Lisbon School of Economics & Management
Universidade de Lisboa

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PROJECT

EQUITY RESEARCH NOS SGPS SA: USER-BASED VS MAINSTREAM VALUATION

ALIN-ANDREI COJOCARU

JULY 2024

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SUPERVISOR:
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Abstract

This report performs an equity research on NOS S.G.P.S., S.A. and also includes an analysis on alternative methodologies of valuation based on customer/subscriber metrics. Namely, a User-Based Valuation adapted from Aswath Damodaran's paper "User and Subscriber Businesses: The Good, the Bad and the Ugly" and a Customer-Based Corporate Valuation based on Daniel McCarthy's & Fernando Pereda's paper "Assessing the Role of Customer Equity in Corporate Valuation: A Review and a Path Forward". The scope of this additional research was to provide a more accurate reflection on the company's value comparing traditional valuation methods and the possible applicability of the User Based valuation methods.

To value this company, a Sum-of-the-Parts approach was employed, where a discounted cash flow analysis was developed for each of the business segments (Telco & A&C).

The valuation generated a buy recommendation with a price target of €4.15/sh for 2024YE, with an upside potential of 27% from the January 12th, 2023, closing price of €3.27/sh, with a medium to low risk.

To support the base case of the report, other methods such as Relative Valuation, DDM and APV were applied.

JEL classification: G10; G32; G34; L96.

Keywords: Equity Research; Valuation; Mergers & Acquisitions, Telecommunications.

Resumo

Este relatório realiza um Equity Research sobre a NOS S.G.P.S., S.A. e também inclui uma análise de metodologias alternativas de avaliação baseadas em métricas de clientes/subscritores. Nomeadamente, uma User-Based Valuation adaptada do artigo de Aswath Damodaran "User and Subscriber Businesses: The Good, the Bad and the Ugly" e uma Customer-Based Corporate Valuation baseada no artigo de Daniel McCarthy & Fernando Pereda "Assessing the Role of Customer Equity in Corporate Valuation: A Review and a Path Forward". O objetivo desta pesquisa adicional foi fornecer uma reflexão mais precisa sobre o valor da empresa, comparando métodos tradicionais de avaliação e a possível aplicabilidade dos métodos de avaliação baseados nos subscritores da empresa.

Para avaliar esta empresa, foi empregue uma abordagem de Sum-of-Parts, onde uma análise de fluxo de caixa descontado foi desenvolvida para cada um dos segmentos de negócios (Telco & A&C).

A avaliação gerou uma recomendação de compra com um preço-alvo de €4,15/ação para o final do ano de 2024, com um potencial de valorização de 27% em relação ao preço de fecho de €3,27/ação a 12 de janeiro de 2023, com risco médio a baixo.

Para apoiar o caso base do relatório, outros métodos como Avaliação Relativa, DDM e APV foram aplicados

Classificação JEL: G10; G32; G34; L96.

Palavras-Chave: Equity Research; Avaliação de Empresas; Fusões e Aquisições; Telecomunicações.

Disclosures

A significant portion of the Appendices were submitted by a group of students from ISEG, including the candidate, for the 2024 CFA Institute Research Challenge Portuguese Local Final. The main work can be read independently of these Appendices, although they provide a better understanding of the analysis.

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Recommendation System

Level of Risk	SELL	REDUCE	HOLD/NEUTRAL	BUY	STRONG BUY
High Risk	0%≤	>0% & ≤10%	>10% & ≤20%	>20% & ≤45%	>45%
Medium Risk	-5%≤	>-5% & ≤5%	>5% & ≤15%	>15% & ≤30%	>30%
Low Risk	-10%≤	>-10% & ≤0%	>0% & ≤10%	>10% & ≤20%	>20%

AI Disclaimer

This master thesis/internship report/project was developed with strict adherence to the academic integrity policies and guidelines set forth by ISEG, Universidade de Lisboa. The work presented herein is the result of my own research, analysis, and writing, unless otherwise cited. In the interest of transparency, I provide the following disclosure regarding the use of artificial intelligence (AI) tools in the creation of this thesis/internship report/project:

I disclose that AI tools were employed during the development of this thesis as follows:

- AI-based research tools were used to assist in literature review and data collection.
- AI-powered software was utilized for data analysis and visualization.
- Generative AI tools were consulted for brainstorming and outlining purposes. However, all final writing, synthesis, and critical analysis are my own work. Instances where AI contributions were significant are clearly cited and acknowledged.

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I understand the importance of maintaining academic integrity and take full responsibility for the content and originality of this work.

Alin-Andrei Cojocaru, 30th June 2024.

Acknowledgements

I would like to extend my heartfelt thanks to the following individuals who supported me throughout the completion of this project:

To my team, thank you for all the hours you have invested in this work. For all the hours in the room. For the everything I've learned from you. And more important, for all the laughs and good times we have had together.
To Professor Victor Barros, thank you for your patience and the insightful inputs you provided. I thoroughly enjoyed having you as a professor and learning from you.
To Professor Tiago Gonçalves, thank you for giving me the opportunity to be part of the CFA Institute Research Challenge.
To António Calapez, thank you for allowing us to attend your classes and for clarifying our doubts.
To Nuno Estácio, thank you for all your ideas and insights on preparing an Equity Research.
To Ana Rita, thank you for sharing your insights and experiences from the CFA Research Challenge.
To all my colleagues from the Master's program, thank you for your camaraderie and support.
To my flatmates, thank you for always being there for me when I needed you and for making the house we live in such a joyful place.
To my manager at Aptoide S.A. – Patrícia Brigas, thank you for understanding my tiredness in the mornings and for your support throughout this journey.
To my friends Viegas, Daniela, and Inácio, thank you for helping me clear my head whenever I visited Portimão.
To my parents, thank you for all your support and for all the sacrifices you made during my journey of studying. Words won't ever be enough to thank you.

And finally, "*I want to thank me for believing in me. I want to thank me for doing all this hard work. I want to thank me for having no days off. I want to thank me for never quitting. I want to thank me for always being a giver and trying to give more than I receive. I want to thank me for trying to do more right than wrong. I want to thank me for being me at all times.*" – Calvin Broadus Jr.

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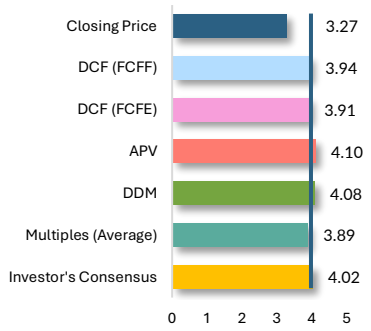
Figure 1 – Valuation Summary w/ Investor Consensus



Source: Team Estimates

User-Based VS Mainstream Valuation

Introduction

In previous chapters of this equity research a mainstream approach was used to value NOS. The results yielded strong results in line with investor expectations.

The rising significance of customer value in business valuation

In today's dynamic and highly competitive market landscape, the valuation of businesses increasingly hinges on their user base, subscribers, and customers. According Aswath Damodaran, the value of a company is fundamentally tied to its ability to attract and retain subscribers, particularly in sectors characterized by intense competition and rapid technological advancements (Damodaran, 2012) - Such as the Portuguese telecommunications one.
Subscribers not only represent a steady revenue stream but also provide valuable data and insights that can drive strategic decisions and innovation. The Telco sector exemplifies this trend, as companies leverage subscriber data to enhance service offerings, improve customer satisfaction, and stay ahead of competitors. Moreover, in an era where customers are more informed and have higher expectations, the ability to understand and meet subscriber needs is crucial for long-term success (McKinsey & Company, 2020). Thus, the emphasis on subscriber metrics is not just a reflection of current earnings, but a critical factor in predicting future growth and sustainability.

User-Based Valuation VS Mainstream Approaches

While traditional valuation methods have historically aided investors in decision-making, they often struggle to capture the full value of Telco companies. Traditional approaches heavily rely on broad financial metrics and insights, which are generally accepted due to their broad applicability across sectors. However, these macro-level methods often overlook the highly specific customer bases that vary significantly across different industries.

Financial Metrics Focus | Traditional methods prioritize financial metrics such as revenue, EBITDA, and net profit margins. While these provide a snapshot of a company's financial health, they fail to account for the detailed dynamics of customer acquisition, retention, and lifetime value, which are crucial in the Telco sector.

Sector-Agnostic Approach | These methods are designed to be broadly applicable across various industries, but this generality leads to a disregard for the unique revenue models and customer bases within specific sectors. For Telco companies, this oversight is particularly limiting given the peculiarity of the rules applied to customer contracts.

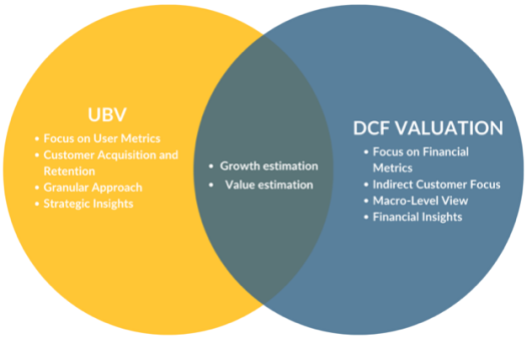
Telco companies generate revenue primarily through subscription models, where customers are charged a recurring monthly fee. This recurring revenue stream is similar to other sectors like streaming services and Software as a Service (SaaS), which also rely on regular subscription fees. This model ensures a steady and predictable income, contrasting with the one-time transactions seen in other business models. The recurring revenue generated by Telco business models, where the user is charged a monthly fee, provides stability and predictability which are often not adequately captured by the traditional valuation methods previously mentioned.
Other types of revenue-generating models further highlight the limitations of traditional valuation approaches:

Transactional Model | Revenue is generated from one-time purchases. This model's value is easier to capture with traditional methods due to the straightforward nature of transactions.

Freemium Model | Services are initially free, with charges for premium features. This model requires a deep understanding of user conversion rates and the lifetime value of premium subscribers, which traditional methods often overlook.

Project-Based Model | Companies earn revenue by charging for specific deliverables. This model's project-based nature means revenue is irregular and dependent on project completion or progress, making it challenging to assess with traditional methods.

Figure 2 – UBV vs DCF Valuation



Source: Author

Table 1 - Methodologies employed by banks in valuation of IPOs (sell-side)

Method	#
WACC	32
APV	0
FTE	1
EP	1
EV/EBIDTA	11
EV/SALES	26
EV/GP	2
P/E	5
EV/GMV	2
Real Options	1

Source: Daniel McCarthy & Fernando Pereda, 2020

Table 2 - Methodologies employed by banks in valuation of IPOs (sell-side) as % of total

Method	%
WACC	40%
APV	0%
FTE	1%
EP	1%
EV/EBIDTA	14%
EV/SALES	32%
EV/GP	2%
P/E	6%
EV/GMV	2%
Real Options	1%

User-Based Valuation

Despite the common acceptance of the importance customers play in a company's valuation as one of its biggest intangible assets the measurement lies in a grey zone in investor's valuation. For instance, looking at the S&P500 evolution of total value coming from intangible assets – 17% to 87% from 1975 to 2015 (Koivisto, 2018) one clearly identifies its major importance in the proper valuation of this element nowadays. Accurate customer value measurement empowers investors to clarify and guide the fair valuation of intangible assets, ultimately impacting on a firm's overall valuation. Still, the adoption of this methodology remains yet to be generalized outside academic purposes. **Table 1** shows the methodologies applied by banks in valuing IPOs. The results show that up to **61%** (42 valuations examined) rely on EBITA or Revenue multiples. The applicability of User-Based Valuation (UBV from now on) would imply that analysts would have to perform a separate calculation of CE (Customer Equity) and the proper adjustments to ensure the compatibility of using CE to obtain the shareholder value.
In company valuation, the goal is always to make projections that are as accurate as possible. Commonly, an investor would consider the Discounted Cash Flow (DCF), Price-to-Earnings (P/E) ratios, and Enterprise Value-to-EBITDA (EV/EBITDA) multiples. These methods, ratios, and multiples are widely used due to their versatility and ease of application across different types of businesses.
The UBV focuses on metrics directly related with the customer base of a company. Well, for NOS that has most of its revenues linked to subscriptions of its services the application of this method of valuation seems appropriate.

User-Based Valuation Issues

Traditionally, business are valued as a whole mainly due to lack of specific information. The highly competitive Portuguese Telco sector is no exception in regards to the disclosed information. The KPIs made public by the above companies fall short of what investors with access to public information require. It's paradoxical that firms, quick to boast about their user numbers and request pricing based on this, are reluctant to disclose user information that investors require to accurately assess their value.

Daniel McCarthy & Fernando Pereda, 2020 present a view of the CE that remains distant when compared to Shareholder Value. In normal conditions, and not considering agency issues, the management of a compay should constantly seek for actions that increase shareholder value. Despite being an important Valuation, the CE as presented by the authors falls short to defining it as a proxy to SHV. In summary, there are gaps between CE and SHV that one should account for.

Table 3– Gaps between CE and SHV

Gap	Consequence
Fixed Costs	Overinvest in capital projects and shun "asset lite" initiatives
	Undervalue companies/industries with lower fixed costs
NOA and net debt	Over-borrow and sell NOA to acquire customer assets
Non-constant taxes	Undervalue companies with high NOA and/or net cash
	Undervalue companies with large deferred tax assets
Working capital	Ignore cash flow conversion initiatives
	Undervalue companies with negative non-financial working capital
	Investors: incorrect absolute and relative company valuations
	Managers: incorrect capital allocation decisions

Source: Daniel McCarthy & Fernando Pereda, 2020

However, companies are increasingly focusing on the number of users, customers, and subscribers they have, both in their marketing to investors and in their business models. And so, the scope of the next chapter is to extend the intrinsic valuation method to value the company through it's customers.

According to Damodaran, one has 3 options:
1st | Adhere to traditional aggregated models, attempting to encapsulate the advantages of users and subscribers in terms of revenue growth and operating margin, and the user acquisition costs in reinvestment – Which was applied to our forecasting models presented before.
2nd | Calculate the value of a user or subscriber using fundamental principles of intrinsic value or conventional pricing methods, and then summing these up to determine the company's value. Since both methods present their benfits and the usage of one does not exclude the possibility of using the other Damodaran presents the third option:
3rd | A hybrid approach, maintaining the traditional method of forecasting aggregate figures, but linking those forecasts more directly to user numbers that mirror the business's economics, including user acquisition costs and anticipated user value.

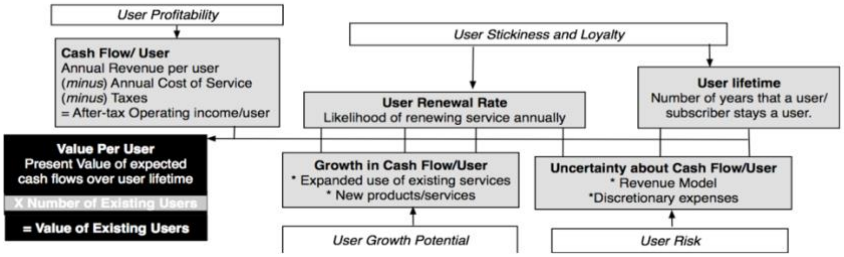
User-Based Valuation Process

As mentioned above, NOS is no exception in disclosing information to the general public. The very short KPIs publicly disclosed to the general investors fall short of what one would need to perform a thorough valuation. Still, there are numbers we can work on. For the UBV one should be able to accurately identify the number of customers the company has in it's subscriber base. Additionally, one should also be able to clearly identify the trends in User metrics performance such as Churn rates and capability of adding new customers.

There are 3 major steps in performing the valuation - Damodaran, A. (2018):

1 - Valuing Existing Customers

Figure 5 – Valuing Existing Users



Source: Damodaran, A. (2018)

The value of a subscriber in a business is determined by calculating the present value of the expected after-tax cash flows that the user will generate over their lifetime on the platform. This valuation process involves several key factors:
According to the above figure one should estimate User Profitability as the After-tax Operating income/user.

User Lifetime | This refers to the period during which a user remains active on the platform. This is due to factors such as technological advancements, competitive pressures, and changing user preferences which may reduce the effective lifetime of a user. For the Portuguese Telco market subscribers, the contracts are usually linked to a 2-year period of loyalty. Fines are applied for unjustified contract termination, so most users respect this 2-year period of loyalty.

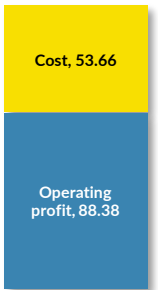
Renewal Rates | These rates measure the likelihood that users will continue their subscription or engagement with the company over time.

Current Cash Flow per User | This metric is derived by subtracting the costs associated with servicing the user from the revenue generated by the user.

Growth in Per-User Cash Flow | Over time, the cash flow generated from each user can grow if the company successfully sells additional products or services to the user. For instance, NOS Cash Flows per user are highly linked to Portuguese inflation.

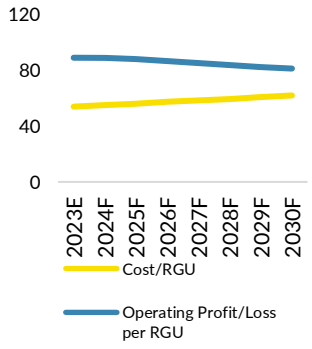
Risk in Cash Flow | The risk associated with future cash flows must be factored into the valuation. This involves assessing both the stability of renewal rates and evolution of churn. Luckily for our valuation, subscription models generally offer more predictable cash flows compared to other models, where revenue is dependent on the frequency and volume of transactions. To account for these risks, proper discount rates should be applied.

Figure 3 – Revenue / RGU Breakdown - 2023



Source: Author

Figure 4 – Evolution of Operating Profit VS Cost per RGU



Source: Author

Valuing Existing RGUs - NOS

To estimate key metrics for valuing existing users, particularly the Contract Survival Rate, data from NOS spanning 2014 to 2023 was utilized. Based on this data, an estimated Contract Survival Rate of **87%** was extrapolated for the year 2023. While NOS does not disclose actual numbers, they provide the churn rate as a percentage relative to previous years.

$$Churn\ Rate = \frac{Customers\ lost\ during\ the\ period}{Total\ Customers\ at\ the\ beginning\ of\ the\ period}$$

To arrive at the **87%** estimate, a method that leverages the net additions, calculated as new customers minus churned customers from one year, and the same figure from the subsequent year was applied. By analyzing the evolution of the churn rate, one is able to project the Contract Survival Rate effectively. This approach, despite the limited direct data provided by companies like NOS, allows for a reliable estimation of user retention over time. For the forecasted years, the Contract Survival Rate was compounded to reflect the cumulative effect of user retention over multiple periods.

Regarding the anticipated growth in Cash Flow per Subscriber, it is expected to align with inflation trends. The Portuguese telecommunications market is already highly saturated, as illustrated in **Figure 29**, which limits the potential for increasing sales of products and services to existing subscribers without raising prices. Additionally, NOS reported that as of 2023, convergent and integrated customers represent 67% of the total RGUs, and 93% of subscribers hold 4/5P bundles. This effect is reflected on the diminishing operating profit per RGU (**Figure 4**) as the market saturation blocks price hikes due to easily shifting customer dynamics. This further restricts the opportunity for upselling. More detailed information on this subject is provided later in the report.

The tax-rate is 22.5%, and the forecasted after-tax operating income is afterward discounted at the company's cost of capital.

The subsequent calculations are straightforward, resulting in a revenue of **€142.04** and a cost of **€53.66** per RGU in 2023. These values are assumed to remain steady over the projected years - **Figure 3**.

Ultimately, this method yields a final value of **€261.25** per RGU.

Table 4 – NOS's Value of Existing RGUs

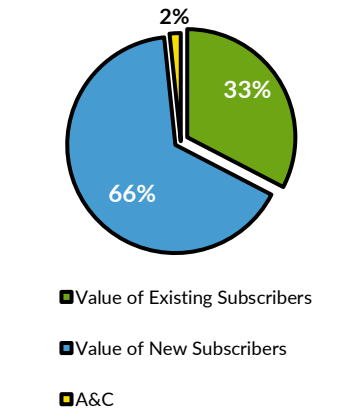
Value of Existing RGUs	2023E	2024F	2025F	2026F	2027F	2028F	2029F	2030F
Discount Factor	1.00	0.95	0.90	0.85	0.80	0.76	0.72	0.67
Contract Survival Rate	87%	76%	66%	58%	50%	44%	38%	33%
Inflation	5.4%	2.8%	2.3%	1.8%	1.7%	1.7%	2.0%	2.0%
Revenue Telco	1,564,502,192	1,608,308,253	1,645,299,343	1,674,914,731	1,703,388,282	1,732,345,882	1,766,992,800	1,802,332,656
Revenue / RGU	142.04	143.16	143.58	143.30	142.88	142.46	142.46	142.46
Cost/RGU	53.66	54.74	55.83	56.95	58.09	59.25	60.43	61.64
Operating Profit/Loss per RGU	88.38	88.42	87.75	86.35	84.79	83.21	82.02	80.81
Tax Rate	22.5%	22.5%	22.5%	22.5%	22.5%	22.5%	22.5%	22.5%
After-Tax Operating Income	59.68	52.02	44.98	38.57	33.00	28.22	24.23	20.80
Present Value (@ Cost of Capital)	59.68	49.24	40.29	32.70	26.47	21.42	17.41	14.04

Value per RGU	**261.25 €**
Number of RGUs	11,014,259
Value of Existing RGUs	**2,877,509,843 €**

Source: Author

2- Valuing New Subscribers

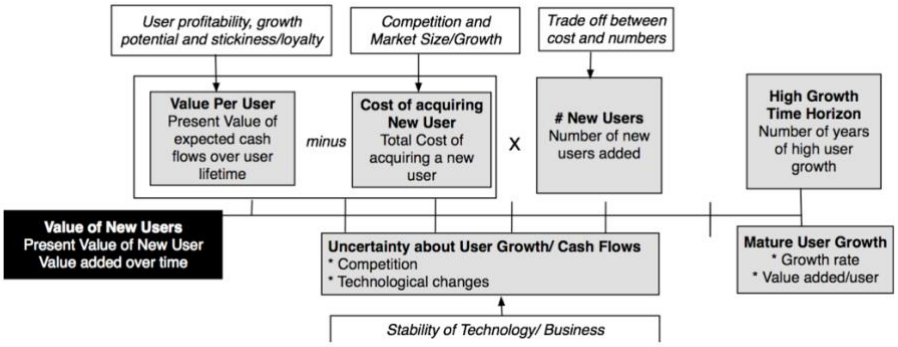
Figure 6 – UBV Valuation weights



Source: Author

Given the highly penetrated Portuguese Telco market, the addition of new subscribers is extraordinarily difficult if not for switching customers from competitors. Nevertheless, according to ANACOM 2023 report - O Sector das Comunicações 2023 – Portuguese consumers choose their operator based on price (1st factor) and reliability of service (2nd factor).
This two factors lead to a dynamic switch in consumer preferences for an operator and the net adds of a Telco company cannot be disregarded. As we will see forward New Customers will account for **~66%** of the valuation obtained from the UBV - **Figure 6**

Figure 7 – Valuing New Users



Source: Damodaran, A. (2018)

Here Damodaran points the following:

The value of a new user is influenced by the same factors as an existing user—cash flow, growth, and risk—but with 2 additional considerations:

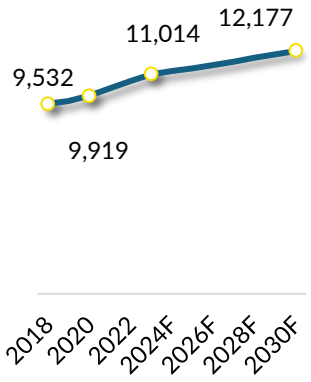
Cost of Acquiring a New User | Acquiring new users can be expensive, and this cost must be subtracted from the user's value. Additionally, the timing of acquisition matters; a user acquired in the first year is more valuable than one acquired in the fifth year due to the time value of money.

