840 €	5 043 € Same as 2022
Other provisions	3 155 €	3 291 €	3 581 €	5 395 €	5 560 €	3 792 €	3 466 €	5 100 €	5 311 €	5 531 €	5 764 €	6 006 €	6 258 € % of Revenue Average 2017-2022
Deferred tax liabilities	6 967 €	8 240 €	8 954 €	17 260 €	19 809 €	22 800 €	21 960 €	21 080 €	21 952 €	22 861 €	23 821 €	24 823 €	25 865 € % of Revenue Average 2020-2022
Other liabilities	3 831 €	3 427 €	1 972 €	2 419 €	1 958 €	2 169 €	1 896 €	2 119 €	2 207 €	2 298 €	2 395 €	2 495 €	2 600 € % of Revenue Average 2021-2022
Contract liabilities	0 €	585 €	456 €	411 €	577 €	663 €	856 €	655 €	683 €	711 €	741 €	772 €	804 € % of Revenue Average 2018-2022
Total Non Current Liabilities	71 499 €	72 793 €	91 528 €	155 232 €	161 355 €	165 881 €	161 128 €	163 892 €	167 814 €	171 724 €	175 677 €	179 673 €	183 729 €
Total Liabilities	98 864 €	101 937 €	124 441 €	192 367 €	200 159 €	211 270 €	195 581 €	203 051 €	208 306 €	213 577 €	218 937 €	224 381 €	229 926 €
Equity													
Common Stock	12 140 €	12 141 €	12 142 €	12 143 €	12 728 €	12 730 €	12 101 €	12 219 €	12 337 €	12 457 €	12 578 €	12 701 €	12 824 € CAGR
Capital Reserves	55 010 €	54 646 €	55 029 €	62 640 €	63 773 €	61 532 €	55 727 €	60 282 €	62 776 €	65 374 €	68 122 €	70 986 €	73 965 € 50%
Retained Earnings	-38 750 €	-37 392 €	-38 709 €	-38 905 €	-36 358 €	-34 489 €	-29 609 €	-33 758 €	-35 155 €	-36 610 €	-38 148 €	-39 752 €	-41 420 € 28%
Other comprehensive income	-1 127 €	-653 €	-622 €	-4 115 €	-1 641 €	783 €	1 432 €	-1 531 €	-1 594 €	-1 660 €	-1 730 €	-1 803 €	-1 878 € % of Revenue Average 2017-2022
Net profit (loss)	3 461 €	2 166 €	3 867 €	4 158 €	4 176 €	8 001 €	18 823 €	5 176 €	5 390 €	5 613 €	5 849 €	6 095 €	6 351 € % of Revenue Average 2017-2022
Non controlling interest	11 737 €	12 530 €	14 524 €	36 629 €	38 791 €	38 763 €	34 526 €	40 403 €	42 075 €	43 816 €	45 658 €	47 577 €	49 574 € % of Revenue Average 2020-2022
Total Equity	42 471 €	43 438 €	46 231 €	72 550 €	81 469 €	87 320 €	93 000 €	82 791 €	85 829 €	88 991 €	92 328 €	95 804 €	99 415 €
Total Equity & Liabilities	141 335 €	145 375 €	170 672 €	264 917 €	281 627 €	298 590 €	288 581 €	285 842 €	294 135 €	302 567 €	311 266 €	320 185 €	329 340 €

Appendix 7 - Relative Valuation Company Information

Company	Share Price	Shares Outstanding	Equity	Debt	Cash	Enterprise Value	Revenue	EBITDA	Net Income
Verizon	29,53 €	4200	124 026,00 €	178 070,00 €	4 310,00 €	297 786,00 €	131 100,00 €	47 990,00 €	20 900,00 €
Vodafone	0,90 €	27080	24 277,22 €	67 340,00 €	13 060,00 €	78 557,22 €	44 710,00 €	10 640,00 €	10 550,00 €
AT&T	13,68 €	7150	97 812,00 €	162 610,00 €	7 630,00 €	252 792,00 €	121 750,00 €	42 080,00 €	-10 820,00 €
Telefónica	3,73 €	5750	21 445,78 €	47 060,00 €	7 820,00 €	60 685,78 €	40 810,00 €	8 500,00 €	1 540,00 €
Orange	10,57 €	2660	28 116,20 €	46 430,00 €	12 710,00 €	61 836,20 €	43 720,00 €	12 680,00 €	1 600,00 €
Telecom Italia	0,29 €	15220	4 460,98 €	32 910,00 €	5 110,00 €	32 260,98 €	16 210,00 €	5 200,00 €	-1 320,00 €
Deutsche Telekom	21,85 €	4 986	108 944,10 €	151 400,00 €	8 886,00 €	251 458,10 €	115 049,22 €	44 970,46 €	15 793,00 €