Added Risk | Some of this risk is specific to the firm and can be diversified away. However, macroeconomic factors that impact the number of new users can affect overall value. The valuation will be made until year 2030 when the entrance of 6G to the Telco market is expected to modify the actual dynamics of the sector.

Valuing New RGUs - NOS

When valuing the new RGUs, it is essential to calculate the net value generated by each RGU. This involves subtracting the cost of acquiring a new RGU from its expected value. The expected value per RGU is directly derived from the previously calculated value per RGU. The costs associated with adding a new RGU are determined by dividing the total Marketing and Advertising expenses by the number of RGUs added during the same period. This approach ensures that the net value of each new RGU accurately reflects both its revenue potential and the associated acquisition costs.

Figure 8 –Number of RGU Evolution



Source: Team estimates

The projected growth rate in RGUs was derived by first calculating the average growth rate over the past four years, which amounted to **2.94%**. This historical average provided a baseline for future projections.

Table 5 – RGU Historical Growth

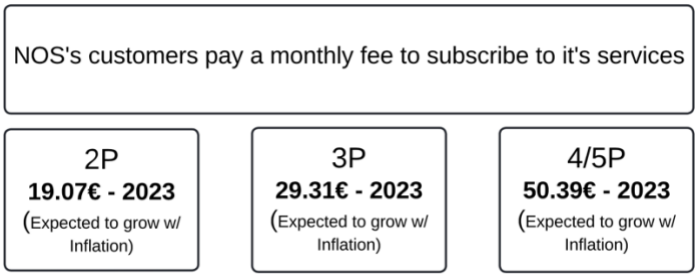
	2018	2019	2020	2021	2022	2023	Average
Total RGUs	9,532	9,676	9,919	10,305	10,782	11,014	-
yoy	-	*1.5%*	*2.5%*	*3.9%*	*3.5%*	*3.3%*	***2.94%***

Source: NOS Annual KPIs

However, to ensure a more accurate and realistic forecast, adjustments were made to account for anticipated future trends as identified by our team analysis yielding a **1.5%** growth. These adjustments involved discounting the historical average growth rate in accordance with the latest observed trends and market conditions, resulting in a more refined estimate for the growth in RGUs.

Historically, NOS has experienced robust RGU growth driven by expanding market penetration and customer acquisition strategies (expect in 2020 where COVID-19's impact is clear and in 2021 which represent the rebound of the pandemics effect on the market). However, recent market saturation trends indicate a plateauing effect, where the pool of potential new customers diminishes, and the focus shifts towards extracting greater value from existing ones. This market saturation undermines the possibility of keeping so high RGU growth without entering in a price battle with the competitors.
Furthermore, the projected growth of **1.5%** acknowledges the strategic orientation toward maximizing revenue from the existing customer base. This strategy prioritizes up-selling initiatives which represent one of the companies' targets. By concentrating efforts on enhancing service offerings and promoting bundled packages the company focuses on shifting its customer base to the one with higher ARPU. Still, this strategy comes with the issues mentioned previously in the report. The difference in bundles prices can be found below:

Figure 9 – NOS's Bundled Offers



Source: Author calculation based on ANACOM 2023 report

It is worth noting that the "New RGUs" presented below do represent the additions of the period but the presented number of "Total RGUs" does account for: $Total\ RGUs_{N+1} = Total\ RGUs_N - Churned\ RGUs_N + Added\ RGUs_N$

Table 6 – NOS's Value of New RGUs

Value of New RGUs		2023E	2024F	2025F	2026F	2027F	2028F	2029F	2030F
Discount Factor		1.00	0.95	0.90	0.85	0.80	0.76	0.72	0.67
Inflation		5.40%	2.80%	2.30%	1.80%	1.70%	1.70%	2.00%	2.00%
Value per new RGU (as of Today's €)	261.25 €								
Cost of Acquiring a New Subscriber	147.41 €								
Total RGUs		11,014,259	11,179,473	11,347,165	11,517,372	11,690,133	11,865,485	12,043,467	12,224,119
New RGUs			1,438,719	1,460,300	1,482,205	1,504,438	1,527,004	1,549,909	1,573,158
Value per Subscriber	113.84 €	114 €	117 €	120 €	122 €	124 €	126 €	129 €	131 €
Value added by New Users			82,994,614	87,026,077	90,807,360	94,659,862	98,675,807	103,165,556	107,859,589
TV									1,706,957,174
Terminal Value (New Subscribers)			78,548,658	77,951,532	76,980,372	75,945,983	74,924,809	74,134,730	1,224,432,871
Value Added by New RGUs		**3,389,876,127 €**							

Source: Author

Table 7 – Costs of Servicing Existing RGUs - 2023

Direct Costs	396,658,904
Cost of Products Sold	101,210,856
Support services	93,199,679
Total	**591,069,439**

Source: Team estimates

Table 8 – Costs of Attracting new RGUs - 2023

Marketing and advertising	37,807,000
Total	**37,807,000**

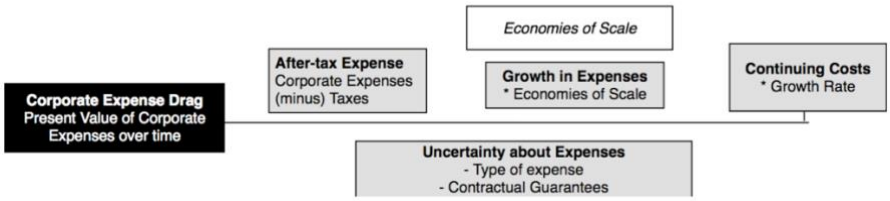
Source: Team estimates

Table 9 – Non-user related costs - 2023

Operating Costs	863,504,500
Costs of Servicing Existing Users	-591,069,439
Costs of Attracting New Users	-37,807,000
Total	**234,628,061**

Source: Author

Figure 10 – Corporate Expense Drag



Source: Damodaran, A. (2018)

These costs may include various operating expenditures unrelated to consumers as well as the typical G&A costs observed in most businesses. To guarantee that the final valuation appropriately reflects the company's genuine value, these expenses must be assessed and considered. In a similar way, a host of costs unrelated to maintaining current customers or attracting new ones must also be factored into the valuation process when determining the worth of user-based businesses.

Corporate Expense Drag

To determine the non-user-related costs for 2023, we subtracted the costs incurred from servicing existing users and acquiring new users from the total operating expenditures.

Costs for Servicing Existing RGUs | These costs include direct costs, costs of products sold, and support services, totaling **591,069,439 €** – **Table 7**
Costs for Adding New RGUs | These costs are associated with marketing and advertising, amounting to **€ 37,807,000.** – **Table 8**

By subtracting the combined total of these user-related costs (€591,069,439 for servicing existing users and €37,807,000 for acquiring new users) from the overall operating expenses, we derived the non-user-related costs for 2023, which amount to **€ 234,628,061**.

Given that these costs pertain to expenses such as wages and salaries, it is logical to link them to inflation to provide a more accurate forecast. By adjusting these expenses for inflation, one ensures that the projections remain realistic and reflect expected economic conditions.

Table 10 – Value of Drag Expenses

Value of Drag Expenses	2023E	2024	2025	2026	2027	2028	2029	2030
Discount Factor	1.00	0.95	0.90	0.85	0.80	0.76	0.72	0.67
Inflation	5.4%	2.8%	2.3%	1.8%	1.7%	1.7%	2.0%	2.0%
Costs non-User Related	234,628,060	241,197,646	246,745,192	251,186,606	255,456,778	259,799,543	264,995,534	270,295,445
After-Tax (22.5% Tax Rate Applied)	181,836,747	186,928,176	191,227,524	194,669,620	197,979,003	201,344,646	205,371,539	209,478,970
TV								3,101,371,027
Present Value (@ Company Cost of Capital)	181,836,747	176,914,581	171,287,492	165,027,809	158,839,340	152,881,538	147,579,911	141,332,691
Value Drag of Corporate Expenses	**4,393,689,500**							

Table 11 –UBV Valuation Summary

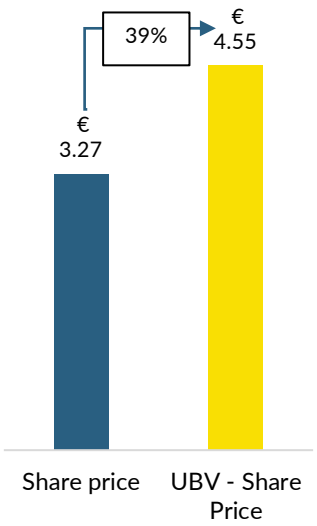
Value of Existing Subscribers	2,877,509,843
Value of New Subscribers	5,764,879,623
PV of Corporate Drag	-4,393,689,500
A&C Component	146,406,797
Total	**4,395,106,762**

Source: Author

For the Valuation to be complete, the A&C component has to be added.

Despite incorporating telecommunications expenses and revenues in the RGU value computations, the FCFF from the A&C segment must still be included to achieve a complete and comprehensive target price for NOS SGPS. This methodology ensures that the valuation reflects the entire value proposition of NOS SGPS, providing investors with a complete and reliable assessment of the company's share value.

Figure 11 –UBV Valuation delta



Source: Author

UBV Results

Table 11's total represents the Enterprise value given by the UBV. By applying the same adjustments presented in **Appendix 11** one reaches an Equity Value of **€ 2,344,438.42** and a share price of **€ 4.55** that represents an upside from the actual price of **39%**.

NOS CBCV (Customer-Based Corporate Valuation)

In **Error! Reference source not found.**, one can find the literature review made by Daniel McCarthy & Fernando P ereda on the methodologies applied for CE valuation. After applying Damodaran's approach to the User-Based Valuation one can infer that the valuation was a proxy of Gupta, Lehmann, and Stuart (2004) valuation.
Given the controversy presented before, regarding its validity due to factors from **Table 3** the natural step forward is to apply the Valuation proposed by the authors (Daniel McCarthy and Fernando Pereda).

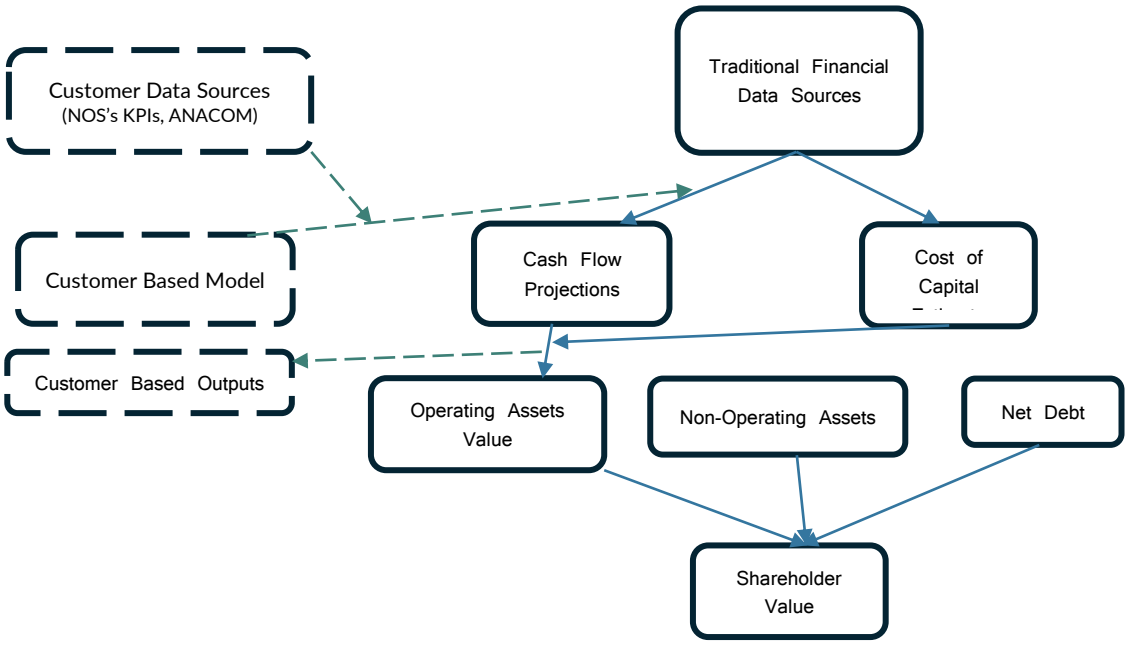
In addition to the before mentioned criticisms, there are several other concerns related to Customer Lifetime Value (CLV), particularly when applied as Value per RGU:

Assumption of Homogeneity | CLV calculations often assume homogeneity among subscribers, failing to account for the diverse behaviors and values of different subscriber segments. This oversight can lead to strategies that do not effectively address the varying needs and potentials of distinct customer groups.

Overlooking Market Dynamics | CLV models may not adequately incorporate the dynamic nature of the market. Important factors typically considered in a DCF analysis, such as changes in consumer preferences, competitive actions, and overall market conditions, might be overlooked. This can result in CLV estimates that quickly become outdated and less reliable.

In the next section the objective is to adapt the customer-based valuation into the DCF-FCFF performed previously to account for the challenges previously mentioned.

Figure 12 – Integration of CBCV into traditional DCF-based valuation methods



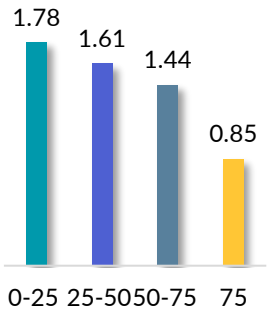
Source: Adapted from Daniel McCarty & Fernando Pereda, 2018

From CE to CBCV

CBCV combines the customer-centric approach of Customer Equity (CE) with traditional corporate valuation methods. It addresses challenges associated with CE-based approaches while retaining their customer-focused spirit. This Customer-Based Corporate Valuation forecasts key financial metrics (such as revenue) based on period-by-period customer behavior projections. In addition to the traditional valuation models these projections enhance cash flow forecasting by enhancing the focus on customer metrics.

From the previous User-Based valuation, in the CBCV the assumption of Homogeneity will be waived as a more granular approach will be used to value each type of RGU. With the Customer Based Model inputs into the Cash Flow Projections, *ceteris paribus* in the model the second issue previously mentioned can, as well, be waived.

Figure 13 – Ratio of CLV for Subscription VS Non-Subscription Customers by prices in EUR.



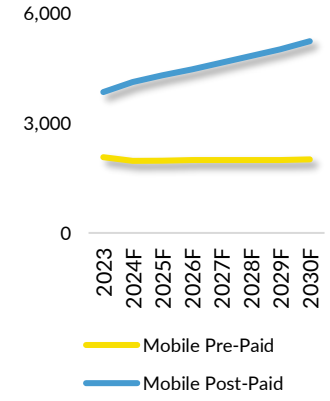
Source: Daniel McCarthy & Fernando Pereda, 2020

Table 13 – NOS RGU Price in EUR (2023)

Mobile Pre-Paid	7.50
Mobile Post-Paid	7.50
Pay TV Fixed Access	34.49
Pay TV DTH	34.49
Fixed Voice	10.49
Broadband	24.99
Others and Data	19.91

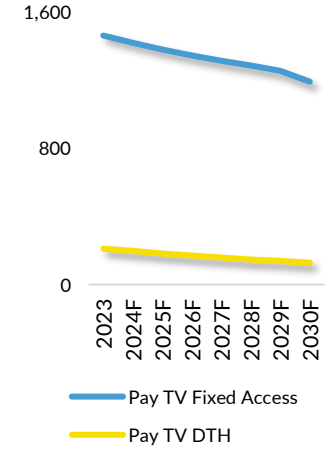
Source: ANACOM

Figure 14 – Mobile RGU Evolution



Source: Author

Figure 15 –PAY TV Evolution



Source: Author

Estimating the RGUs Growth

The estimates applied before for RGU growth remain applicable for this section. Still, we now dive into a more granular approach by estimating the RGU evolution by each type reported by the company:

Table 12 – RGU Forecasted Evolution

RGUs ('000)	2023E	2024F	2025F	2026F	2027F	2028F	2029F	2030F
Mobile Pre-Paid	2,069	1,969	1,976	1,983	1,989	1,993	1,997	2,001
Mobile Post-Paid	3,848	4,129	4,297	4,469	4,646	4,827	5,012	5,238
Pay TV Fixed Access	1,460	1,416	1,377	1,343	1,313	1,286	1,252	1,189
Pay TV DTH	210	196	183	170	159	147	137	128
Fixed Voice	1,822	1,845	1,869	1,882	1,893	1,899	1,908	1,915
Broadband	1,552	1,565	1,578	1,596	1,608	1,621	1,635	1,639
Others and Data	54	60	67	74	83	92	103	114
Total	**11,014**	**11,179**	**11,347**	**11,518**	**11,690**	**11,865**	**12,043**	**12,224**

Source: Author

For each type of RGU, the Portuguese telecommunications regulator, ANACOM, provides a quarterly update on the prices charged by market players. These prices (**Table 13**) were used to compute the revenue generated from each RGU, with their yearly evolution linked to inflation indicators. Below is an analysis of the expected trends for each type of RGU:

Mobile | The evolution of Mobile RGUs is expected to increase in 2024, based on already disclosed information. The mobile segment is set to experience continued growth in 2024, primarily driven by the Mobile Post-Paid segment. The demand for mobile services remains strong, with consumers increasingly favoring post-paid plans due to their perceived value and bundled offerings. Although growth is expected to continue, it will likely decelerate in the long term. Market saturation and competitive pressures will contribute to this trend. Also, the gap between post-paid and pre-paid subscriptions will widen further. This shift is driven by consumer preferences for the stability and benefits offered by post-paid plans, such as better data packages and added services.

Pay TV | Pay TV RGUs are on a declining trajectory, a trend that is expected to persist before stabilizing. The decline is more pronounced in the Fixed Access (-3% annually) and DTH (-6.74% annually) segments. The decrease in traditional Pay TV subscribers can be attributed to the rise of over-the-top (OTT) streaming services and changing consumer viewing habits, with more people preferring on-demand content or alternatives.

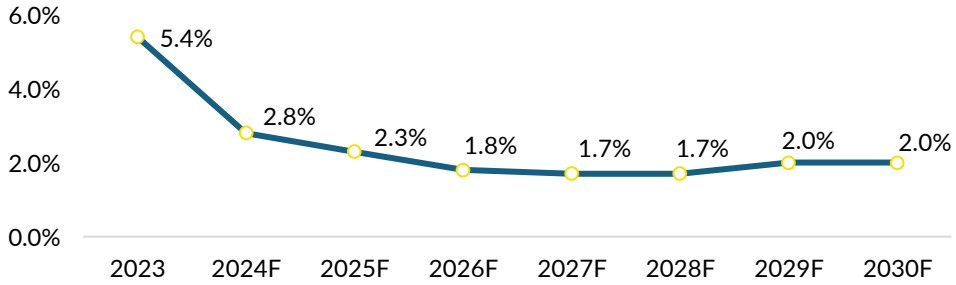
Fixed Voice | Fixed Voice RGUs have exhibited stable growth (0.83% annually) and this trend is expected to continue. This stability is largely due to Fixed Voice being a mandatory component in 4P & 5P Bundles. The inclusion of Fixed Voice in bundled services ensures a steady user base, even as standalone Fixed Voice services may see declining demand. Fixed Voice services remain important for certain demographics, particularly older consumers, and businesses, which helps maintain its relevance.

Broadband | Broadband RGUs have shown consistent growth, averaging 2.39% in recent years. The market is highly penetrated, yet there is still room for growth, particularly in rural areas and through upgrades to higher-speed plans. As the market reaches higher levels of penetration, the growth rate is expected to slow down to around 1.1% by 2030 and the continued investment in fiber-optic networks and 5G technology will support this sustained growth, as consumers and businesses demand faster and more reliable internet connections.

Other and Data | The Other and Data RGU segment is becoming increasingly significant, driven by the rise in B2B services and the growing demand for data-centric solutions. The trend of digitalization in SMEs and the requirements for more sophisticated data services are expected to sustain the high growth in this type of RGU.

Next, the revenue generated by each RGU is estimated based on the forecasted number of RGUs times its price which is expected to increase on an annual basis according to the inflation.

Figure 16 – Forecasted Inflation



Source: EIU – Economist Intelligence Unit

Table 14 – Annual RGU Revenue generated by RGU.

Annual RGU Revenue ('000 €)	2023E	2024F	2025F	2026F	2027F	2028F	2029F	2030F
Mobile Pre-Paid	14,896	14,573	14,965	15,285	15,589	15,891	16,239	16,730
Mobile Post-Paid	27,707	30,561	32,536	34,450	36,419	38,482	40,759	43,314
Pay TV Fixed Access	604,173	602,457	599,488	595,117	591,552	589,232	585,245	567,102
Pay TV DTH	86,985	83,391	79,557	75,528	71,632	67,367	64,081	60,956
Fixed Voice	18,345	19,100	19,794	20,287	20,757	21,175	21,697	22,216
Broadband	37,230	38,591	39,807	40,991	42,001	43,070	44,297	45,298
Others and Data	12,807	14,668	16,717	18,960	21,483	24,341	27,660	31,433
Total	**802,143**	**803,341**	**802,863**	**800,619**	**799,433**	**799,559**	**799,979**	**787,048**

Source: Author

For the above estimation, some considerations have to be taken into account. Namely, the revenue for Mobile, Fixed Voice and Broadband have been deducted by **92%**. This happens due to the % of convergent subscribers which by adhering to bundles are able to pay less than the sum of all products. Theses component + the total revenue from the 4/5P Bundles is summed below to the calculation:

Table 15 – Annual RGU Revenue generated by 4/5P bundles + Total.

Annual RGU Revenue ('000 €)	2023E	2024F	2025F	2026F	2027F	2028F	2029F	2030F
4P Price	58.99	59.43	60.80	61.89	62.94	64.01	65.29	66.60
5P Price	64.99	65.47	65.64	65.48	65.27	65.05	65.02	65.00
4P Revenue	201,157	235,550	259,006	281,116	332,420	351,796	370,591	397,069
5P Revenue	221,617	259,509	279,643	297,444	344,694	357,490	369,057	387,517
TOTAL RGUs Revenue	**1,224,918**	**1,298,400**	**1,341,512**	**1,379,178**	**1,476,547**	**1,508,845**	**1,539,627**	**1,571,635**

Source: Author

The incorporation of bundle revenues is an important step to reflect the bundling efforts of the company. By subscribing to bundled services, subscribers have access to lower prices the total sum of each component. Given that 93% of NOS's customer base subscribes to convergent 4P,5P bundles. By adjusting the high percentage of convergent customers, the revenue provides a clearer picture of the true revenue generation.

Cost metrics

Table 16 – Detailed cost of adding the RGUs

Cost of Adding the RGUs ('000 €)	2023E	2024F	2025F	2026F	2027F	2028F	2029F	2030F
Mobile Pre-Paid	0	0	1,369	1,227	1,082	907	705	697
Mobile Post-Paid	30,024	33,773	30,444	32,080	33,948	35,365	35,706	38,869
Pay TV Fixed Access	4,144	0	0	0	0	0	0	0
Pay TV DTH	0	0	0	0	0	0	0	0
Fixed Voice	1,480	2,804	4,351	2,371	2,197	1,140	1,671	1,261
Broadband	3,222	1,553	2,360	3,385	2,309	2,611	2,597	713
Others and Data	191	736	1,235	1,413	1,627	1,840	2,022	2,014
Total	**39,060**	**38,866**	**39,760**	**40,475**	**41,163**	**41,863**	**42,700**	**43,554**

Source: Author

The costs of Marketing & Advertising above are split by the Net Adds of RGU which is an important metric extracted to analyze the efficiency and effectiveness of this expenditures. According to the forecasted Marketing & Advertising costs and the expected Net Adds of RGUs indicate the strategic priorities of the company in the future, with a strong focus on Mobile Post-Paid and emerging data services, while traditional segments like Pay TV see reduced or no investment.

DCF – FCFF with CBCV

FCFF TELCO	2022	2023E	2024F	2025F	2026F	2027F	2028F	2029F	2030F	TV
Revenues		**1,224,918**	**1,298,400**	**1,341,512**	**1,379,178**	**1,476,547**	**1,508,845**	**1,539,627**	**1,571,635**	**1,571,635**
OPEX (including provisions)		804,852	825,899	850,380	857,251	863,275	867,749	874,476	881,144	881,144
EBITDA		**420,066**	**472,501**	**491,132**	**521,927**	**613,272**	**641,095**	**665,151**	**690,491**	**690,491**
D&A		-409,698	-403,346	-393,327	-379,683	-364,264	-359,379	-358,603	-357,689	-357,689
EBIT		**10,368**	**69,155**	**97,805**	**142,244**	**249,008**	**281,717**	**306,548**	**332,802**	**332,802**
Taxes		-40,166	-43,105	-44,360	-47,475	-49,629	-48,675	-47,015	-45,258	-45,258
NOPAT		**-29,798**	**26,051**	**53,445**	**94,769**	**199,379**	**233,042**	**259,533**	**287,544**	**287,544**
+ D&A		409,698	403,346	393,327	379,683	364,264	359,379	358,603	357,689	
- Change in NWC		60,831	6,208	2,245	-1,259	-1,796	-3,608	-2,884	-3,018	
- Capex		372,452	366,678	357,570	345,167	331,149	326,708	326,003	325,172	
Reinvestment Value = (CAPEX - D&A + DNWC)										-35,535
FCFF		**-53,384**	**56,511**	**86,957**	**130,544**	**234,290**	**269,320**	**295,017**	**323,079**	**252,009**
WACC		5.66%	5.66%	5.66%	5.66%	5.66%	5.66%	5.66%	6.51%	6.51%
Discount Factor		0.95	0.95	0.90	0.85	0.80	0.76	0.72	0.67	0.67
Telco Discounted FCFF			**53,483**	**77,890**	**110,668**	**187,974**	**204,498**	**212,002**	**217,980**	**3,117,183**
Telco Enterprise Value	**4,181,678**									

Source: Author

For the below NOS Enterprise Value, one should also consider the previously computed FCFFs from the A&C business which have been computed in **Appendix 11**.

Table 17 – Adjustments EV – Equity Value

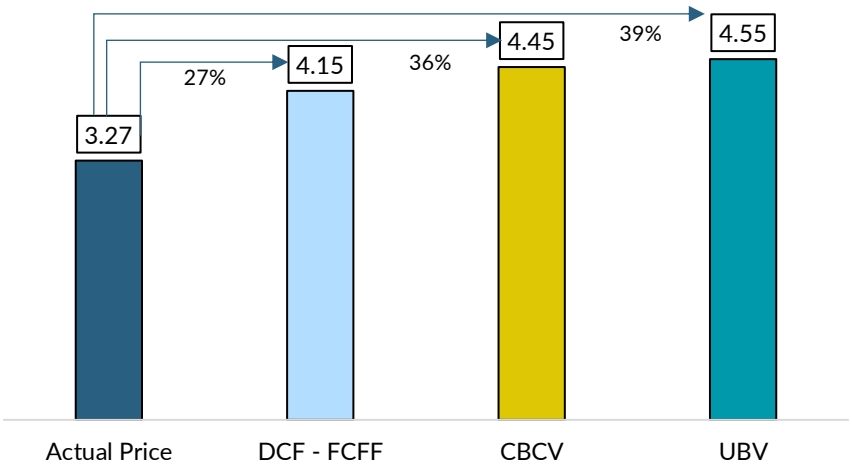
NOS Enterprise Value	4,328,079
Adjustments from EV to Equity Value	
Noncontrolling interests	-6,251
Cash & Equivalents	15,783
Debt	-1,706,678
Provisions and Contingent Liabilities (revised)	-99,842
Net Accounts Receivable - trade	107,332
Other financial undertakings	-361,012
Equity Value	2,277,410
Share Price	**€ 4.45**
Nos SGPS SA (XLIS: NOS)	**€ 3.27**
Upside	**36.19%**

Source: Author

Summary

In this equity research on NOS S.G.P.S., S.A. two similar valuation methodologies were applied: the user-based valuation approach by Aswath Damodaran and the Customer-Based Corporate Valuation (CBCV) approach developed by Daniel McCarthy. The results from these methodologies highlighted a convergence between their target price, with Daniel McCarthy's approach aligning closely with the investor consensus. Still, both indicated a substantial upside potential. The fact that these valuation methods account for detailed customer metrics can result on the higher valuation when compared to the DCF-FCFF given that the underlying assumptions are positive for the company. Next, the comparison in target prices and detailed comparison between methods:

Figure 17 – Price target summary



Source: Author

The DCF-FCFF model provides a target price of **€ 4.15**, which is moderately above the current market price of **€ 3.27**. This model, traditionally employed in corporate finance, projects future cash flows and discounts them to present value, considering the overall financial health and growth prospects of the firm. However, it may lack granularity in capturing the nuances of customer behavior and market dynamics, as it often relies on broader financial metrics.

In contrast, both the CBCV and UBV models yield higher valuations of **€ 4.45** and **€ 4.55**, respectively. These customer-centric models emphasize the importance of customer behavior, retention, and lifetime value, offering a more granular perspective on revenue and cash flow projections. Despite their optimistic outcomes, these models stay close to each other, underscoring their reliability in capturing customer-related dynamics.

Customer-Based Corporate Valuation (CBCV):

The CBCV model addresses the limitations associated with traditional CE-based approaches by incorporating customer behavior projections into the cash flow forecasting process. By waiving the assumption of homogeneity and applying a more granular approach, the CBCV model provides a more accurate reflection of varying subscriber segments' behaviors and values. This enhances the precision of cash flow forecasts and makes the model more robust against market dynamics.

UBV:

Similarly, the UBV model by Damodaran leverages customer-centric metrics to derive its valuation. It is noteworthy that the UBV model yields a slightly higher target price than the CBCV, but both are significantly higher than the DCF-FCFF valuation and the current market price.

Comparative Analysis:

The consistency between the CBCV and UBV valuations highlights the reliability of user-based approaches in capturing the intrinsic value of customer relationships. Despite being higher than the DCF-FCFF valuation, the proximity of CBCV and UBV results indicates a robust agreement in their methodology and assumptions.

The discrepancy between the market price of **€ 3.27** and the higher valuations provided by CBCV (**€ 4.45**) and UBV (**€ 4.55**) suggests that the market may not fully appreciate the value embedded in customer relationships and future cash flows derived from them. However, it is essential to recognize that these models assume certain continuities in customer behavior and market conditions, which may not be fully captured in market prices that also factor in broader economic and market uncertainties.

Final Thoughts

The analysis underscores that user-based valuation models (CBCV and UBV) offer a higher and closely aligned valuation for NOS compared to the traditional DCF-FCFF model. This alignment between the CBCV and UBV models demonstrates their efficacy in capturing the intrinsic value derived from customer relationships. While the market price remains below these valuations, the user-based models provide a compelling argument for a more optimistic outlook on NOS's future financial performance, driven by customer-centric metrics. However, these valuations must be considered alongside broader market conditions and uncertainties by investors.

Paths for Future Development of User-Based Models

Enhanced Customer Segmentation | The utilization of machine learning algorithms to segment customers based on behavior data, subscription and un-subscription patters can lead to a more accurate projection of the Value of each type of RGU.

Impact of Market Dynamics on CLV | The development of models that incorporate changes in consumer preferences, and market dynamics could highly improve the accuracy of User-Based Valuations – This case is of high interest for the Portuguese Telco companies at this moment given the expected entrance of DIGI into the market.

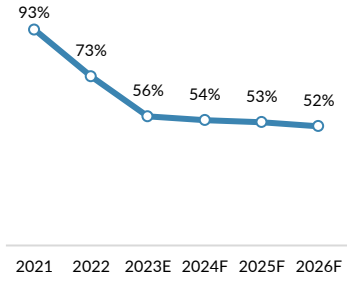
Appendix A: NOS' Equity Research Equity Research

Table 18 - NOS.LS Overview

Company Name	NOS SGPS, S.A.
Price Target (2024YE)	**€4.15**
Upside	**27%**
Closing Price (Jan 12, 2024)	€3.27
Stock Exchange	Euronext Lisbon
Industry	Telecommunication
Ticker (Refinitiv)	NOS.LS
52w Price Range (€)	3.13 – 4.46
Average Volume (Th)	466,178
Shares Outstanding	511M
Market Cap (Jan 12th, 2024)	1.69B
Free Float	36%
Dividend Yield	8.5%

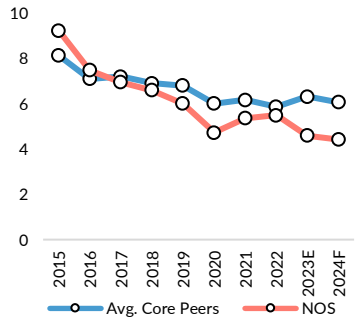
** As of January 12th*
Source: Team Estimates, NOS' data, Refinitiv

Figure 18 - CAPEX/EBITDA



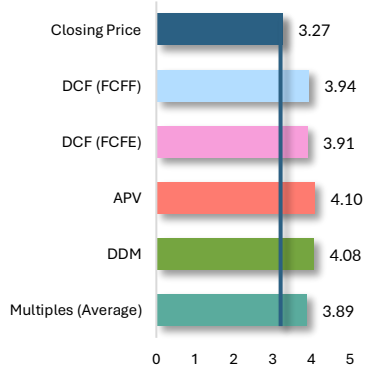
Source: Team Estimates

Figure 19 – EV/EBITDA



Source: Refinitiv

Figure 20 – Valuation Summary



Source: Team Estimates

NOS: Disconnected From Its Value

NOS, a key player in the Portuguese Telecommunications Market, is renowned for its commitment to delivering state-of-the-art technology solutions aimed at enhancing customer connectivity. With a dedication to ongoing innovation, the company is positioned to tackle future challenges, driving an upward trajectory in its share price.

Investment Summary

We are starting our report on NOS SGPS, S.A., a key player in the Portuguese telecommunications landscape, with a **BUY** recommendation based on a price target of **€4.15/share** for 2024YE using a DCF model. The forecasted price implies a **27%** upside potential from January 12th, 2024, closing price of €3.27/sh (Table 18) with a medium-low risk. Our recommendation is based on three main pillars.

PILLAR 1 | Free Cash Flow to pick up as Capex Normalizes

NOS has recently finished a significant investment phase, focusing on the rollout of Fiber and 5G networks. The total Capex from 2019 to 2022 amounted to **€1.74 billion**, with an average of **€495 million per year**, not considering the unusual year of 2020. Now that most of this expansion is complete, we anticipate that Capex will slowly move towards a long-term steady state of **€350 million**. The generation of cash flow will enable distributions without risking the company's financial stability. Since 2019, shareholders have been receiving a constant return of **€0.27 per share**. As Capex stabilizes, we foresee an increase in NOS' payout by an additional **€0.055 per share**, which could potentially increase the dividend yield by **150 basis points**. Our projections of Capex to EBITDA ratio support this expectation (**Figure 18**).

PILLAR 2 | Room to Entry but Bundles Make the Market!

Digi's entry into the Portuguese market, dominated by three key players, has been overestimated according to our analysis. The market's oligopolistic nature, high service penetration, and preference for bundled services pose significant barriers for new entrants. Digi targets a niche segment of internet-only consumers, a small part of NOS's business. Despite regulatory efforts to increase competition, Portuguese consumers prefer established local companies. Take NOWO as an example, a Spanish company, that despite having lower prices, only secured a 3% market share, indicating limited impact on the big three players' market share.

PILLAR 3 | Attractive Valuation vs. Peers

Using a DCF model grounded on the Free Cash Flow to the Firm (FCFF) and a Sum-of-Parts (SoP) approach, we have arrived at a price target of **€4.15 per share** for NOS. This represents a potential upside of **27%**, which is significant considering the average cost of equity capital faced by investors is **8.4%** Currently, NOS's trading value is considerably lower than its peers' average, which strengthens our recommendation to buy. Prior to the COVID-19 pandemic, NOS's trading multiples were consistently at or slightly above its peers. However, it now trades at a **19% discount** (as shown in **Figure 19**). The A&C segment, which accounts for approximately **7% of the total revenue**, has raised some concerns. However, given that the company has already surpassed its pre-pandemic numbers we expect a recalibration of the company's multiples.
Our valuation based on the 2024 forecasted EV/EBITDA suggests a price target of **€4.59 per share**. Meanwhile, the average of the four multiples we evaluated indicates a price target of **€3.89 per share**. Alternative valuation methods summary can be found in **Figure 20**.

OUTLOOK | Market and NOS Forecasts

High market penetration (**Figure 29**) suggests that the primary growth driver for traditional Telcos will be inflation-linked pricing, complemented by advancements in new technologies. Capex remains crucial for the Telco sector to avoid obsolescence. Although NOS experienced peak Capex in recent years, there will be a deceleration with anticipated rebounds in the long term.
Bundles are expected to remain foundational in the sector, with consumers increasingly seeking comprehensive packages, including 4 or 5 products, over lower-cost options with limited features. Our projections indicate a continued rise in the adoption of these services, currently comprising approximately **55%** of total market bundles. This figure is expected to increase by **550 basis** points by the end of the decade. NOS is well-positioned to capitalize on this trend, having focused on expanding its base of convergent customers compared to those opting for low-cost alternatives. This strategic shift has significantly improved NOS's EBITDA margin, which rose by **300 basis** points from its 2018 value to **42.8%** in 2023E. For the period from 2024F to 2030F, the margin is forecasted to stabilize around **43.3%**. In contrast, competitors' average EBITDA margin stands at **37.4%**. The market is expected to move towards more comprehensive bundles, with NOS positioned as a leader in this transition.

Risks to achieve Price Target

NOS is expected to generate strong cash flows while maintaining a solid market position. However, risks arise from the relaxed entry requirements for new competitors and the possibility of sudden regulatory changes, as well as the dynamics inherent in the tech industry. Established competitors like Vodafone and Altice may threaten NOS's market share and profit margins, although market volatility in these areas has been minimal. Governance risks are associated with ZOPT's stake, but so far, there have been no issues affecting NOS (**Table 23**). Additionally, potential geopolitical events that impact the macroeconomic environment, along with the increasing threat of cyber-attacks, should be considered. Despite these risks, various stress tests indicate that NOS remains a stock with a buy rating (**Appendix 16**).

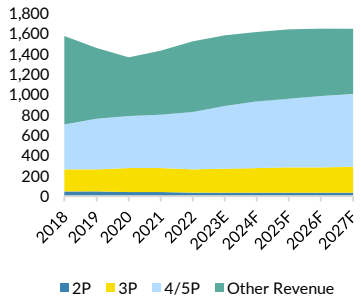
Table 19 - Abbreviations

FttH	Fiber-to-the-Home
IoT	Internet-of-Things
RGU	Revenue Generating Unit
M2M	Machine to Machine
MVNO	Mobile Virtual Network Operator
GHG	Greenhouse Gas
OTT	Over-the-Top
VoIP	Voice Over internet Protocol
WISPs	Wireless Internet Service Providers

Figure 21 – Stock Evolution

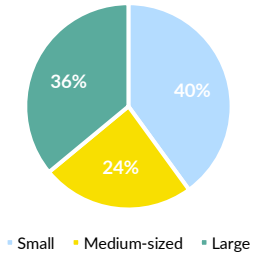
Source: Refinitiv, Team Analysis

Figure 22 –Revenue Breakdown (Bundles and Other Revenue)



Source: NOS' data, Team Estimates

Figure 23 – B2B Revenue Sources



Source: NOS' data

Business Description

NOS, S.G.P.S., S.A. (NOS.LS), a prominent Telco firm in Portugal, provides a range of services including Fixed Pay TV, Fixed Voice, Fixed Broadband, Mobile, IoT, and Data Management. These constitute about 92.3% of its estimated 2023 revenue, with the rest coming from A&C, Audiovisuals, and Cinema.

NOS was established in 2013 through the merger of ZON and Optimus, two significant players in the telecommunications sector. ZON Multimedia, primarily owned by Isabel dos Santos, specialized in cable TV, internet, and landline services. Optimus, a Sonae group company, was a major mobile operator.

The merger was strategic, capitalizing on the trend of convergent offers in the industry. ZON led in Fixed Pay TV, while Optimus had a significant mobile presence but lacked TV. The merger allowed NOS to offer a comprehensive portfolio of fixed and mobile services, meeting market demand for bundled services.

The strategy was successful, with 89% of customers for their first integrated package, ZON4i, coming from the existing Fixed Pay TV subscriber base. This marked NOS's growth in the mobile segment, increasing its market share from 18% in 2013 to 28.9% in 3Q2023.

Recently, NOS has focused on implementing 5G technology. In 2020, it sold its tower management business, NOS Towering, to Cellnex for an initial payment of €375M and an additional €175M over six years. It then won the most 5G spectrum in ANACOM's auction, investing €165M. This enhances service quality and efficiency, improving customer retention. NOS also explores new revenue sources from ongoing sector developments, such as acting as an intermediary for cloud computing services.