Appendix 8 - Relative Valuation

Company	EV/EBITDA	P/E	P/S	EV/REVENUE
Deutsche Telekom	5,59162821	6,898250672	0,94693468	2,18565663
Verizon	6,20516774	5,934258373	0,94604119	2,271441648
Vodafone	7,38319737	2,301158294	0,54299307	1,757039141
At&T	6,00741445	-9,039926063	0,80338398	2,076320329
Telefónica	7,13950294	13,92582792	0,52550294	1,487031977
Orange	4,87667192	17,572625	0,64309698	1,41436871
Telecom Italia	6,204035	-3,379531818	0,27519938	1,99019013

MAX	7,38319737	17,572625	0,94604119	2,271441648
MIN	4,87667192	-9,039926063	0,27519938	1,41436871
Average	6,3026649	4,552401951	0,62270292	1,832731989
Median	6,20460137	4,117708334	0,59304502	1,873614635

Deutsche Telekom EBITDA	41 971 €
Deutsche Telekom Net Income	9 112 €

Implied Enterprise Value	264 529 €			220 961,15 €
Debt - Cash	142 643,17 €			142 643,17 €
Implied Equity Market Value	121 885,74 €	41 480 €	75 075,44 €	78 317,98 €
Shares Outstanding	4 986	4 986	4 986	4 986
Implied Share Price	24,45 €	8,32 €	15,06 €	15,71 €
Average Implied Share Price	15,88 €			

Appendix 9 - Financial Analysis

Ratio Analysis	2017	2018	2019	2020	2021	2022	2023F	2024F	2025F	2026F	2027F	2028F	2029F
Key Financials													
Revenues	81 081 €	79 568 €	84 101 €	106 637 €	112 955 €	121 728 €	115 049 €	120 564 €	125 552 €	130 748 €	136 243 €	141 972 €	147 930 €
Cost of Revenue	-53 665 €	-54 596 €	-53 679 €	-63 527 €	-68 146 €	-72 297 €	-65 115 €	-73 279 €	-76 311 €	-79 470 €	-82 810 €	-86 292 €	-89 913 €
Gross Margin	33.8%	31.4%	36.2%	40.4%	39.7%	40.6%	43.4%	39.2%	39.2%	39.2%	39.2%	39.2%	39.2%
EBITDA	23 971 €	21 837 €	27 120 €	38 633 €	40 539 €	43 049 €	44 970 €	41 971 €	43 707 €	45 516 €	47 429 €	49 424 €	51 498 €
Net Income	5 553 €	3 329 €	5 268 €	6 748 €	6 103 €	9 039 €	10 759 €	9 112 €	9 773 €	10 484 €	11 261 €	12 083 €	12 943 €
Margins													
Operating margin	11.57%	10.06%	11.24%	12.01%	11.56%	12.66%	18.45%	16.23%	16.27%	16.34%	16.43%	16.53%	16.63%
Profit Margin	6.85%	4.18%	6.26%	6.33%	5.40%	7.43%	9.35%	7.56%	7.78%	8.02%	8.27%	8.51%	8.75%
Profitability Ratios													
ROE (return-on-equity)	13.07%	7.66%	11.39%	9.30%	7.49%	10.35%	11.57%	11.01%	11.39%	11.78%	12.20%	12.61%	13.02%
ROA (return-on-assets)	3.93%	2.29%	3.09%	2.55%	2.17%	3.03%	3.73%	3.19%	3.32%	3.47%	3.62%	3.77%	3.93%
Liquidity Ratios													
Current ratio	75%	75%	75%	100%	100%	86%	99%	85%	92%	97%	102%	107%	110%
Quick ratio	45%	42%	44%	68%	50%	62%	64%	53%	59%	64%	69%	73%	76%
Cash ratio	12%	13%	16%	35%	20%	13%	20%	11%	17%	22%	26%	29%	32%
Activity Ratios													
Asset turnover	57%	55%	49%	40%	40%	41%	40%	42%	43%	43%	44%	44%	45%
Receivables Turnover	8.34	7.97	7.75	7.89	7.38	7.26	7.32	7.32	7.32	7.32	7.32	7.32	7.32
Receivables Turnover (days)	43.77	45.82	47.07	46.29	49.44	50.27	49.85	49.85	49.85	49.85	49.85	49.85	49.85
Payables Turnover	4.89	5.09	5.69	6.51	6.52	6.01	6.11	6.34	6.34	6.34	6.34	6.34	6.34
Payables Turnover (days)	74.62	71.77	64.13	56.08	55.98	60.76	59.74	57.61	57.61	57.61	57.61	57.61	57.61
Inventory Turnover	27.04	30.50	34.23	23.57	23.87	27.40	25.27	26.46	26.46	26.46	26.46	26.46	26.46
Inventory Turnover (days)	13.50	11.97	10.66	15.48	15.29	13.32	14.45	13.80	13.80	13.80	13.80	13.80	13.80
Solvency Ratios													
Interest Coverage Ratio	3.73	3.82	3.49	2.76	2.58	2.71	2.96	2.54	2.66	2.78	2.91	3.05	3.20
Equity to Assets Ratio	0.30	0.30	0.27	0.27	0.29	0.29	0.32	0.32	0.29	0.29	0.29	0.30	0.30
Debt to Assets Ratio	0.47	0.47	0.45	0.45	0.44	0.41	0.39	0.39	0.42	0.41	0.40	0.39	0.38