Segments Breakdown

Telco | Revenue from this field has increased at a CAGR of ~6% (2013-2023). Furthermore, profitability has also significantly improved, with EBITDA margin expanding from 35.7% to 41.2%. The company serves diverse clienteles, segmenting their telecommunications offerings into Consumer, Business, and Wholesale markets. Fixed services encompass Fixed TV (providing a comprehensive selection of TV channels and streaming content), Fixed Voice (facilitating traditional home phone lines), and Fixed Broadband (delivering high-speed internet access). Mobile services, on the other hand, empower customers with access to 4G and 5G networks, along with roaming and mobile hotspot solutions. Their revenue streams are categorized into bundles (further details and forecasts to be provided later) and other revenue streams (as presented in **Figure 22**).

NOS built a competitive edge by bundling fixed and mobile services (convergent offerings). This strategy leveraged ZON's strong fixed-line market share (>40%) to boost mobile sales (Optimus) and increase revenue per customer. Convergent customers are the core, representing 69% of the subscriber base. They grew significantly from 384.6K subscribers in 2014 to 1.13 million currently (+193% increase). Overall, NOS's Telco customer base has grown steadily (+44% over a decade), with mobile leading the way (+95% growth) due to the success of convergent plans. Fixed Broadband and Voice also saw increases (+69% and +41% respectively), while Pay TV growth was modest (+4%) due to existing market saturation (**Figure 24**).

As of 3Q2023, NOS' Business segment accounted for 21.5% of total Telco revenues, reflecting a 17.2% growth since 2018. This growth significantly outpaces the 5.6% increase in Telco's consumer segment, highlighting NOS' commitment to revenue diversification. The Business segment primarily derives its sales from traditional telecommunications services, similar to those offered to residential customers, and provides a range of tailored products, particularly in IoT and Data Management Solutions.

However, the potential for growth in IoT and Data Management Solutions is constrained by the market composition in Portugal, where most firms are SMEs with limited interest in these services. As of November 2023, the B2B revenue distribution shows that 40% of NOS' business customers are small businesses such as restaurants and cafes, 24% are mid-size companies, and 36% are large corporations, which tend to have volatile revenue profiles and depend on large projects.

In the Wholesale segment of Telco, revenues are derived from multiple sources. Namely, revenues from providing telecommunication services to other operators (such as network infrastructure, data transmission, or data storage); roaming revenues from customers of other operators using NOS' networks; and value-added call revenues, including cloud computing, data centers, IT services, and other IoT services. As of 3Q2023, these activities accounted for 6.5% of Telco revenues.

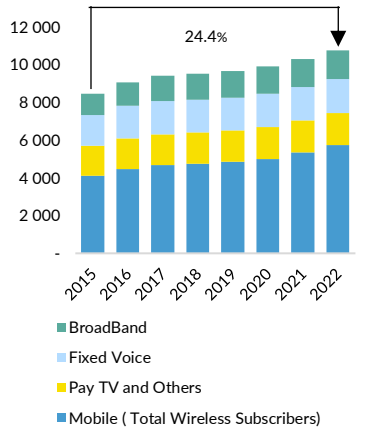
A&C | The Audiovisuals and Cinema business unit oversees the production, distribution, and exhibition of audiovisual content through television and cinemas. In 3Q2023, this segment achieved its best quarter to date, with revenues of €32.2 million and an EBITDA of €15.4 million (**Figure 25**). This success was driven by the release of blockbuster films such as Barbie, Oppenheimer, Mission: Impossible, and Elemental, which boosted ticket sales by 57.4% year-over-year. Despite being a less critical segment, NOS values its differentiation factor and has no plans to divest its operations. The strong recovery from the COVID-19 pandemic, which severely impacted this segment due to worldwide lockdowns, underscores the enduring appeal of cinemas even amidst the rise of streaming platforms.

Company Strategies

Lead in 5G | Despite regulatory challenges, NOS remains dedicated to leading in 5G technology to deliver high-quality services and reduce customer churn, a prevalent issue in the telecommunications industry. Following the 2021 5G auction, NOS secured the largest share of 5G spectrum frequencies. This is particularly significant as data-intensive applications gain prominence in the digitalization era. Currently, NOS' 5G network coverage exceeds 90% of its customer base.

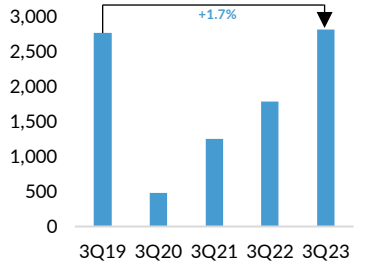
Lead in Customer Experience | Digitalization presents a unique opportunity to transform the customer experience, and NOS is committed to leading this initiative. Leveraging its strong track record of innovation, NOS aims to capitalize on the expanding digital landscape. Recently, the company has focused on its B2B strategy, positioning itself as the primary partner for Portuguese companies seeking to embrace digitalization.

Figure 24 - NOS' RGUs (number of units)



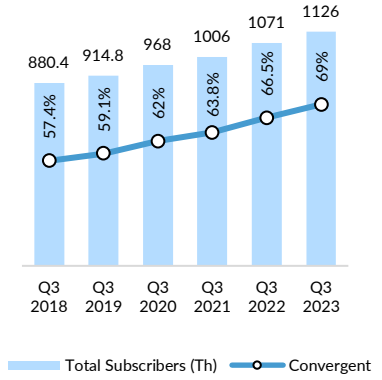
Source: NOS' data

Figure 25 – Cinema tickets sold



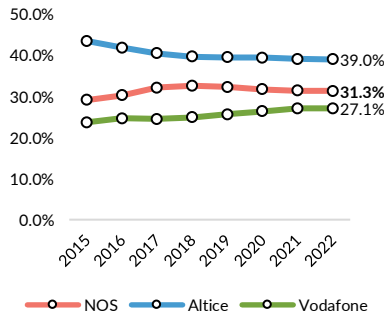
Source: NOS

Figure 26 –Convergent Customer Growth



Note: Convergent customers – bundled consumers with fixed and mobile services.
Source: NOS' data

Figure 27 – Market Share Evolution



Source: ANACOM

Deepen Customer Relationships | With a substantial market share in Portugal's telecommunications sector and the threat of new competitors, retaining customers poses a challenge for the companies in this sector. To address this, NOS aims to strengthen customer relationships by expanding its offerings. This includes introducing new consumer services, such as alarm systems, and enhancing enterprise solutions, such as partnering in digital transformations.

Key drivers of profitability

Convergent customers | The merger that resulted in the creation of NOS was fundamentally driven by a strategic shift towards convergent offerings. These offerings encompass bundled services that include Fixed Pay TV, Fixed Broadband, and Mobile services. Convergent customers are crucial for the company's revenue and profitability. Since its inception, NOS has significantly increased the proportion of convergent customers among its total subscriber base, rising from 29.2% in 2014 to 69.0% by the third quarter of 2023 (**Figure 26**). This growth has been propelled by a successful upselling strategy aimed at capturing market share in the Mobile segment, which expanded from 13% in the first quarter of 2014 to 29% in the third quarter of 2023. This strategy leveraged NOS's substantial existing customer base in other telecommunications segments.

Ability to maintain above-market EBTIDA margins | NOS' EBITDA growth has consistently outpaced both domestic and international competitors, a trend anticipated to continue. The implementation of Artificial Intelligence for Robotic Process Automation (RPA) is an example of NOS's capability to enhance efficiency and improve financial performance. By automating repetitive tasks to reduce G&A costs, the company illustrates its ability to adapt and thrive in a mature and saturated market. The company's commitment to maximizing efficiency is evident in the increase of its EBITDA margin from 35.7% in 2013 to an estimated 44.28% in 2023, compared to the current average of 37.4% among its peers (**Table 27**). Given the characteristics of this industry, maintaining above-market margins is crucial for future profit growth and financial stability.

Infrastructure sharing partnerships | NOS and Vodafone entered into an agreement to share access to their network infrastructure. Under this partnership, the two companies jointly covered greenfield areas encompassing 2.6 million households, with the coverage split evenly between NOS and Vodafone. This collaboration aims to enhance cost efficiency by avoiding redundant investments in network coverage across the country. Although specific cost savings figures have not been disclosed, both companies successfully expanded their network reach to over 30% of households nationwide—a milestone that would have otherwise required significant additional capital expenditure. This strategic partnership not only improved profit margins but also extended network reach without incurring incremental costs, providing a competitive advantage for both entities.

Industry Overview and Competitive Positioning

Economic Outlook

In 2022, Europe experienced an armed conflict that triggered an energy crisis, exacerbating existing price hikes. The rising costs of raw materials since 2021 contributed to increased prices of goods and services, leading to a heightened inflation of **7.8%** in 2022. ECB's decision to raise interest rates aimed at curbing inflation also resulted in higher borrowing costs, impacting the Telco industry, which is heavily leveraged. Additionally, Telco prices in the EU increased by 0.9% YoY, on average, from September 2022, while in Portugal, prices rose by 2.9% during the same period, surpassing the EU average by 200 basis points.

Despite these challenges, Portugal's real GDP expanded by 6.7%, exceeding the EU average of 3.61% growth. However, the unemployment rate in Portugal rose to 6.1% in Q3 2023, up by 30 basis points compared to the previous year.

Telco Sector

The European telecommunications sector operates under liberal market policies aimed at fostering competition. Despite the EU's strategic objectives for digital advancement, Telco companies face significant pressures on profitability, uncertainties in demand and pricing, and the erosion of value in existing technologies. These challenges compel firms to sustain investments to avoid becoming obsolete.

To address these dynamics, there is a discernible trend towards vertical separation within the Telco value chain (known as decoupling), which is expected to persist over the coming decade. While this strategy can enhance market capitalization and promote more efficient business models, it also opens the door for competition from non-EU players.

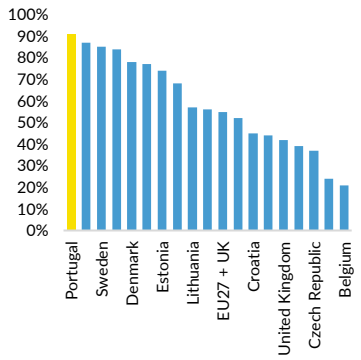
In Portugal, the Telco landscape reflects substantial growth, with extensive FttH coverage reaching 92.5% and robust deployment of 5G infrastructure, positioning the country among the leaders in the EU. NOS, for instance, covers over 90% of its customer base with these advanced services. Households in Portugal increasingly favour bundled Telco services, with penetration reaching 92.8% by the first half of 2023. Subscriber numbers have grown significantly, from approximately 2.5 million in 2013 to around 4.7 million presently. In terms of market saturation, mobile services in Portugal show a penetration rate of 180% (130%

excluding Machine-to-Machine connections), indicating widespread adoption. Fixed services also demonstrate high penetration rates: Fixed Voice at 97%, Fixed Broadband at 93%, and Fixed Pay TV at 98%.

Market Overview

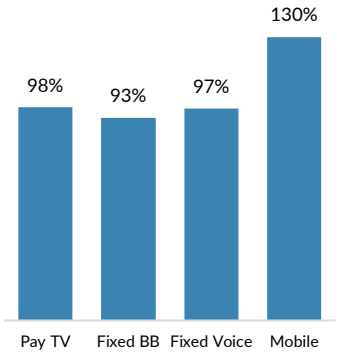
The Portuguese Telco industry is primarily dominated by Altice with a market share of 38.8%, followed by NOS at 31.6% and Vodafone at 27.2%. Characterized by maturity and consistent growth, the sector saw a YoY revenue increase of 3.64%, following a 2.34% growth in 2021.

Figure 28 – FTTH penetration in Europe



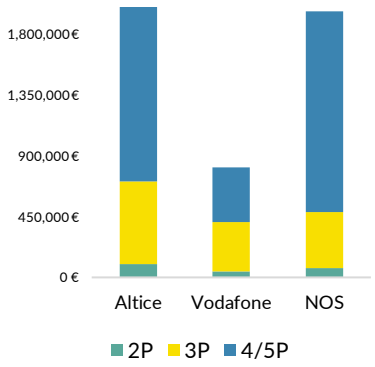
Source: FttH Council Europe Market Intelligence Committee and Moody's Investors Service

Figure 29 – 3Q23 Service Penetration



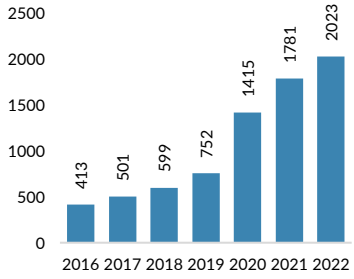
Source: ANACOM data

Figure 30 – TTM Bundle Revenue per Player



Source: ANACOM data

Figure 31 – Total of cyberattacks recorded in Portugal



Source: CNCS

NOS focused on expanding its mobile services within its extensive fixed customer base, increasing its mobile market share from 23.1% in 2016 to 29.5% by the third quarter of 2023. This strategic emphasis resulted in declines in other segments, benefiting Vodafone. However, NOS did not match the overall market's growth pace across all segments.
The Portuguese Telco market is marked by price sensitivity among consumers and significant churn rates. Smaller competitors like NOWO and LYCAMOBILE have secured a niche market share through Mobile Virtual Network Operator (MVNO) agreements, leveraging cost leadership strategies with bundle prices 20% to 30% below the general market. Despite initial gains, these operators have faced challenges, with NOWO experiencing a 90-basis points market share decline over six years, and LYCAMOBILE maintaining a marginal market share.

Entry barriers remain substantial, evidenced by the struggles of new entrants lacking consumer awareness and facing high marketing costs to alter market dynamics. Vodafone's ongoing acquisition process of NOWO underscores this competitive landscape, subject to regulatory scrutiny by ANACOM with no disclosed acquisition price.
The anticipated entry of Digi, focusing on internet offers, prompted NOS to introduce the WOO service package (standalone internet), countered by Vodafone's "amigo" offer. Digi's successful entry into the Spanish market demonstrated strategic acumen in addressing underserved segments. However, its entry into Portugal's more developed and higher FttH covered market presents a more challenging scenario, raising uncertainties about market pricing dynamics and potential shifts.

Furthermore, satellite service providers such as Starlink and SpaceMobile are pioneering technologies aiming to overcome Telco limitations through satellite internet access for mobile devices by 2025. Regulatory processes may delay their availability in Portugal, yet they have the potential to emerge as global competitors and disruptors within the industry.

Supply drivers

Regulatory incentives | ANACOM, as the regulatory authority in Portugal's Telco sector, plays a crucial role in promoting a competitive environment among service providers. Through the formulation of regulations that foster fair competition and curb anti-competitive behaviours, ANACOM aims to stimulate innovation, enhance service quality, and promote competitive pricing.

Additionally, ANACOM imposes strategic objectives and performance metrics on Telco companies, encouraging them to expand their service portfolios, improve network infrastructure, and invest in technological advancements. The regulatory body's interventions also include initiatives to incentivize industry investment. For instance, ANACOM's acceptance of the 2022 BEREC draft effectively mitigated Altice's planned increase in the cost of capital rate by more than 150 basis points. This action was designed to maintain investment incentives, prevent anti-competitive practices, and safeguard consumers from potential price hikes.

Operational efficiency improvement | Telco companies prioritize operational optimization and cost reduction strategies across critical domains, including network infrastructure, equipment procurement, and energy consumption. This strategic emphasis on efficiency is catalysing the adoption of advanced technologies like cloud computing and artificial intelligence. These innovations enable Telco providers to streamline operations effectively, leading to enhanced profitability and performance outcomes.

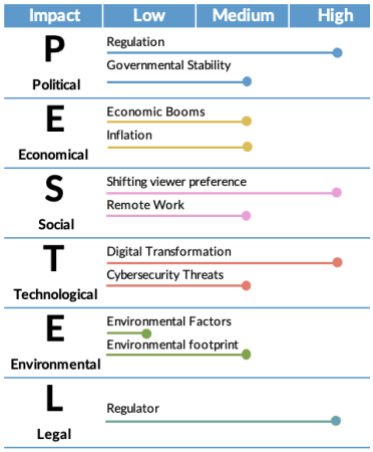
Technology | The integration of advanced technologies forms the cornerstone of supply expansion within the Telco sector. Companies that prioritize substantial investments in emerging technologies such as 5G infrastructure, IoT solutions, AI-driven services, and cloud-based platforms experience significant improvements in their supply capabilities. Beyond achieving cost optimization objectives, the adoption of these cutting-edge technologies empowers companies to deliver innovative services, expand connectivity, and elevate operational efficiency, thereby augmenting their overall supply potential.

Demand drivers

Changing consumer preferences | The telecommunications sector is witnessing shifts in consumer preferences that drive market demand. Increased reliance on mobile data, projected to grow at an annual rate of 5.34% from 2023 to 2027 according to the Economist Intelligence Unit, is compounded by the expanding trend of remote work, elevating the need for enhanced internet connectivity and robust data services. Concurrently, there is a rising demand for comprehensive bundles that include additional services such as access to streaming platforms. It is anticipated that bundles encompassing four or five services (4/5P bundles) will encompass 61% of the total market bundles by 2030, up from the current 55%. Telecom companies that effectively meet these demands for reliable, high-speed data solutions are poised to capture heightened market demand.

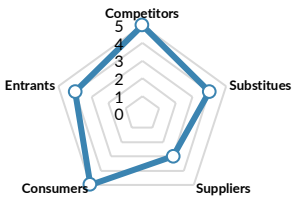
Technological advancements and increased connectivity | The telecommunications industry thrives by responding to evolving consumer demands for cutting-edge technologies and seamless connectivity. Companies that continually innovate, offering enhanced network speeds, broader coverage, and pioneering services, are poised to attract customers seeking advanced solutions. According to ETNO, European Mobile 5G coverage expanded significantly from 13% in 2019 to over 70% by 2022. This innovation aligns with consumer preferences for faster internet speeds, extensive coverage, and reliable connectivity in their daily activities. Telecom providers capable of delivering superior coverage and dependable services are well-positioned to meet the increasing demand, establishing themselves as preferred choices for consumers seeking robust connectivity solutions.

Figure 32 – PESTEL Analysis



Source: Team Analysis

Figure 33 – Porter's 5 Forces



Source: Team Analysis

Table 20 – SWOT Analysis

Strengths	Weaknesses
Established Infrastructure	Rural Connectivity
Market Reputation	Saturated Market
Diversified Offerings	Economic Conditions
High Penetration	Regulations
Opportunities	**Threats**
More Efficient Networks	New Entrants
Emerging Technologies	New Substitutes
Improved Customer Experience	Cybersecurity
Strategic Partnerships	Changing Consumer Preferences

Source: Team Analysis

Table 21 – ESG scores

Pillar	Source	NOS
ESG	Refinitiv	B (64/100)
ESG	Bloomberg	4.73/10 - "Leading"
ESG risk	Sustainalytics	14.3 - low
ESG risk resiliece	MSCI	AA (6.1)
E	Refinitiv	A
E	Bloomberg	3.75/10 - "Above Median"
S	Refinitiv	B+
S	Bloomberg	5.35/10
S	Moody's	70
G	Refinitiv	C - "Below Average"

Note: E – Environment; S – Social; G – Governance

Privacy and Security | In Portugal, cyber-attacks have shown a significant annual growth rate of 30.3% from 2016 to 2022 (**Figure 31**). This surge is fuelled by the increasing value of data and the emergence of sophisticated cyber threats, underscoring heightened demand for enhanced privacy, security, and resilience within the Telco sector. Consumers are increasingly prioritizing the protection of their personal information, making each operator's ability to effectively mitigate and manage these threats a critical concern. Telco companies that strategically prioritize and adeptly address these imperatives not only lead the industry's advancement but also fortify their brand against potential incidents that could undermine consumer trust and loyalty.

PESTEL Analysis

Political | ANACOM promotes fair competition, ensures regulatory compliance, and establishes industry standards, thereby benefiting consumers with access to innovative services and competitive pricing. Additionally, stable government policies enhance Telco companies' confidence in making significant investments in infrastructure and innovation.

Economical | Economic expansions generally lead to higher expenditures on communication services as disposable incomes rise. Conversely, inflation and elevated borrowing costs can constrain growth in the telecom industry, which is renowned for its substantial infrastructure investment requirements.

Social | The transition of viewer preferences from traditional TV to on-demand streaming services, coupled with heightened mobile data consumption, underscores a growing preference for flexibility and personalized content. Additionally, the increasing reliance on remote work further amplifies the demand for dependable broadband services.

Technological | The ongoing digital transformation in the telecom sector drives innovation but also exposes companies to cybersecurity threats, necessitating the adoption of enhanced measures to safeguard consumer data and infrastructure.

Environmental | Environmental factors, including adverse weather events, can affect service reliability and consumer satisfaction. In response, companies are prioritizing eco-friendly practices during infrastructure upgrades to minimize their environmental footprint.

Legal | ANACOM oversees telecommunications regulations, safeguarding consumer rights through data protection laws, transparent pricing practices, fair contract management, and the prevention of anti-competitive behavior. The regulatory body establishes a legal framework governing mergers and acquisitions within the sector.

Competitive Positioning

Rivalry Among Competitors - HIGH | The Portuguese telecommunications market is predominantly dominated by three major entities: ALTICE, NOS, and VODAFONE. Despite the oligopolistic nature of the industry, there is limited price competition as these companies vigorously seek to expand their market shares through extensive advertising and strategic partnerships. Furthermore, potential mergers and acquisitions among competitors, such as VODAFONE's acquisition of NOWO, are subject to regulatory scrutiny.

Threat of Substitute Products – MODERATE | While traditional telecom services lack direct substitutes across all facets, alternatives such as Over-the-Top (OTT) platforms, Voice over Internet Protocol (VoIP), and specific social media platforms compete in niche areas. In remote or underserved regions, Fiber to the Home (FttH) encounters competition from Wireless Internet Service Providers (WISPs) and satellite service providers like Amazon (Project Kuiper) and Starlink, which are reshaping the industry landscape. The regulatory framework will be crucial in assessing the impact and market integration of these advancements.

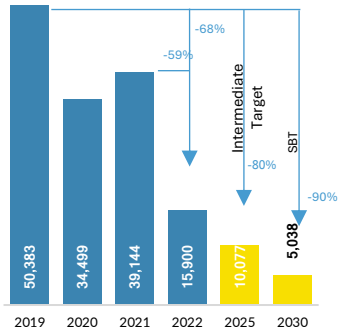
Bargaining Power of Suppliers – MODERATE | In 2022, NOS engaged with more than 6,250 suppliers, allocating approximately €1,575 million, with 86% of procurement sourced domestically. This extensive network plays a crucial role in supporting the local economy, particularly within the telecommunications sector, underscoring NOS's strategic impact. Since 2019, NOS has conducted rigorous annual evaluations of its suppliers, focusing on proactive engagement, contract compliance, quality assurance, ethical standards, and considerations related ESG criteria. These evaluations reflect NOS's commitment to fostering mutually beneficial relationships with its suppliers. Despite its substantial market presence and diversified service offerings, NOS maintains a balanced dynamic with its suppliers. While the company holds strategic influence over specific supplies, it also depends on specialized suppliers, granting them negotiation leverage and minimizing the risk of disruptions through strategic supplier management practices.

Bargaining Power of Customers – HIGH | Portuguese consumers demonstrate a high sensitivity to prices, facilitated by low switching costs that enable easy transitions between Telecom operators. Previously, 24-month contract terms with loyalty clauses imposed substantial switching expenses, requiring customers to pay penalties for changing providers. However, mandatory contract options without such clauses are now available.

Despite the presence of established Telecom firms, competition to attract and retain customers remains fierce. Operators prioritize reducing churn rates and enhancing customer loyalty through continuous innovation and competitive pricing strategies. As a result, consumers wield considerable influence, compelling companies to innovate continually and offer superior services at competitive rates to maintain their market position.

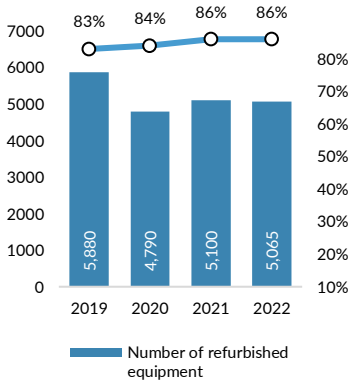
Threat of New Entrants – MODERATE | Telecom market liberalization creates a conducive environment for new entrants, contingent upon meeting ANACOM's stringent requirements aimed at safeguarding consumer interests and promoting competition. While traditionally requiring substantial capital investment, potential entrants can now mitigate costs through Mobile Virtual Network Operator (MVNO) agreements. However,

Figure 34 – Emissions from own operations (tCO_2e)



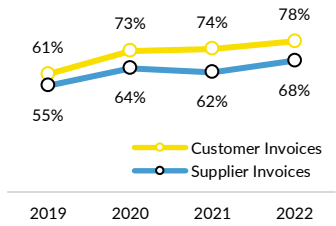
Note: SBT – Science Based Target
Source: Team Analysis

Figure 35 – Collection and recovery of customer equipment in the fixed service (in 00's)



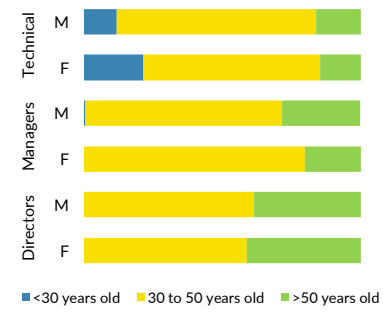
Source: Team Analysis

Figure 36 – Level of digitalization of billing processes



Source: Team Calculation

Figure 37 – Distribution of employees



Source: Team Calculation

Table 22 – NOS' Management Team

Women	33%
Men	67%

Source: Team Analysis

established Telecom giants pose significant barriers for new entrants seeking to establish market presence and leverage economies of scale. These incumbents have proactively introduced lower-cost solutions (such as WOO by NOS) to counter emerging competitors like DIGI. Despite ANACOM's regulatory efforts, new entrants may encounter challenges in fully competing, as they contend with the well-established strategies of dominant companies across traditional service offerings

SWOT Analysis

Portuguese Telecom companies encounter challenges including rural connectivity, market saturation, and regulatory constraints. Established firms like NOS leverage their infrastructure and brand reputation to maintain market leadership. Opportunities exist in optimizing networks, adopting emerging technologies, enhancing customer experiences, and forging strategic partnerships. However, threats such as new entrants and cybersecurity vulnerabilities must be carefully managed.

Environment, Social and Governance

NOS formulated a sustainability strategic plan for 2021-2025 centered around four key pillars: "Planet Advocacy," "Digital Advancement," "Employee Enrichment," and "Ethical Management." This framework aligns with 11 out of the 17 United Nations Sustainable Development Goals (SDGs), particularly SDG 14. NOS demonstrates robust Environmental, Social, and Governance (ESG) performance (**Table 21**). The company has established Sustainability Requirements for Suppliers and Partners to ensure adherence to their sustainability principles across all levels of engagement.

Environment

NOS has demonstrated a strong commitment to environmental sustainability, achieving impressive scores as evidenced in **Table 21** and earning inclusion in the A List of the CDP Climate 2022 Program. As the only Telecom company in Portugal evaluated by CDP, NOS consistently surpasses the international sector average and has maintained a Leadership-level assessment for three consecutive years. Furthermore, NOS actively participates in the Global e-Sustainability Initiative (GeSI) and has endorsed the Manifesto Towards COP 27, aligning its initiatives with the objectives of the Paris Agreement and the 2030 Sustainable Development Goals.

Carbon Efficiency | NOS has accomplished a year-on-year reduction of 59% in its operational greenhouse gas (GHG) emissions and a 68% reduction compared to the base year of 2019. The company aims to achieve a 90% reduction in GHG emissions from its own operations and a 30% reduction from its value chain by 2030, both relative to the 2019 baseline (Figure 17). As a founding member of the European Green Digital Coalition, NOS is committed to attaining carbon neutrality by 2040.

Energy Efficiency | NOS aims to fully electrify its fleet and offset emissions through reforestation in Portugal by 2030. While advancing energy efficiency and phasing out impactful gases, the company faces challenges with rising emissions from network expansion. In 2022, NOS saw a 39% increase in electricity use, managing to save 5-10% on energy costs during low-traffic periods with intelligent network management. Overall, energy consumption rose 27% year-on-year due to increased operational demands and activity recovery.

Supply Chain | NOS actively engages in the Eco Rating project, offering consumers environmental impact data for mobile phones. Since its inception in 2021, NOS has achieved a 2-percentage-point increase in the average Eco Rating score. The company intends to extend this initiative to its primary suppliers, incorporating emissions data from network equipment. This initiative aims to empower consumers to make informed and sustainable choices, encourage supplier enhancements, and promote transparency across the sector, ultimately reducing environmental impact.

Circular Economy | NOS is committed to enhancing business circularity from 2022 to 2025, achieving a 98% recycling rate for total waste generated in 2022, marking a 1 percentage point increase year-on-year. With the introduction of 5G technology, NOS has bolstered recovery and reuse practices by refurbishing and reintegrating equipment, while also selling legacy items to minimize energy and material consumption (Figure 18). Furthermore, NOS has implemented digital solutions for billing and contractual processes, enhancing operational efficiency and reducing energy use associated with printing and transportation (Figure 19)

Sustainability-Linked Bonds | NOS's Sustainability-Linked Financing Framework plays a pivotal role in reducing the company's environmental impact. Aligned with NOS's long-term emission reduction goals, the framework integrates specific objectives aimed at sustainability. In January 2023, NOS secured 350 million euros in bank loans, allocated across bond loans and commercial paper programs maturing in 2028, all tied to sustainable criteria. According to the S&P Global Ratings report, NOS meets all Sustainability Performance Targets. This financing mechanism enables NOS to benefit from lower interest rates, effectively managing its cost of debt amid increasing interest rates. Presently, 70% of NOS's debt is linked to sustainability Key Performance Indicators (KPIs), offering interest rate advantages commonly referred to as a 'greenium'.

Social

NOS excels in workforce diversity, achieving an 84.11% score on Bloomberg's 2023 Gender-Equality Index, surpassing both sector and national averages. Women constitute 41% of the workforce and hold 33% of management positions (**Table 22**), demonstrating a strong commitment to gender parity. The company prioritizes Occupational Health and Safety (OHS) with a certified management system aimed at proactive health and safety measures. NOS collaborated with ENSICO on "Projeto ZER01" to promote computer science education nationwide, emphasizing digital literacy and inclusion. Despite these strengths, NOS has seen a 4% increase in employee turnover from 2018 (10% turnover) to 2022.

Table 23 – Shareholders

Sonae Com, SGPS, S.A.	26%
ZOPT, SGPS, S.A.	26%
Sonae, SGPS, S.A.	11%
Mubadala Investment Company PJSC	5%
Free Float	32%

Source: NOS' data

Table 24 – Management Team

Name	Position (Since)
Miguel Almeida	CEO (2013)
José da Costa	CFO (2007)
Luís Nascimento	Member of EC (2017)
Jorge Graça	CTO (2016)
Manuel Eanes	Member of EC (2013)
Filipa Carvalho	CCO (2021)
Daniel Beato	Member of EC (2021)

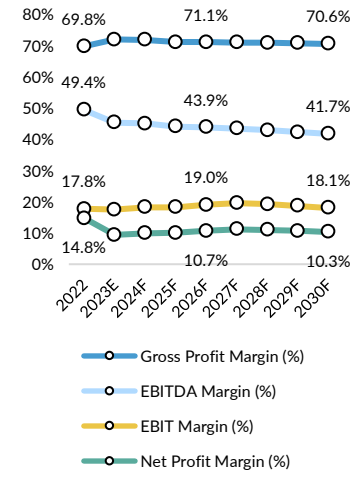
Source: NOS' data

Table 25 – Valuation

	Model	g	%EV	M €
Telco	FCFF	1.0%	92.3%	3,920,562
A&C	FCFF	1.0%	7.7%	251,119
NOS				4,171,682
Adjustments for Net Debt				-1,690,895
Other Adjustments				-359,773
Equity Value				**2,121,013**
# Shares (Th)				511,382
Price Target (€/sh)				**4.15 €**

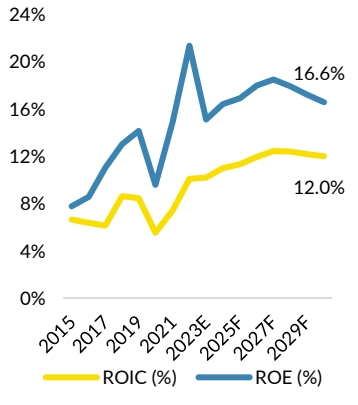
Source: Team Estimates

Figure 38 – Margin evolution



Source: Team Estimates

Figure 39 – Ratios evolution



Source: Team Estimates

Governance & Management

Shareholder structure | NOS has four major shareholders (**Table 23**), with 36% of its shares available for trading freely. While there are no restrictions on the transfer and ownership of shares, shareholders seeking to hold more than 10% of the capital must obtain approval at the General Meeting if they compete with NOS's subsidiaries. In 2022, the General Meeting authorized the company to repurchase and sell its own shares for a period of 18 months. Additionally, certain financing agreements allow for early repayment in the event of a change of control, including takeovers. Currently, NOS lacks specific defenses against public takeover bids or measures to safeguard company assets in the event of a change in BoD or control.

Controversies | In 2020, Isabela dos Santos' close associates, including Jorge Brito Pereira, Mário Leite da Silva, and Paula Oliveira, resigned from the NOS board in the aftermath of the Luanda Leaks scandal. Allegations surfaced that dos Santos diverted more than 100 million euros from Sonangol to a Dubai-based company. Subsequently, a UK court froze her assets, including her stake in NOS. In June 2023, dos Santos was convicted by a Dutch court for embezzling €52.6 million from Sonangol through document forgery. Following their departure, Ana Rita Cernadas, Cristina Maria de Jesus Marques, and José Carvalho de Freitas were appointed to the board for the current mandate (2019-2021), with two of the new members maintaining ties to Isabela dos Santos through Santoro Finance, a company implicated in the scandal.

In 2022, ANACOM fined Portuguese telecom companies, including NOS, for insufficient customer communication regarding price increases. Additionally, in April 2023, NOS was fined €50,000 for signing service contracts via phone calls, which violated Electronic Communications Law regulations.

Board of Directors | NOS operates with a unified board structure comprising a Board of Directors responsible for daily operations and a separate independent audit board overseeing management supervision. The Board of Directors consists of 7 executive and 8 non-executive directors, with a gender composition of 67% male and 33% female, collectively averaging 15 years of telecommunications industry experience.

Management Team | Miguel Almeida, serving as President of the executive committee from 2022 to 2024, leads a team responsible for providing strategic guidance to the Board of Directors. As the longest-serving CEO in the sector, his primary objective is to create long-term shared value. Under his leadership, the management team is at the forefront of deploying 5G technology, enhancing NOS's competitive position in the industry.

Remuneration Policy | Executive administrators have seen significant remuneration growth over the past decade. Their compensation policy includes a fixed component supplemented by a capped variable component. This variable pay, tied to profit sharing and/or stock allocations, is based on both individual performance (30%) and company performance (70%), measured against NOS's key performance indicators.

Valuation

Free Cash Flow to the Firm: A Sum-of-the-Parts Approach (SoP)

We recommend a BUY rating with a 12-month price target of **€4.15**, which represents a **27%** upside from the January 12th closing price of **€3.27** per share. Our target is derived from a Discounted Cash Flow (DCF) model using a Sum of Parts (SoP) approach, where we separately value each segment. We applied different Weighted Average Cost of Capital (WACC) rates tailored to the risk profiles of each segment (**Appendix 8**). Additional valuation methods were employed to complement our primary analysis. Financial statements were forecasted using a hybrid top-down approach, with a strong emphasis on Portuguese macroeconomic projections.

Revenue Breakdown

NOS' revenue forecast is divided into two main segments: Telco and A&C, each further segmented into three categories. The primary category, Services Rendered, constitutes approximately 90% of NOS's total revenues. For Telco's services rendered, leveraging ANACOM data, industry sources, and internal estimates, we calculated average bundle prices for 2P to 5P bundles. Pricing for each bundle type reflects anticipated market movements and adjustments tied to annual inflation clauses stipulated by major operators. Our projections also encompass forecasts for bundle evolution in the market, alongside NOS and competitors' market shares (**Figure 42**). Market dynamics analysis reveals a significant trend: while NOS continues to attract customers preferring 4/5P bundles, its growth rate trails the industry average. This trend results in gradual market share loss to competitors like Vodafone, aligning with recent trends. Nonetheless, NOS is expanding its customer base and revenue-generating units. Services rendered also include content VOD and other supplementary services, projected based on their declining share within the bundle mix.

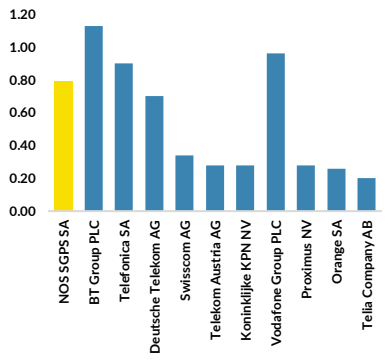
The A&C segment, primarily driven by cinema-related revenues such as box office, film distribution, advertising, and audiovisual content production, was independently estimated. Revenue projections for these services considered inflation-adjusted forecasts.

The second and third revenue categories for NOS are sales and other operating revenue, collectively contributing 10-11% of total revenues from 2023E to 2030F. These estimates were derived from the evolution of services rendered and adjusted for inflation.

Capex and D&A

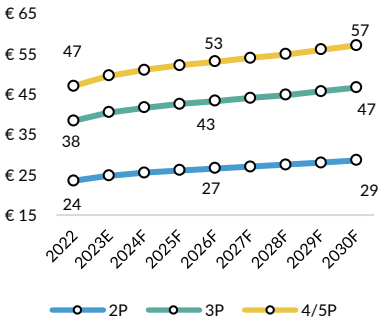
NOS has surpassed the peak of its Capex expenditure related to FttH and 5G network deployment. We anticipate a decline in Capex, with a projected CAGR of -1.9% until 2030, starting from an estimated expenditure of approximately €400 million in 2023 and eventually stabilizing at a terminal value of €350 million. Since 2015, Depreciation & Amortization has consistently averaged around 110% of Capex, and we foresee this trend continuing in the coming years. However, future technology deployments will necessitate adjustments in net Capex over the long term.

Figure 40 – Market Levered Beta



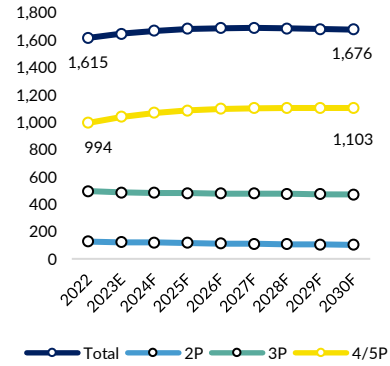
Source: Refinitiv

Figure 41 –NOS' Bundles Average Selling Price (€)



Source: Team Estimates

Figure 42 –NOS' Number of Bundles



Source: Team Estimates

Table 26 – WACC

	2024F	TV
Debt ratio	50.8%	46.2%
Cost of debt	3.2%	3.2%
Cost of equity		
Telco	8.1%	8.9%
A&C	12.3%	11.6%
WACC		
Telco	5.7%	6.5%
A&C	7.7%	7.9%

Source: Team Estimates

Table 27 – Peers and industry comparison (%)

	NOS	Industry Average	PT sector's average
ROE	14.9	9.3	-
ROCE	0.1	-	-0.62
EBITDA	42.5	37,4	30.19
Current Ratio	56.9	-	64.97

Note: Most updated data used
Source: Team Estimates, Orbis

Weighted Average Cost of Capital

The NOS Group's diverse segments entail distinct risks, necessitating the calculation of two separate Weighted Average Cost of Capital (WACC) rates for discounting the Free Cash Flow to Firm (FCFF) of each segment. The cost of equity was determined using the CAPM method, leveraging adjusted Betas from relevant peer groups. NOS' cost of debt comprises three components: the normalized 10-Year German Government Bond Yield (2.14%) as a proxy for the Risk-Free Rate, an additional spread of 2.0% reflecting its BBB Fitch rating, resulting in an estimated after-tax cost of debt of approximately 3.2% in 2024. We assume the cost of equity will vary in line with NOS' annual changes in capital structure, while the cost of debt is expected to remain constant throughout the forecast period.

Terminal Period | Value from the Long-Run

In our terminal period forecast, we incorporated long-term uncertainties impacting both Telco market and NOS specifically. The Telco sector is characterized by continuous technological innovation, with expectations already emerging for advancements from 5G to 6G technology in the coming decade. This necessitates ongoing reinvestment by companies to maintain relevance and profitability. Concurrently, regulatory efforts are fostering a more competitive market environment, intensifying existing competition. Additionally, NOS faces potential governance challenges due to Isabel dos Santos' significant frozen stake in the company, introducing further uncertainty regarding future ownership of these shares.

To address these factors affecting NOS in the coming years, we integrated specific features into our models. Firstly, we adjusted Telco's unlevered beta to 0.55, reflecting the increased business risks NOS faces amidst the industry's pervasive long-term uncertainties, particularly the risk of technological obsolescence (**Appendix 8**). Furthermore, we adopted a conservative 1% terminal growth rate. This approach allows us to account for the aforementioned challenges ahead for NOS while still accommodating potential future cash flow growth as depicted in our projections.

FCFF and APV

In our discounted cash flow (DCF) model, we discounted NOS' free cash flow to the firm (FCFF), combining portions from both the Telco and A&C segments using the company's consolidated annual weighted average cost of capital (WACC). This implementation underwent several adjustments, transitioning from enterprise value to equity value (**Appendix 11**), culminating in a target price of €4.15 per share. Additionally, the adjusted present value (APV) model suggests a target price of €4.10 per share. Both models apply the sum-of-the-parts FCFF approach, influencing our recommendation.

FCFE

To account for NOS's evolving capital structure annually, we employed a direct valuation method up to the terminal value. Subsequently, we discounted these cash flows using the company's cost of equity (**Appendix 8**), adjusting for non-controlling interests, leading to a price target of €3.9 per share.

Relative Valuation

In our multiples valuation, we adopted a sum-of-parts approach, segregating NOS into Telco, and A&C segments. For the Telco segment, peers were selected using the Sum of Absolute Rank Differences (SARD) method, focusing on companies closely aligned with NOS's core business areas (**Appendix 9**). Altice USA and firms with significant capital expenditure were excluded to ensure a more accurate comparison. In the A&C segment, cinema theater operators with similarities before and after COVID-19 were chosen.

The multiples valuation, based on EV/EBITDA for 2024F, involved applying a weighted average of multiples derived from NOS's Telco and A&C peers. This analysis yielded a price target of €4.59 per share, indicating a potential upside of **40%**. Using an equal-weighted average of the price targets from the four multiples assessed, we arrived at a consolidated price target of €3.89 per share, reflecting a **19%** upside (**Appendix 10**). Historical multiples analysis further supports our assessment, indicating that NOS has consistently traded below its peers following the correction prompted by COVID-19.