Appendix 10 - Members of the Board of Management

Members of the Board of Management	Department	Remuneration	Member since
Timotheus Höttges	Chair of the Board of Management (CEO)	8,594,121€	2014
Adel Al-Saleh*	T-Systems	3,585,598€	2018
Birgit Bohle	Human Resources and Legal Affairs	2,938,179€	2020
Srini Gopalan	Germany	3,485,585€	2020
Dr. Christian P. Illek	Finance (CFO)	3,744,921€	2019
Thorsten Langheim	USA and Group Development	3,114,719€	2019
Dominique Leroy	Europe	2,087,850€	2020
Claudia Nemat	Technology and Innovation	3,772,299€	2017

*Replaced as of 2024 for Dr. Ferri Abolhassan

Appendix 11 - Members of the Supervisory Board

Members of the Supervisory board	Role	Remuneration	Member since	Appointed until
Dr. Frank Appel	Chairman of the Board	280 000,00 €	2022	2026
Odysseus D. Chatzidis	Member	174 000,00 €	2018	2028
Eric Daum	1st Deputy Chariman	26 834,00 €	2023	2028
Constantin Greve	Member	149 000,00 €	2018	2028
Katja Hessel	Member	0€*	2022	2026
Lars Hinrichs	Member	145 000,00 €	2013	2024
Dr. Helga Jung	Member	154 000,00 €	2016	2025
Dagmar P. Kollmann	Member	275 500,00 €	2012	2026
Petra Steffi Kreusel	Member	166 000,00 €	2013	2028
Harald Krüger	Member	145 000,00 €	2018	2027
Kerstin Marx	Member	229 000,00 €	2020	2028
Dr. Reinhard Ploss	Member	87 000,00 €	2023	2028
Frank Sauerland	Deputy Chairman	246 000,00 €	2018	2028
Christoph Schmitz-Dethlefsen	Member	24 667,00 €	2023	2028
Susanne Schöttke	Member	125 000,00 €	2022	2028
Nicole Seelemann-Wandtke	Member	141 000,00 €	2018	2028
Karl-Heinz Streibich	Member	193 000,00 €	2013	2024
Margret Suckale	Member	174 000,00 €	2017	2027
Karin Topel	Member	149 000,00 €	2017	2028
Stefan Wintels	Member	115 750,00 €	2022	2026

* As a Parliamentary State Secretary, Katja Hessel waives remuneration.

Appendix 12 - Income Tax Expense Calculation

	2024F	2025F	2026F	2027F	2028F	2029F	2030E
Profit (loss) before income taxes	11 966 €	12 835 €	13 768 €	14 789 €	15 868 €	16 998 €	18 141 €
Expected income tax expense (benefit) (Income tax rate applicable to Deutsche Telekom)	3 757 €	4 030 €	4 323 €	4 644 €	4 982 €	5 337 €	5 696 €
Adjustments to expected tax expense (benefit) Effect of changes in statutory tax rates	-91.75 €	-98.42 €	-105.57 €	-113.40 €	-121.67 €	-130.34 €	-139.11 €
Tax effects from prior years	-60.57 €	-64.96 €	-69.69 €	-74.86 €	-80.32 €	-86.03 €	-91.82 €
Tax effects from other income taxes	192.39 €	206.36 €	221.37 €	237.78 €	255.13 €	273.29 €	291.68 €
Non-taxable income	-371.73 €	-398.72 €	-427.73 €	-459.43 €	-492.94 €	-528.04 €	-563.58 €
Tax effects from equity investments	72.39 €	77.65 €	83.30 €	89.47 €	96.00 €	102.83 €	109.75 €
Non-deductible expenses	198.52 €	212.94 €	228.43 €	245.36 €	263.26 €	282.00 €	300.98 €
Permanent differences	-290.06 €	-311.13 €	-333.76 €	-358.50 €	-384.65 €	-412.04 €	-439.77 €
Goodwill impairment losses	-2.47 €	-2.64 €	-2.84 €	-3.05 €	-3.27 €	-3.50 €	-3.74 €
Tax effects from loss carryforwards	4.54 €	4.87 €	5.22 €	5.61 €	6.02 €	6.44 €	6.88 €
Tax effects from additions to and reductions of local taxes	73.34 €	78.67 €	84.39 €	90.64 €	97.26 €	104.18 €	111.19 €
Adjustment of taxes to different foreign tax rates	-626.76 €	-672.27 €	-721.18 €	-774.64 €	-831.14 €	-890.31 €	-950.23 €
Other tax effects	-0.89 €	-0.96 €	-1.03 €	-1.10 €	-1.18 €	-1.27 €	-1.35 €
Income tax expense (benefit) according to the consolidated income statement	2 854.22 €	3 061.49 €	3 284.21 €	3 527.67 €	3 784.96 €	4 054.45 €	4 327.31 €

Values for each line calculated using the average of the periods between 2020-2022