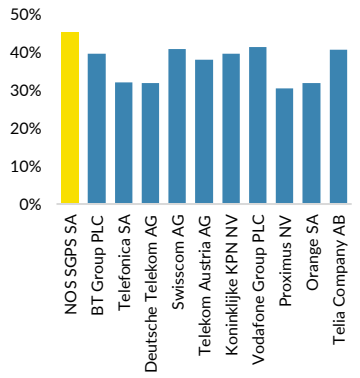
DDM

The DDM analysis for NOS considered the company's consistent dividend payouts of 27 cents/share since 2019. However, due to NOS's improved financial position and expectations of higher margins, an additional dividend increase of €0.055 was applied, resulting in a new dividend of €0.325 per share. Based on this model, the estimated price target for NOS stock is €4.04 per share, indicating a potential upside of **24%**.

Sensitivity Analysis

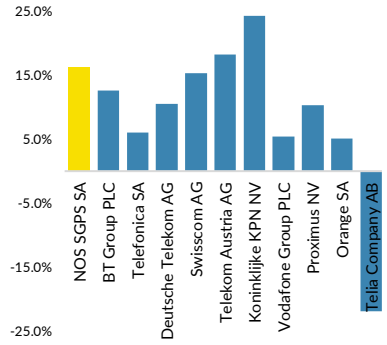
Our valuation's sensitivity analysis revealed that a highly unlikely scenario (0.2% terminal growth, 7.18% WACC) would necessitate a recommendation change. NOS's recent capital expenditures and inflation-linked contracts suggest a higher terminal growth rate. While a 0.6% rate might impact recommendation confidence, a sub-1% rate is improbable due to ongoing growth initiatives. Notably, stressing this variable down only triggers a recommendation downgrade 30% of the time.

Figure 43 – EBITDA Margin



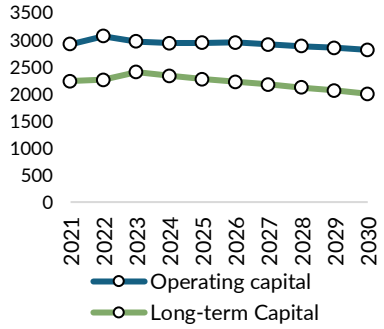
Source: Refinitiv

Figure 44 – Peers ROE



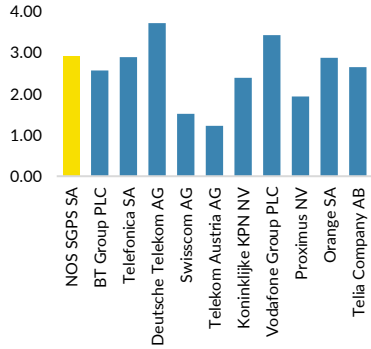
Source: Refinitiv

Figure 45 – Financing Strategy (in 000's)



Note: The spread between Operating Assets and Equity and Long Term-Debt corresponds to the Short-Term Debt
Source: Team Estimates

Figure 46 – Net Debt / EBITDA



Source: Refinitiv

Financial Analysis

Profitability | Bottom Line Stability

NOS shows impressive historical profitability growth, with a +3.1% CAGR in EBITDA and a +7.0% CAGR in EBIT from 2015 to 2023. These figures surpass the industry average of 37.4% (**Error! Reference source not found.**). While ongoing consolidation is anticipated due to new entrants (like Digi), market shifts, and regulatory changes, EBITDA margins are expected to settle around 460 bps below current levels. Net profit margins are forecasted to stabilize at roughly 11%, reflecting market saturation.

Despite the expected moderation in growth, NOS's overall profitability trajectory remains positive. ROA has grown at a +5.5% CAGR historically and is projected to maintain a +1.9% CAGR until 2030. This sustainable trend is driven by reduced capital needs and margin stability. Additionally, NOS's asset turnover of 0.45 sits above the industry average (0.43).

Profitability ratios suggest a slight initial rise followed by consolidation, resulting in a consistent long-term trend. Notably, NOS's ROCE demonstrates stability compared to competitors like Altice (whose ROCE dropped significantly in 2019). Similarly, NOS's ROE has improved, exceeding the industry average by over 300 bps (**Error! Reference source not found.**).

Liquidity | Taking Risks as They Have a Bargain

The company's financing strategy involves a higher level of risk due to its reliance on shorter-term financing with more attractive yields, which ensures it can meet investment and payout targets. The company consistently shows a negative net liquid balance and working capital, indicating that its current assets are insufficient to cover short-term obligations. Stable funding is not enough to support operating assets. Despite short-term imbalances, our treasury forecast does not indicate significant risks, which aligns with this risky financing strategy.

Operating assets are partially financed through short-term funding, facilitated by NOS's ability to secure market access for short-term financing at attractive rates. This approach minimizes interest payments but increases risk since the company must continuously renew its short-term financing. NOS appears comfortable with this strategy, leveraging its status as a major corporation with easy access to financial markets. This approach explains the consistently low liquidity ratios, similar to other Portuguese companies.

Additionally, NOS has set a target Net Financial Debt to EBITDA AL ratio of 2.0x, showing a conservative approach to leverage. Among NOS's competitors, this ratio has averaged 2.55x. The company's ability to cover interest payments has remained strong, averaging 7.0x from 2015 to the end of 2023, and is projected to stabilize at 6.0x from 2024 to 2030.

Efficiency | Stability

Stable efficiency ratios translate into a negative operating cash cycle forecast of -567 days for NOS by 2024YE. Their strong reputation allows them to leverage extended payment terms with suppliers without impacting creditworthiness. This approach, aligned with their business model, further optimizes cash flow.

Dividends | Room for improvement/growth

Despite not having an official payout policy, NOS has consistently demonstrated a commitment to rewarding shareholders. Notably, from 2018 to 2020, the company's shareholder remunerations occasionally exceeded its net income. Following a period of significant capital expenditure, NOS distributed an extraordinary dividend of €0.152 per share in 2023, in addition to the ordinary dividend of €0.278 per share, which has remained constant since 2019. The extraordinary dividend was funded by additional cash proceeds and capital gains from the sale of towers to CELLNEX.

Looking ahead, we anticipate a period of increasing margins, reduced capital expenditures, and enhanced financial strength. Consequently, we expect NOS to raise its dividend to €0.325 per share. This projected increase aligns with NOS's historical approach to profit sharing and underscores its ongoing commitment to shareholder returns.

Financial Risk | Under Control

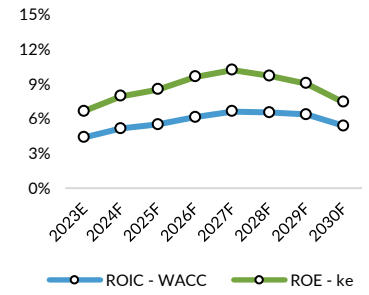
NOS has been assigned a credit rating of BBB- by Standard and Poor's and BBB by Fitch Ratings. Although the financing strategy involves significant reliance on short-term funding, the capital structure remains conservative with a Net Debt/EBITDA AL target of 2.0x. Additionally, the company's issuance of sustainability-linked bonds has yielded an estimated 'greenium,' offering more favourable terms compared to similar previous issuances by NOS.

Value Creation | Delivering

NOS's ROIC, a proxy for profitability, consistently exceeds its WACC by over 400 basis points. Additionally, the ROE outperforms the cost of equity by 245 basis points, thereby creating added value for shareholders. These substantial positive spreads, illustrated in **Error! Reference source not found.**, indicate that NOS is well-positioned to continue delivering sustained value to its shareholders and to maintain its historically robust payout levels.

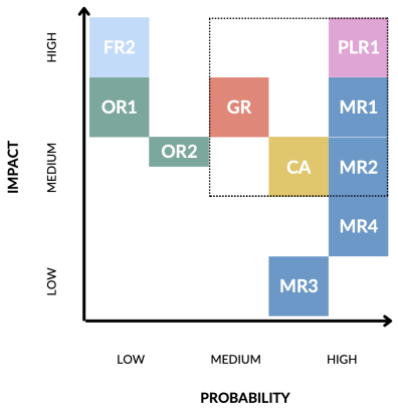
Given our estimated Telco segment cost of equity of approximately 8.1% and an implied 2024YE dividend yield of 8.5%, we project that NOS will continue to provide strong value to its shareholders.

Figure 47 – ROIC spread to WACC and ROE spread to Cost of Equity



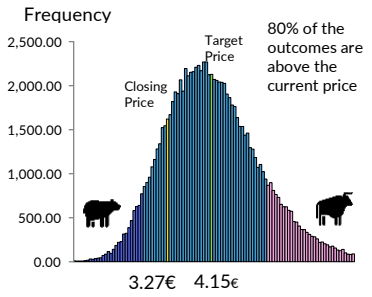
Source: Team Estimates

Figure 48 – Risk Matrix



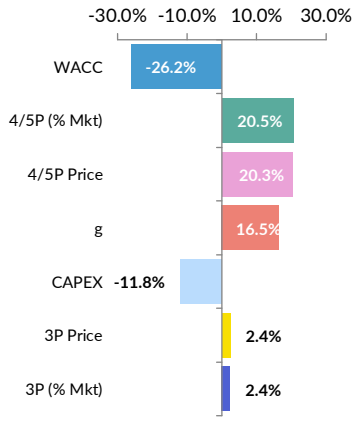
Source: Team estimates

Figure 49 – Monte Carlo Simulation



Source: Team calculations

Figure 50 – Sensitivity analysis



Source: Team calculations

Investment Risks

Here we present the main risks associated with this investment. A complete picture of potential risks, including those specific to the current investment climate, can be found in **Appendix 14**.

Market Risk | Existing Competition (MR1)

The market is characterized by its compact size and high penetration, with 5.6 million households in a country of about 10.3 million residents. NOS faces direct competition from two other major players, Vodafone and Altice, with all three companies providing similar services and products. This results in a continuous battle among the market leaders to retain and grow their market shares. **Mitigation:** NOS implements proactive strategies to expand its telecommunications offerings, prioritizing improved customer experience, product quality, and additional services such as alarm systems. These initiatives are designed to attract new convergent customers and lower churn rates. Furthermore, NOS seeks to continue innovating in the business-to-business segment by delivering competitive IT and IoT services to small and medium-sized enterprises, thereby diversifying its revenue streams.

Market Risk | Entry of New Players (MR2)

The arrival of new competitors like Digi, which offer affordable options, could attract a new group of customers interested solely in low-cost Fixed Broadband and Mobile services. This scenario intensifies price competition, putting pressure on established companies to maintain and expand their market share without sacrificing profit margins. **Mitigation:** NOS has been very vocal about the differences between the Portuguese and other markets. The company has long been aware of the potential threat from new low-cost competitors targeting the growing mobile sector. In response, NOS introduced the "WOO" offering in 2020, a budget-friendly package for customers seeking only Fixed Broadband and Mobile services. It's important to note that NOS isn't actively promoting this alternative but is positioning itself to adapt to any changes in market preferences or competitor-driven shifts in customer behaviour.

Political, Regulatory and Legal Risk | Recent changes in Regulations (PRL1)

NOS encounters significant political, regulatory, and legal challenges in the Portuguese telecommunications sector, mainly due to ANACOM's actions. ANACOM's regulatory decisions have a history of unexpected changes that can destabilize the market and lower entry barriers for new competitors. For example, the 5G auction rules introduced in February 2020 made it easier for new players to enter by requiring them to cover only 25% of the population within three years and 50% within six years, using existing towers from larger operators. In contrast, when NOS entered the market as the third major player, it had to cover over 90% of the population within four years without access to other networks. This discrepancy led to tensions between NOS and ANACOM, resulting in legal actions claiming that the regulator's decisions constituted unlawful discrimination among industry participants. More recently, ANACOM ordered Altice to provide access to its FttH network in 402 areas where it held a monopoly, indicating the possibility of sudden regulatory changes in this market.

Governance Risk | NOS' Shareholders (GR)

Sonaecom owns a 37.37% stake in NOS. As a diverse conglomerate with investments across various industries, Sonaecom may prioritize its own interests over those of NOS' minority shareholders. Additionally, ZOPT, the second-largest shareholder with a 26.08% stake in NOS, presents a significant risk due to uncertainties about its position. ZOPT, controlled by Isabel dos Santos, is embroiled in legal issues in Angola over allegations of harmful management and document falsification. Recently, UK authorities froze ZOPT's stake in NOS following a request from Angola's state-owned Unitel. Mitigation: Despite past pressure from influential shareholders urging changes to its plans and capital structure, NOS has remained steadfast in its conservative approach to debt. The company continues to uphold a strong stance in defining its priorities and long-term strategies. However, it is important to note that NOS is currently subject to court decisions, particularly in the context of ZOPT's previous ownership by Isabel dos Santos (**Table 23**)

Cybersecurity Attacks | (CA)

Portugal has seen a troubling increase in cyberattacks affecting various sectors, as noted by the Portuguese National Cybersecurity Centre (CNCS). This surge has heightened awareness of cybersecurity risks throughout the country. While such attacks have become more frequent in today's world, their impact can vary based on factors such as the severity and duration of the attack, or whether they compromise customers' private data. In February 2022, Vodafone Portugal faced a significant cyberattack that disrupted services for all customers nationwide for at least one day, although it did not involve a breach of customers' private information. Interestingly, this incident did not appear to affect the company's market share trends across all telecommunications segments. Mitigation: Besides offering B2B cybersecurity solutions and launching a joint integrated solution with Fidelity in 2022, blending preventive and reactive measures, NOS has strengthened its operational security. The company emphasizes ongoing vigilance and upgrades to its technical infrastructure, aligned with technological advancements. Key priorities include rigorous training for its cybersecurity team in areas such as strategy, intelligence, architecture, and defence. Additionally, NOS has appointed a new Chief Information Security Officer (CISO) to oversee and enhance cybersecurity efforts.

Scenario and Sensitivity analysis

A Monte Carlo Simulation consisting of 100,000 iterations was conducted on the DCF model to evaluate its robustness. **Error! Reference source not found.** and **Error! Reference source not found.** provide a summary of the results, with additional details on the analysis and outcomes available in **Appendix 15**.

Appendices

Appendix 1: Income Statement

(in € millions)	2023E	2024F	2025F	2026F	2027F	2028F	2029F	2030F
Operating revenues	1 579	1 616	1 637	1 645	1 645	1 641	1 640	1 639
Services Rendered	1 435	1 466	1 484	1 489	1 487	1 480	1 476	1 472
Telco	1341	1368	1383	1387	1383	1374	1368	1361
A&C	94	98	101	102	104	106	108	111
Sales	114	117	120	122	124	126	129	131
Telco	101	104	106	108	110	112	114	116
A&C	13	13	14	14	14	14	15	15
Other Operating Revenue	31	32	33	34	34	34	35	36
Telco	30	31	32	33	33	33	34	35
A&C	1	1	1	1	1	1	1	1
Operating costs	864	888	915	923	931	937	946	955
Wages and salaries	91	93	95	97	99	100	102	104
Direct Costs	341	351	366	367	367	366	365	365
Cost of Products Sold	101	104	106	108	110	112	114	117
Marketing and advertising	38	39	40	40	41	42	43	44
Support services	93	95	97	97	97	97	97	97
Supplies and external services	164	168	172	175	178	181	185	188
Other operating losses / (gains)	1	1	1	1	1	1	1	1
Taxes	35	36	37	38	38	38	39	39
EBITDA	716	728	722	722	715	704	694	684
Depreciation and Amortization	440	434	423	409	393	388	388	388
EBIT	276	294	299	313	322	316	306	296
Net Financial costs	(85)	(88)	(87)	(85)	(84)	(82)	(80)	(79)
Income before tax	192	206	212	227	238	234	226	218
Income Tax	43	46	48	51	54	53	51	49
Net Income from continuing operations	148	160	164	176	184	181	175	169
Net Income	148	160	164	176	184	181	175	169

Appendix 2: Statement of Financial Position

	2023E	2024F	2025F	2026F	2027F	2028F	2029F	2030F
Assets	3 482	3 457	3 431	3 408	3 380	3 345	3 306	3 262
Non-current assets	2 886	2 846	2 808	2 771	2 735	2 700	2 664	2 629
Tangible assets & Investment Property	1 092	1 075	1 060	1 044	1 029	1 015	1000	986
Intangible assets	1 185	1 161	1 137	1 115	1 093	1 071	1 049	1 028
Contract costs	162	163	164	165	166	167	168	170
Rights of use	298	297	297	297	297	297	296	296
Investments in jointly controlled and associated companies	39	39	39	39	39	39	39	39
Other accounts receivables & non-current financial assets	10	10	10	10	10	10	10	10
Deferred income tax assets	90	90	90	90	90	90	90	90
Derivative financial instruments	11	11	11	11	11	11	11	11
Current assets	596	611	623	638	645	645	642	633
Inventories	70	71	72	73	73	73	72	72
Accounts receivable and other current assets	370	380	385	386	386	384	383	382
Contract assets	63	64	65	65	65	65	65	64
Tax receivable & other accounts receivable	25	25	26	26	26	26	26	26
Prepaid expenses	52	53	55	55	56	55	55	55
Cash and cash equivalents	15	16	19	33	40	43	41	33
Shareholders' Equity	983	975	972	981	997	1 011	1 019	1 020
Share capital	855	855	855	855	855	855	855	855
Capital issued premium	4	4	4	4	4	4	4	4
Own shares	(14)	(14)	(14)	(14)	(14)	(14)	(14)	(14)
Legal and other reserves & accumulated earnings	(17)	(36)	(44)	(47)	(39)	(22)	(8)	0
Net Income	148	160	164	176	184	181	175	169
Equity before NCI	977	969	966	974	991	1 005	1 013	1 014
Noncontrolling interests	6	6	6	6	6	6	6	6
Liabilities	2 499	2 482	2 459	2 428	2 382	2 334	2 288	2 241
Non-Current Liabilities	1 600	1 542	1 482	1 422	1 355	1 288	1 224	1 162
Borrowings	1 424	1 365	1 306	1 246	1 179	1 112	1 048	986
Provisions	81	81	81	81	81	81	81	81
Accounts payable - other	42	42	42	42	42	42	42	42
Deferred income & tax liabilities	53	53	53	53	53	53	53	53
Current Liabilities	899	940	977	1 005	1 027	1 046	1 063	1 079
Borrowings	313	341	368	393	414	432	449	464
Accounts payable - trade	258	264	267	268	268	266	266	265

Accounts payable - other	54	54	54	54	54	54	54	54
Tax payable	39	39	39	39	39	39	39	39
Accrued expenses	198	204	210	212	213	215	217	219
Deferred income	37	38	39	39	39	39	39	39
Total Liabilities & Equity	3 482	3 457	3 431	3 408	3 380	3 345	3 306	3 262

Appendix 3: Cash Flow Statement

(in € millions)	2023E	2024F	2025F	2026F	2027F	2028F	2029F	2030F
Operating Activities (CFO)	**608**	**675**	**672**	**672**	**663**	**655**	**647**	**638**
EBIT	276	294	299	313	322	316	306	296
Depreciation, Amortization, and Impairment losses	440	434	423	409	393	388	388	388
Taxes	43	46	48	51	54	53	51	49
Change in NWC	65	7	2	(1)	(2)	(4)	(3)	(3)
Investment Activities (CFI)	**(400)**	**(394)**	**(385)**	**(372)**	**(357)**	**(353)**	**(353)**	**(352)**
CAPEX (Tangible Assets)	(122)	(120)	(117)	(113)	(109)	(108)	(108)	(108)
CAPEX (Intangible Assets)	(91)	(90)	(88)	(85)	(82)	(81)	(81)	(80)
CAPEX (Contract costs)	(81)	(80)	(78)	(75)	(72)	(72)	(72)	(71)
CAPEX (Rights of Use)	(105)	(104)	(101)	(98)	(94)	(93)	(93)	(93)
Financing Activities (CFF)	**(201)**	**(280)**	**(284)**	**(287)**	**(299)**	**(299)**	**(296)**	**(294)**
Net Borrowings	99	(30)	(33)	(35)	(47)	(49)	(47)	(47)
Interest and related expenses	(85)	(88)	(87)	(85)	(84)	(82)	(80)	(79)
Dividends	(220)	(167)	(167)	(167)	(167)	(167)	(167)	(167)
Accounts payable Trade	5	6	3	1	(0)	(1)	(1)	(1)
Change in Cash	**7**	**1**	**4**	**14**	**7**	**3**	**(2)**	**(8)**
Beginning	8	15	16	19	33	40	43	41
End	**15**	**16**	**19**	**33**	**40**	**43**	**41**	**33**

Appendix 4: Financial Ratios

Key Financial Ratios	2021	2022	2023E	2024F	2025F	2026F	2027F	2028F	2029F	2030F	CAGR (2015-2023)	CAGR (2024-2030)
Liquidity Ratios												
Current Ratio (%)	56.9%	52.5%	66.3%	64.9%	63.8%	63.4%	62.8%	61.7%	60.4%	58.6%	1.0%	-1.7%
Quick Ratio (%)	39.7%	34.3%	44.3%	43.4%	42.6%	42.9%	42.6%	42.0%	42.0%	39.5%	-1.1%	-1.5%
Efficiency Ratios												
Total Assets Turnover (x)	0,44 x	0,44 x	0,45 x	0,47 x	0,48 x	0,48 x	0,49 x	0,49 x	0,50 x	0,50 x	-0.8%	1,2%
DSO (days) - core	82	76	83	83	83	83	82	82	82	82	-0.6%	-0.2%
DIO (days)	162	214	252	250	248	245	241	236	231	227	2.4%	-1.6%
DPO (days)	1 013,4	662,0	895,7	899,5	895,7	887,9	874,4	857,5	837,2	818,3	-2.7%	-1.6%
Operating Cash Cycle (days)	(769,8)	(372,2)	(561,1)	(566,2)	(565,0)	(560,5)	(551,2)	(539,0)	(523,6)	(509,7)	-2.7%	-1.7%
Profitability Ratios												
Gross Profit Margin (%)	69.4%	69.8%	72.0%	71.8%	71.1%	71.1%	71.0%	70.9%	70.7%	70.6%	1.1%	-0.3%
EBITDA Margin (%)	42.5%	49.4%	45.3%	45.0%	44.1%	43.9%	43.4%	42.9%	42.3%	41.7%	2.6%	-1.3%
EBIT Margin (%)	13.9%	11.2%	17.5%	18.2%	18.3%	19.0%	19.6%	19.2%	18.7%	18.1%	5.3%	-0.1%
Net Profit Margin (%)	10.1%	14.8%	9.4%	9.9%	10.0%	10.7%	11.2%	11.0%	10.7%	10.3%	6.4%	0.7%
ROA (%)	4.4%	6.5%	4.3%	4.6%	4.8%	5.2%	5.5%	5.4%	5.3%	5.2%	5.5%	1.9%
ROIC (%)	7.4%	10.0%	10.2%	11.0%	11.3%	11.9%	12.4%	12.4%	12.2%	12.0%	5.5%	1.5%
ROE (%)	14.9%	21.3%	15.1%	16.4%	16.9%	18.0%	18.5%	17.9%	17.2%	16.6%	8.7%	0.2%
EPS	0.28	0.44	0.29	0.31	0.32	0.34	0.36	0.35	0.34	0.33	7.6%	0.9%
DPS	0.28	0.28	0.43	0.33	0.33	0.33	0.33	0.33	0.33	0.33	15.0%	0.0%
Payout Ratio (%)	98.8%	63.4%	148.2%	104.9%	101.9%	95.1%	90.8%	92.5%	95.6%	99.1%	6.8%	-0.9%
Solvency Ratios												
Total interest-bearing Debt Ratio (%)	62.08%	60.88%	64.61%	65.00%	65.26%	65.23%	65.01%	64.87%	64.90%	65.11%	2.6%	-1.3%
Interest Coverage Ratio (x)	5.5	8.6	3.3	3.3	3.4	3.7	3.8	3,8	3.8	3.8	-7.5%	2.1%

Appendix 5: Income Statement Assumptions

Income Statement Assumptions	Unit	2023E	2024F	2025F	2026F	2027F	2028F	2029F	2030F	Notes for assumptions
Portuguese inflation	YoY	5.4%	2.8%	2.3%	1.8%	1.7%	1.7%	2.0%	2.0%	Data from EIU forecasts
Operating Revenues										
Telco										
Services rendered	M€	1,341	1,368	1,383	1,387	1,383	1,374	1,368	1,361	See Valuation Revenue Breakdown
Sales	M€	101	104	106	108	110	112	114	117	

Other operating Revenue	M€	30	31	32	32	33	33	34	35	
A&C										
Services rendered	M€	94	99	101	103	104	106	108	111	See Valuation Revenue Breakdown
Sales	M€	13	13	13	14	14	14	14	15	
Other operating Revenue	M€	0.7	1	1	1	1	1	1	1	
Operating Costs										
Wages and salaries	%	10%	11%	11%	11%	11%	12%	12%	12%	Linked to inflation
Direct Costs	operating costs	39%	41%	42%	42%	42%	42%	42%	42%	Projection resulting from 2022 direct costs over Revenues
Cost of Products Sold		12%	12%	12%	13%	13%	13%	13%	14%	Projection from 3 prior years of COPS over Sales
Marketing and advertising		4%	5%	5%	5%	5%	5%	5%	5%	Linked to inflation
Support services		11%	11%	11%	11%	11%	11%	11%	11%	Projection from 7 prior years of Support services over Sales
Supplies and external services		19%	19%	20%	20%	21%	21%	21%	22%	Linked to inflation
Other operating losses / (gains)		0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	Projection from 6 prior years Other operating losses over Other Operating Revenues
Taxes		4%	4%	4%	4%	4%	4%	4%	5%	Projection from last three years taxes over sum of Direct Costs, COPS and Supplies and External Services
Provisions and adjustments		0%	0%	0%	0%	0%	0%	0%	0%	Kept at 0, See Appendix with Balance
EBITDA										
D&A	M€	400	394	385	372	357	353	353	352	Maintaining the company's depreciation rate, adjusted for new Capex
EBIT										
Borrowings	%, Kd	4.6%	4.6%	4.6%	4.6%	4.6%	4.6%	4.6%	4.6%	See Appendix WACC
Finance leases	% RoU	-9.8%	-9.8%	-9.8%	-9.8%	-9.8%	-9.8%	-9.8%	-9.8%	Expectation from 2 prior years of finance leases over Rights of Use
Others	% interest expense	6.3%	6.0%	5.8%	5.5%	5.3%	5.0%	4.7%	4.5%	ratio over interest expense. Yearly decrease of 25bp
Income tax	% of EBT	22.5%	22.5%	22.5%	22.5%	22.5%	22.5%	22.5%	22.5%	For our forecasts we will assume the nominal tax rate of 21%+ Derrama municipal tax rate of 1.5%
Dividends	€/share	0.43	0.325	0.325	0.325	0.325	0.325	0.325	0.325	See Financial Analysis, Dividends

Appendix 6: Balance Sheet Assumptions

Balance Sheet Assumptions	Unit	2023E	2024F	2025F	2026F	2027F	2028F	2029F	2030F	Notes for assumptions
Non-current assets										
Tangible assets	%NCA	38%	37%	37%	36%	36%	35%	35%	34%	Team Calculations of tangible Assets (TA) as prior year TA + TA Capex – TA depreciation
Investment property	M€	514	514	514	514	514	514	514	514	Assumed constant due to lack of necessary information to estimate
Intangible assets	%NCA	41%	40%	39%	39%	38%	37%	36%	36%	Team Calculations of Intangible Assets (IA) as prior year IA + IA Capex - IA amortization
Contract costs	%NCA	6%	6%	6%	6%	6%	6%	6%	6%	Team Calculations of Contract Costs (CC) as prior year CC + CC Capex – CC depreciation
Rights of use	%NCA	10%	10%	10%	10%	10%	10%	10%	10%	Team Calculations of Rights of Use RoU) as prior year RoU + RoU Capex - RoU depreciation
Investments in jointly controlled companies and associated companies	M€	39	39	39	39	39	39	39	39	Assumed constant due to lack of necessary information to estimate
Other Non-Current Assets	M€	111	111	111	111	111	111	111	111	Assumed constant due to lack of necessary information to estimate
Current assets										
Inventories	DIO	252	250	248	245	241	236	231	227	Projection from 7 prior years
Accounts receivable - trade	DSO	83	83	83	83	82	82	82	82	Projection from 7 prior years
Contract assets	% Services Rendered	4,4%	4,4%	4,4%	4,4%	4,4%	4,4%	4,4%	4,4%	Projection from 7 prior years of Contract Assets over Services Rendered
Accounts receivable - other	% Services Rendered	1,4%	1,4%	1,4%	1,4%	1,4%	1,4%	1,4%	1,4%	Projection from 5 prior years of AR over Services Rendered
Tax receivable	% Revenues	0,3%	0,3%	0,3%	0,3%	0,3%	0,3%	0,3%	0,3%	Projection from 5 prior years of tax receivable over Services Rendered
Prepaid expenses	% Direct Costs	15,1%	15,1%	15,1%	15,1%	15,1%	15,1%	15,1%	15,1%	Projection from 2022 Prepaid expenses over Direct Costs
Other current assets	M€	9	9	9	9	9	9	9	9	Assumed constant due to lack of necessary information to estimate
Non-Current Liabilities										
Borrowings	%Total Debt	82%	80%	78%	76%	74%	72%	70%	68%	See Appendix 6: FCFE

Provisions	M€	81	81	81	81	81	81	81	81	Assumed constant due to lack of necessary information to estimate
Other Non-Current Liabilities	M€	95	95	95	95	95	95	95	95	Assumed constant due to lack of necessary information to estimate
Current Liabilities										
Borrowings	%Total Debt	18%	20%	22%	24%	26%	28%	30%	32%	See Appendix 6: FCFE
Accounts payable - trade	DPO	896	899	896	888	874	857	837	818	Projection from 5 prior years of AP over Services Rendered
Accrued expenses	% Operating Costs	22,93%	22,93%	22,93%	22,93%	22,93%	22,93%	22,93%	22,93%	Projection from 5 prior years of Accrued expenses over Services Rendered
Deferred income	% revenues	2,36%	2,36%	2,36%	2,36%	2,36%	2,36%	2,36%	2,36%	Projection from 5 prior years of Deferred Income over Services Rendered
Other Current Liabilities	M€	93	93	93	93	93	93	93	93	Assumed constant due to lack of necessary information to estimate

Appendix 7: Swot Analysis

Strengths

Established infrastructure | Existing players own large networks of communication infrastructure, needing significant CAPEX, posing hurdles for the new entrants to replicate.

Market Reputation | Established operators have built strong brand recognition, challenging the entry of new players.

Diversified Offerings | Portuguese Telecom companies offer diverse bundled services, attracting consumers with varied needs.

High Penetration | High penetration eases the upselling of new services to existing users, lowering acquisition costs.

Weaknesses

Rural Connectivity | Telecom operators struggle with high-speed internet in remote areas, seeing competition from satellite service providers.

Saturated Market | Portuguese telecom market, with 92,8% penetration, has limited growth potential due to saturation.

Economic Conditions | Telecom usage is tied closely to economic conditions, with booms driving consumption, and recessions lowering it.

Regulations | Regulators aim to protect consumers and encourage competition, but strict compliance restrict flexibility in the decision making.

Opportunities

More Efficient Networks | New technologies enhance efficiency, flexibility, and cost reduction, improving network performance.

Emerging Technologies | New technologies allow operators to offer higher performance and a more services, improving quality and meeting consumer needs better.

Improved Customer Experience | Improving service, personalization, communication, and security drives loyalty and attract new subscribers.

Strategic Partnerships | Partnering with tech-focused companies can help telecom companies stay ahead in technology.

Threats

New Entrants | New players with innovative technologies can intensify competition, pressuring the market share and profitability of established firms.

New Substitutes | Over-the-Top services and satellite providers have been gaining traction potentially disrupting the industry.

Cybersecurity | New tech brings better services, but also cyber threats, compelling companies to enhance cybersecurity measures.

Changing Consumer Preferences | Consumer preferences drive telecom companies to continuously invest in newer services to meet evolving needs.

Appendix 8: WACC Assumptions

NOS operates in two distinct segments with varying risk profiles, necessitating different required rates of return. As a result, our team has assigned separate discount rates for both the Telco and A&C segments based on their respective risk levels.

Cost of Equity (Ke) | Using the Capital Asset Pricing Model (CAPM: Ke = RFR + b * ERP + FRP), we have calculated the cost of equity. The variability in NOS' capital structure year-over-year impacts the model's beta (b), causing fluctuations in the cost of equity, which has been decreasing due to NOS' deleveraging process. Additionally, we applied a conservative approach by including a 1% firm premium to account for the risks identified in the report. This methodology allows us to conduct a realistic valuation of the firm, taking into consideration its business specifics, industry dynamics, and prevailing market conditions.

Betas | To determine the betas used in calculating the cost of equity, we analysed a sample of 65 European companies operating as integrated telecom service providers. Initially, we collected the levered betas of these peers and adjusted them using the Hamada formula to remove the effects of leverage based on each peer's capital structure. Subsequently, we computed the average unlevered betas for each segment and derived the specific unlevered betas for NOS (0.45 for Telco and 0.83 for A&C).

Furthermore, we re-levered the betas annually based on NOS' projected capital structure for each forecasted year. For the terminal value of the unlevered Telco beta, we adjusted it to 0.55. This adjustment reflects our consideration of the long-term risks inherent in the industry, encompassing regulatory changes and technological developments, as previously discussed. Therefore, this adjustment is deemed necessary to appropriately account for future uncertainties in this segment within our valuation model

RFR and MRP | The 10-year German Bond Yield as of January 6, 2024, which stood at 2.1%, was used as our risk-free rate. The market risk premium was derived from the latest data sourced from "Country Default Spreads and Risk Premiums," updated on January 5, 2024, by Aswath Damodaran, yielding a value of 6.85%

Cost of Debt | We determined the after-tax cost of debt by combining two main components. Firstly, we used the normalized 10-Year German Government Bond Yield, which stood at 2.14%, as the risk-free rate. Secondly, we added NOS' spread related to its BBB Fitch rating, amounting to 2%. These factors together resulted in an after-tax cost of debt of 3.21%

	2024F	2025F	2026F	2027F	2028F	2029F	2030F	TV
Debt ratio	50.8%	50.3%	49.8%	49.3%	48.6%	47.8%	47.0%	46.2%
Cost of debt	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%
Cost of equity	**2024F**	**2025F**	**2026F**	**2027F**	**2028F**	**2029F**	**2030F**	**TV**
Telco	8.1%	8.1%	8.0%	8.0%	7.9%	7.8%	7.8%	8.9%
A&C	12.3%	12.2%	12.1%	12.0%	11.8%	11.7%	11.7%	11.6%
WACC	**2024F**	**2025F**	**2026F**	**2027F**	**2028F**	**2029F**	**2030F**	**TV**
Telco	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%	6.5%
A&C	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.9%

Appendix 9: Peers

Rank	SARD	Company	ROE	Rank	Asset Turnover	Rank	EBITDA Margin	Rank	Net Debt/EBITDA	Rank	Beta	Rank
	0	**NOS SGPS SA**	**16,3%**	**5**	**0,45**	**10**	**45,3%**	**4**	**2,90**	**8**	**0,80**	**9**
1	25	BT Group PLC	12,6%	8	0,40	13	39,7%	9	2,57	12	1,13	4
3	32	Telefonica SA	6,0%	14	0,37	17	32,1%	13	2,88	9	0,90	8
3	32	Deutsche Telekom AG	10,6%	9	0,39	16	32,0%	15	3,71	6	0,70	11
2	27	Swisscom AG	15,4%	7	0,45	11	40,9%	6	1,51	16	0,34	15
7	48	Telekom Austria AG	18,3%	4	0,58	7	38,1%	11	1,22	19	0,28	17
5	34	Koninklijke KPN NV	24,3%	3	0,43	12	39,7%	8	2,39	13	0,28	17
6	36	Vodafone Group PLC	5,4%	15	0,30	18	41,4%	5	3,42	7	0,96	7
10	53	Proximus NV	10,3%	10	0,59	5	30,5%	17	1,93	14	0,28	17
8	51	Orange SA	5,1%	16	0,40	15	32,0%	16	2,87	10	0,26	20
8	51	Telia Company AB	21,9%	21	0,40	14	40,7%	7	2,64	11	0,20	22

Source: Refinitiv

To value NOS using a multiples approach, we employed a Sum-of-Parts (SoP) method for Relative Valuation, establishing distinct peer groups for each segment: Telco and A&C. For the telecommunications segment, we utilized the Sum of Absolute Rank Differences (SARD) method developed by Knudsen et al. (2017). This involved selecting key financial metrics — including Return on Equity, EBITDA margin, Net Debt/EBITDA, Asset Turnover, and Beta — and ranking them across the chosen peer group.

Initially, we started with companies within the telecommunications sector (excluding non-European entities). However, due to currency disparities among the selected companies, we opted to refine our analysis by excluding companies from certain Eastern European countries such as Poland, Romania, and Hungary. This adjustment aimed to create a more consistent and representative peer group, aligning with comparable macroeconomic risks. Subsequently, our analysis delved deeper into the diverse business models within the telecommunications sector. We specifically focused on including companies that were pure plays in areas relevant to NOS, such as Fixed TV, Fixed Voice, Broadband, and Mobile services, ensuring a more accurate comparison and valuation framework.

Peers	Market Cap (€)	FttH Coverage*	Capex	EV/EBITDA *	Description
BT Group	14,20B	MEDIUM	Increasing	4.34	Headquartered in London, the United Kingdom, the company operates in the UK, Europe, the Middle East, Africa, the Americas, and the Asia Pacific. BT Group plc is the largest telecom operator in the UK with over 30% market share.
Telefónica	20,36B	HIGH	Decreasing	5.32	Telefónica, S.A. is a telecommunications giant headquartered in Madrid, Spain, serving Europe and Latin America. Its services cover mobile, fixed telephony, broadband, and wholesale offerings, with a market share exceeding 35% in Spain.
Deutsche Telekom	107,78B	LOW	Stable	6.44	Deutsche Telekom AG, based in Germany, is a leading provider of integrated telecommunication services globally. It operates in over 50 countries, having ~30% market share in Germany and being the 3rd largest operator in the U.S.
swisscom	27,89B	MEDIUM	Stable	7.38	Headquartered in Bern, Switzerland, Swisscom AG leads the telecommunication sector in Switzerland, having over 50% market share in the Mobile segment. It is also growing significantly in Italy and internationally.
A1 Telekom Austria Group	5,06B	MEDIUM	Stable	4.10	Based in Austria, Telekom Austria AG and its subsidiaries provide integrated telecommunication solutions across several countries within Central and Eastern Europe, including Belarus, Bulgaria, Croatia, North Macedonia, Serbia, and Slovenia.
kpn	12,30B	HIGH	Stable	7.18	Koninklijke KPN N.V., headquartered in the Netherlands, is a premier provider of telecommunications and IT services within the region, with over 40% market share in most of the segments.
vodafone	21,46B	MEDIUM	Increasing	4.02	Vodafone Group PLC, based in UK, is a global leader in telecommunications services across Europe and internationally. It operates through both digital and physical channels and it is a pioneering force since its establishment in 1984.
proximus	2,90B	LOW	Increasing	3.77	Proximus PLC, headquartered in Brussels, Belgium, is a leading provider of digital services and communication solutions within Belgium, with over 40% market share, and with a small international presence.
orange	27,37B	HIGH	Decreasing	5.17	Based in France, Orange S.A. is a leading provider of telecommunications and data transmission services globally, operating in 26 countries across Europe, Africa, and the Middle East, having over 35% market share in its domestic market.
Telia	9,12B	HIGH	Decreasing	6.39	Telia Company AB (publ), based in Solna, Sweden, is a leading telecommunications provider in Sweden, Norway, and Finland, and the second-largest provider in Denmark, Estonia, Latvia, and Lithuania.
NOS	1,65B	HIGH	Decreasing	4.58	
		*Domestic		*2023E	

Source: *Refinitiv and Companies' guidance*

It is important to highlight that Altice Portugal's parent company, Altice USA, Inc., was excluded from our peer comparison due to reported concerns regarding its debt and capital structure. According to reports from Financial Times and Bloomberg, Altice USA is exploring the potential sale of its Portuguese operations, with interested buyers including António Horta Osório, the Warburg Pincus investment fund, billionaire Xavier Niel, and Saudi Telecom. These uncertainties have resulted in Altice being priced below its peers due to perceived increased risk. Including Altice in our peer group would distort the average valuation due to these unique circumstances.

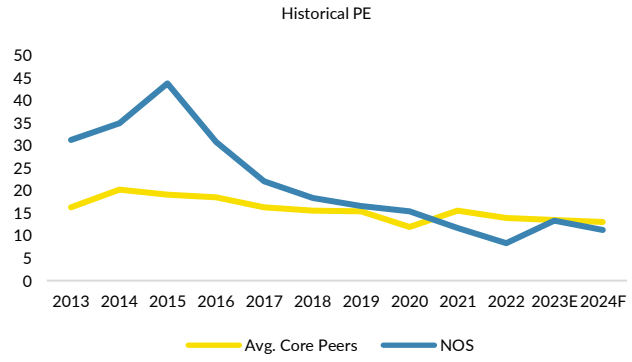
To ensure accuracy, we established a Core Peers group for comparison, taking into account disparities in capital expenditure cycles. Therefore, companies currently undergoing significant capex expansion were excluded, given their differing risk profiles compared to NOS.

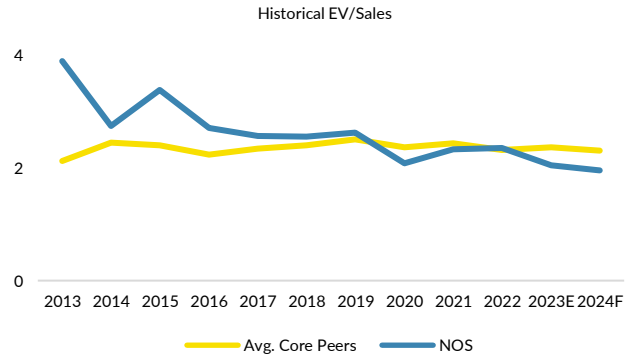
In the A&C segment, due to the absence of listed pure-play companies, our team compiled a sample of 6 cinema theatre operators that exhibited similar behaviour to NOS' A&C segment both before and after the COVID-19 pandemic. This selection was made considering the significant impact of the pandemic on cinema operators. The peer group includes Kinepolis Group NV (KIN.BR), AMC Entertainment Holdings, Inc. (AMC), Cinemark Holdings, Inc. (CNK), Cineplex Inc. (CGX.TO), Wanda Film Holding Co., Ltd. (002739.SZ), and CJ CGV Co., Ltd. (079160.KS)

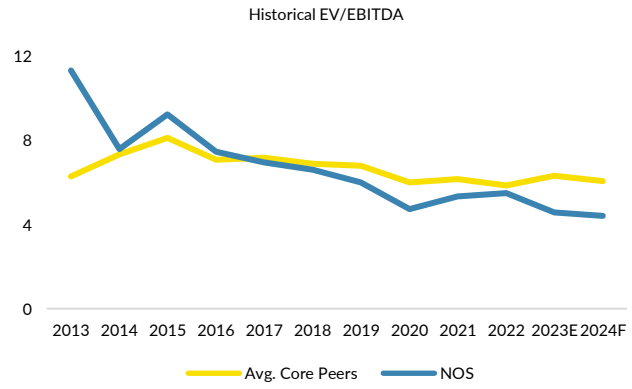
Appendix 10: Multiples Valuation

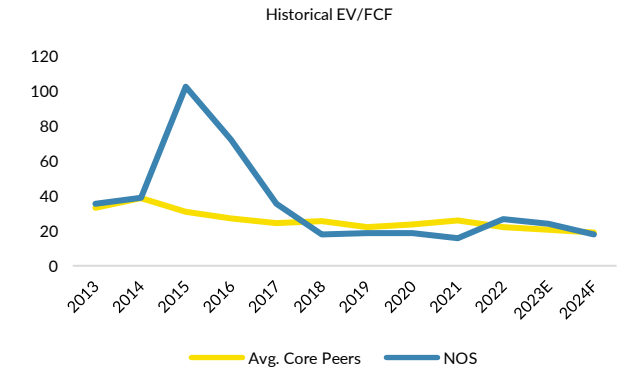
Our multiples-based valuation for 2024F relied on data extracted from Refinitiv Multiples. Initially, we gathered multiples data specific to each of NOS's segments from our selected peer group. By applying the weighted average of EV/EBITDA for 2024F, we arrived at a price target of €4.59 per share, indicating a potential upside of 40%. Additionally, using an equal-weighted average of price targets derived from four different multiples, we established a price target of €3.89 per share, reflecting a 19% upside. We favoured EV/EBITDA as our primary multiple due to the diverse capital structures among the peer companies. This choice was further justified by the fact that some members of the A&C Peers group exhibited non-profitability and negative book values. Despite these considerations, the average upside of 19% reaffirms our buy recommendation for NOS.

Upon analysing NOS' historical multiples, it is evident that the company has traditionally traded at or slightly above its Core Peers group across multiple metrics. However, following the correction prompted by COVID-19, NOS is currently trading below the average of its comparables. We anticipate this discrepancy to correct itself in the near term. Presently, NOS is trading at 4.41 times EV/EBITDA for 2024F, indicating a discount of around 27.1% compared to its Core Peers group. This observation reinforces our analysis and suggests potential for upside









	P/E			EV/Sales			EV/EBITDA			EV/FCF		
	2022	2023E	2024F	2022	2023E	2024F	2022	2023E	2024F	2022	2023E	2024F
Avg. Peers Telco	11,75	10,70	11,15	2,02	2,01	1,95	5,17	5,41	5,34	24,38	26,08	24,05
Avg. Core Peers Telco	13,87	13,41	12,96	2,32	2,37	2,30	5,86	6,31	6,05	22,27	20,76	19,04
Avg. Peers A&C	40,72	15,27	13,33	2,48	1,71	1,50	58,78	8,80	8,10	31,71	18,03	15,38
NOS Multiple	8,30	13,25	11,24	2,35	2,05	1,96	5,48	4,58	4,41	26,55	24,17	18,13
Price Target*			**3,78**			**3,76**			**4,59**			**3,39**

***Average price target** of **€3.89/share,** indicating **upside of 19%.**

Appendix 11: FCFF Valuation

FCFF TELCO	2024F	2025F	2026F	2027F	2028F	2029F	2030F	TV
Revenues	**1 502 778**	**1 521 575**	**1 527 286**	**1 526 033**	**1 519 572**	**1 516 293**	**1 512 428**	**1 512 428**
OPEX (including provisions)	825 899	850 380	857 251	863 275	867 749	874 476	881 144	881 144
EBITDA	**676 879**	**671 194**	**670 035**	**662 758**	**651 823**	**641 817**	**631 284**	**631 284**
D&A	-403 346	-393 327	-379 683	-364 264	-359 379	-358 603	-357 689	-357 689
EBIT	**273 534**	**277 867**	**290 351**	**298 494**	**292 444**	**283 213**	**273 595**	**273 595**
Taxes	-43 105	-44 360	-47 475	-49 629	-48 675	-47 015	-45 258	-45 258
NOPAT	**230 429**	**233 507**	**242 876**	**248 865**	**243 769**	**236 198**	**228 337**	**228 337**
+ D&A	403 346	393 327	379 683	364 264	359 379	358 603	357 689	
- Change in NWC	6 208	2 245	-1 259	-1 796	-3 608	-2 884	-3 018	
- Capex	366 678	357 570	345 167	331 149	326 708	326 003	325 172	
Reinvestment Value = (CAPEX - D&A + DNWC)								-35 535
FCFF	**260 889**	**267 019**	**278 652**	**283 776**	**280 048**	**271 682**	**263 872**	**192 802**
WACC	5,66%	5,66%	5,66%	5,66%	5,66%	5,66%	6,51%	6,51%
Discount Factor	0,95	0,90	0,85	0,80	0,76	0,72	0,67	0,67
Telco Discounted FCFF	**246 914**	**239 179**	**236 226**	**227 679**	**212 647**	**195 237**	**178 035**	**2 384 645**
Telco Enterprise Value	**3 920 562**							

FCFF A&C FLOWS	2024F	2025F	2026F	2027F	2028F	2029F	2030F	TV
Revenues	**112 797**	**115 391**	**117 468**	**119 465**	**121 496**	**123 926**	**126 404**	**126 404**
OPEX (including provisions)	-61 991	-64 490	-65 934	-67 581	-69 380	-71 470	-73 643	-73 643
EBITDA	**50 806**	**50 901**	**51 534**	**51 884**	**52 116**	**52 455**	**52 761**	**52 761**
D&A	-30 275	-29 829	-29 203	-28 516	-28 734	-29 308	-29 895	-29 895
EBIT	**20 531**	**21 072**	**22 332**	**23 367**	**23 382**	**23 147**	**22 866**	**22 866**
Taxes	-3 235	-3 364	-3 651	-3 885	-3 892	-3 843	-3 783	-3 783
NOPAT	**17 296**	**17 708**	**18 680**	**19 482**	**19 490**	**19 304**	**19 084**	**19 084**
+ D&A	30 275	29 829	29 203	28 516	28 734	29 308	29 895	
- Change in NWC	466	170	-97	-141	-288	-236	-252	
- Capex	27 522	27 117	26 548	25 924	26 122	26 644	27 177	
Reinvestment Value = (CAPEX - D&A + DNWC)								-2 970
FCFF	**19 582**	**20 250**	**21 432**	**22 215**	**22 391**	**22 204**	**22 054**	**16 114**
WACC	7,70%	7,71%	7,71%	7,71%	7,71%	7,71%	7,71%	7,94%
Discount Factor	0.93	0.86	0.80	0.74	0.69	0.64	0.6	0.6
A&C Discounted FCFF	**18 181**	**17 456**	**17 153**	**16 508**	**15 447**	**14 222**	**13 086**	**139 066**
A&C Enterprise Value	**251 119**							

Several adjustments were made to accurately derive Equity Value from NOS' Enterprise Value within our FCFF model. We considered Debt (short and long-term borrowings), Cash & Equivalents, and Net Trade Accounts Receivable. Non-controlling interests, Provisions, and Other financial undertakings were excluded due to their negative impact on the company's overall value.

Within Provisions, there are €22.9 million in contingent liabilities, indicating a 41% implicit likelihood of realizing these potential losses, adjusted conservatively to 75% by our team. In Other financial undertakings, we included €61.5 million in tax guarantees and €299.5 million in assignment agreements for football broadcast rights. It's important to note that the incremental Cash Flows generated by these rights are already incorporated in our forecasted market share evolution, justifying the adjustments made from EV to Equity Value.

The FCFF (SoP) tables were segmented between Telco and A&C segments. Terminal value calculations for each segment followed a distinct methodology, subtracting the reinvestment value (calculated as NOS' terminal value growth ratio by its ROIC) from NOPAT, and discounting the perpetuity. Throughout the valuation process, we applied a consistent 22.5% effective tax rate across both segments.

NOS Enterprise Value	4 171 682
Adjustments from EV to Equity Value	
Noncontrolling interests	-6 251
Cash & Equivalents	15 783
Debt	-1 706 678
Provisions and Contingent Liabilities (revised)	-99 842
Net Accounts Receivable - trade	107 332
Other financial undertakings	-361 012
Equity Value	2 121 013
Share Price	**€ 4,15**
Nos SGPS SA (XLIS: NOS)	**€ 3,27**
Upside	**27%**

Appendix 12: FCFE Valuation

NOS' equity value was derived by computing the regular steps to the FCFE from the Net income, including adjustments regarding the company's non-controlling interests. Net borrowings in 2023 correspond to the amount needed to finance the operation, with special focus on the extra dividend payment followed by the sale of the towers, in the previous year. From 2024 onwards, net borrowings were estimated having in mind NOS cash generation and its ability to deleverage.

FCFE	2024F	2025F	2026F	2027F	2028F	2029F	2030F	TV
NI	159 616	164 384	176 102	184 326	181 062	175 176	168 917	168 917
D&A	433 620	423 156	408 886	392 780	388 113	387 912	387 584	387 584
CAPEX	394 200	384 687	371 714	357 073	352 830	352 647	352 349	352 349
dNWC	6 674	2 415	-1 356	-1 936	-3 896	-3 119	-3 270	-3 270
Net Borrowings	-29 692	-32 532	-34 591	-46 804	-48 535	-47 376	-47 348	-47 348
FCFE	**162 671**	**167 905**	**180 038**	**175 165**	**171 706**	**166 184**	**160 073**	**160 073**
Discount rate	8,43%	8,38%	8,34%	8,27%	8,20%	8,14%	9,13%	9,13%
Discount factor	0,92	0,85	0,79	0,73	0,67	0,62	0,57	0,57
FCFE 0	**150 024**	**142 872**	**141 409**	**127 072**	**115 120**	**103 033**	**90 945**	**1 130 420**
Equity Value	**2 000 895**							**g = 1%**

Appendix 13: Dividend Discount Model

DDM		2024	2025	2026	2027	2028	2029	2030	TV
Dividends		167 427	167 427	167 427	167 427	167 427	167 427	167 427	167 427
Discount Factor		0,92	0,85	0,79	0,73	0,67	0,62	0,57	0,57
Discounted Dividends		154 410	142 466	131 504	121 459	112 251	103 804	95 123	1 223 942
Equity Value	2 084 960								
Non-Controlling Interests	-6 251								
Equity Value	2 078 709								
Equity Value per Share	**€4,06**								

Appendix 14: Risk Matrix

Market Risk | Energy Prices (MR3)

The volatility and unpredictability of energy prices, driven by recent geopolitical conflicts, present a notable risk to companies across various sectors, including NOS. However, this risk is relatively limited in its potential impact since energy costs represent only about 2% of the company's overall expenses. Mitigation: NOS is leveraging an energy provisioning strategy based on a long-term Power Purchase Agreement (PPA), which, according to the CFO during the 3Q2023 conference call, offers "very attractive prices." This plan covers 35% of the company's energy consumption, while the remaining 65% is procured at spot market rates.

Market Risk | Inflation and Interest Rates (MR4)

In recent years, inflation has been a concern for companies and consumers worldwide. Although Portugal has seen a slight easing of inflation to 2.1% year-over-year in the last reported month, uncertainty remains about whether this marks the end of the high inflation period. This uncertainty directly affects interest rates and, consequently, the company's average cost of debt, which has notably increased from 1.3% in Q4 2022 to 3.9% in Q3 2023. Mitigation: NOS contracts include a clause that allows the company to adjust prices in line with the country's inflation rates. To manage its average cost of debt, NOS has implemented a policy of using interest rate swaps to hedge against future interest payments on bond loans.

Operational Risk | Intense Capex (OR1)

The telecommunications sector is characterized by significant capital expenditure for maintenance and expansion. This can lead to potential financial distress due to the large upfront investments in infrastructure and technology upgrades that may not yield the expected returns. Mitigation: After a period of substantial capital expenditure to support FttH and 5G advancements, NOS plans to reduce its annual capex. This shift will enhance cash flows and strengthen the company's already robust financial position.

Operational Risk | Potential Natural Disasters (OR2)

Climate factors are becoming increasingly important for investors as extreme weather events grow more frequent and intense due to global warming. For NOS, natural disasters could damage infrastructure, disrupt supply chains, and cause substantial business interruptions. These impacts could significantly affect NOS's financial performance and its ability to generate returns for shareholders. Mitigation: NOS has implemented a Business Continuity Management (BCM) program to enhance the resilience and availability of its most critical functions, ensuring the smooth operation of daily activities. This program encompasses infrastructure, including networks, facilities, and communication support services, as well as NOS's business activities. Additionally, it prioritizes the health and safety of employees through an Occupational Health and Safety (OHS) management system.

Financial Risk | Solvency and Liquidity (FR2)

NOS's primary sources of liquidity include its operating cash flow, available committed commercial paper programs, and cash and equivalents. Operating in a capital-intensive industry, it is crucial for NOS to maintain a robust liquidity position to manage unexpected events and meet its upcoming obligations. Mitigation: NOS employs a proactive risk management strategy, consistently maintaining its Net Financial Debt to EBITDA AL ratio at or below 2, a target emphasized by the management team. The company's liquidity position includes 267.5 million euros in unissued available committed commercial paper programs and 11.9 million euros in cash and equivalents. Additionally, NOS's operating cash flows have been robust enough to comfortably cover capital expenditures. With the company now entering a period of significantly reduced capex, its financial position is further strengthened.

Appendix 15: Scenario Analysis

We conducted a Monte Carlo simulation to assess the impact of key valuation drivers amid uncertainty. The analysis included variables detailed in **Error! Reference source not found.**. Additionally, we explored both bull and bear case scenarios.

In the bear case scenario, we considered potential market entry by new competitors and increased price competition, which could erode NOS's market share and pricing.

Conversely, in the bull case scenario, we envisioned NOS achieving market leadership in 4/5P Bundles and successfully implementing price increases. More information on these scenarios is provided below:

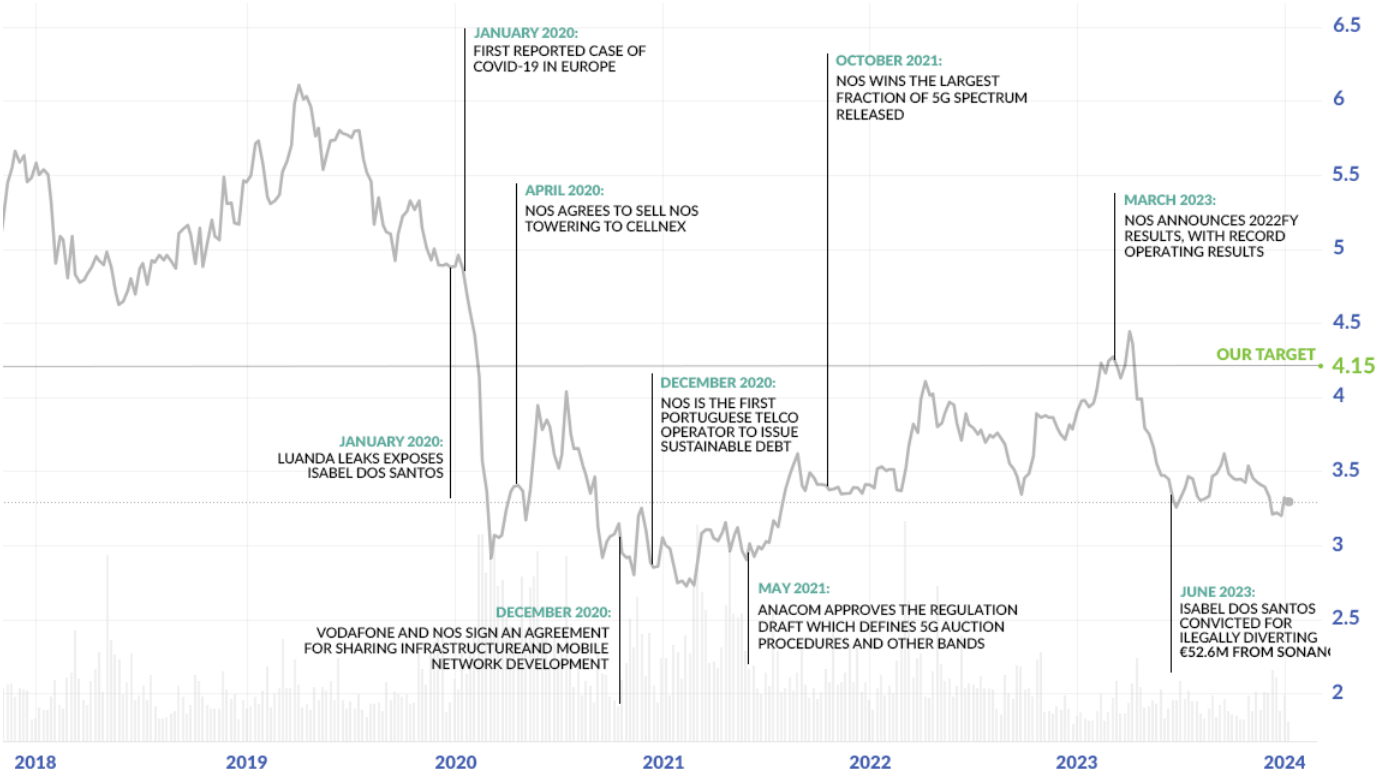
Scenarios	Bear Case	Base Case	Bull Case
WACC	7.8%	6.51%	5.21%
4/5P (% Mkt)	31.9%	36.43%	38.99%
4/5P Price	51.40 €	57.11 €	62.82 €
3P (% Mkt)	26.1%	29%	31.90%
3P Price	41.96 €	46.60%	51.28 €

Appendix 16: Sensitivity Analysis

A sensitivity analysis was conducted to assess the significance on 2 of the most important valuation drivers. With the performed analysis we stressed the 2 variables analysing the impact on the FCFF price target. We found that for a 4/5 Bundle Price in 2030 below 54.61€ allied with a WACC above 5.71% would shift our recommendation. Most of the outcomes reinforce our buy recommendation with target prices considerably above the current trading price.

WACC	4/5P Bundle Price in 2030				
	52.11 €	54.61 €	57.11 €	59.61 €	62.11 €
5.71 %	3.06 €	3.98 €	4.91 €	5.84 €	6.77 €
6.11 %	2.78 €	3.63 €	4.49 €	5.35 €	6.20 €
6.51 %	2.54 €	3.33 €	4.15 €	4.92 €	5.72 €
6.91 %	2.33 €	3.07 €	3.81 €	4.55 €	5.29 €
7.31 %	2.15 €	2.85 €	3.54 €	4.23 €	4.93 €

Appendix 17: Stock price evolution & important events



Source: Refinitiv, Team Analysis

Appendix 18: CE Components

Article	CAC included	CLV Time horizon	CLV Margin	CE Customers included	CE Historical value	Overall Valuation Outcome variable	Overall Valuation Valuation model	Overall Valuation Period-by-period
Proposed	Yes	Infinite	Variable profits	Current + future	Excluded	Any	Any	Yes
Kim, Mahajan, and Srivastava (1995)	Yes	Infinite	Direct profit	Current + future	Excluded	OA	WACC	No
Blattberg and Deighton (1996)	No	One year	Variable profit	Current	Excluded	CE	CE	No
Berger and Nasr (1998)	No*	Finite	GP ex-MKT	Current	Excluded	CE	CE	No
Blattberg, Getz, and Thomas (2001)	Yes	Finite	Gross Profit	Current	Excluded	CE	CE	No
Drèze and Bonfrer (2009)	Yes	Infinite	GP ex-MKT	Current + future	Excluded	CE	CE	No
Zeithaml, Lemon, and Rust (2001)	No	Finite	Variable profit	Current	Included	CE	CE	No
Libai, Narayandas, and Humby (2002)	No	Finite	n/a	Current	Excluded	CE	CE	No
Gupta, Lehmann, and Stuart (2004)	Yes	Infinite	Direct profit	Current + future	Excluded	CE	CE	No
Rust, Lehmon, and Zeithaml (2004)	No	Three years	Variable profit	Current + future	Included	CE	CE	No
Bauer and Hammerschmidt (2005)	Yes	Finite	Variable profit	Current + future	Excluded	CE	CE	No
Pfeifer, Haskins, and Conroy (2005)	Yes	Infinite	Cash flow	Current	Excluded	CE	CE	No
Gupta and Zeithaml (2006)	Yes	Infinite	Direct profit	Current + future	Excluded	CE	CE	No
Gupta et al (2006)	Yes	n/a	Direct profit	Current + future	Excluded	CE	CE	No
Rust and Chung (2006)	n/a	n/a	n/a	Current + future	Excluded	CE	CE	No
Kumar and Shah (2009)	Yes	Three years	Variable profit	Current + future	Excluded	CE	CE	No
Libai, Muller, and Peres (2009)	Yes	Infinite	GP	Current + future	Excluded	CE	CE	No
Malthouse (2009)	No	Two years	Revenue	Current	Excluded	CE	CE	No
Wagner, Hennig-Thurau, and Rudolph (2009)	No	Infinite	Revenue ex-MKT	Current	Excluded	CE	CE	No
Persson and Ryals (2010)	n/a	n/a	n/a	Current + future	Included	CE	CE	No
Skiera, Bermes, and Horn (2011)	No	Infinite	Direct profit	Current	Excluded	CE	CE	No
Schulze, Skiera, and Wiesel (2012)	Yes	Infinite	Variable profit	Current + future	Excluded	SHV	WACC	No
Bonacchi, Kolev, and Lev (2015)	Yes	Infinite	Gross profit	Current	Included	CE	CE	No
Datta, Foubert, and van Heerde (2015)	Yes	Three years	Direct profit	Current + future	Excluded	CE	CE	No
McCarthy and Fader (2018)	Yes	Infinite	Variable profit	Current + future	Excluded	SHV	WACC	Yes
Mornampour et al (2019)	No	One year	Revenue	Current	Excluded	CE	CE	No

Source: Daniel McCarthy & Fernando Pereda, 2020

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