

LUZ SAÚDE BUYOUT: EQUITY VALUATION

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Abstract

Luz Saúde is one of the main players on Portuguese private healthcare business, owning 9% of the market share.

It became the first Portuguese healthcare listed company in 2014 with an initial price of €3.20 per share; in the same year, the insurance company *Fidelidade*, bought 96% of the company and became the majority shareholder at that time.

Currently, the capital is mainly divided by *Fosun* (49%) and *Fidelidade* (49.7%). In 2018 it was decided by both to buyout the rest of the dispersed shares, offering €5.71 per share.

Therefore, the aim of this thesis is to value the equity side of *Luz Saúde* and reach a fair price per share and to conclude over the reasonableness of the price offered by *Fosun* and *Fidelidade* to the minority investors.

As the purpose of the thesis is to value only the equity side, the valuation methodology followed the free cash-flow to the equity approach and relative valuation based on comparable companies. Dividend discount model was not used since *Luz Saúde* never paid any dividend and it is not expectable that it will do so.

Keywords: Equity Valuation, Free cash-flow to equity (FCFE), Relative Valuation, Buyout

Resumo

Luz Saúde é uma das principais empresas a atuar em Portugal no setor da saúde privada, com uma quota de mercado estimada na ordem dos 9%.

Em 2014, tornou-se na primeira empresa Portuguesa da área da saúde a entrar em bolsa, com o preço inicial de €3.20 por ação; no mesmo ano, a seguradora Fidelidade comprou 96% do capital desta, tornando-se no acionista maioritário.

Atualmente, o capital da mesma encontra-se maioritariamente dividido em apenas dois acionistas, sendo eles a Fosun (49%) e a Fidelidade (49.7%). Em 2018, foi aprovada a saída de bolsa da Luz Saúde, tendo sido proposto €5.71 por ação.

Deste modo, esta tese tem como objetivo avaliar os capitais próprios da Luz Saúde e concluir sobre a razoabilidade do preço oferecido pela Fosun e pela Fidelidade aos restantes acionistas.

A metodologia utilizada na avaliação baseou-se no modelo de *free cash flow to the equity* e por múltiplos de mercado. A metodologia de *dividend discount model* não foi considerada para a elaboração desta tese dado a política rígida de distribuição de dividendos da Luz Saúde, nunca tendo distribuído qualquer valor desde que se tornou uma empresa cotada.

Palavras-chave: Equity Valuation, Free cash flow to equity (FCFE), Avaliação por múltiplos, Buyout

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Abbreviations

ACE – Agrupamento Complementar de Empresas
ADSE – Assistência na Doença aos Servidores Civis do Estado
ASF – Autoridade de Supervisão de Seguros e Fundos de Pensões
BS – Balance Sheet
CAPEX – Capital Expenditure
CAPM – Capital Asset Pricing Model
CEO – Chief Executive Officer
CF – Cash Flow
COGS – Cost of Goods sold
CRP – Country Risk Premium
DCF – Discounted Cash Flow
D/E – Debt-to-Equity
ESS – Espírito Santo Saúde
EBIT – Earnings before Interests and Taxes
EBITDA – Earnings before Interests, Taxes, Depreciation and Amortization
EBT – Earnings before Taxes
EV – Enterprise Value
FCFE – Free Cash Flow to the Equity
FCFF – Free Cash Flow to the Firm
FY – Fiscal Year
GDP – Gross Domestic Product
HAG – Hospital da Arrábida
HLUZ – Hospital da Luz
HML – High minus Low
HOSPOR – Hospital de Santiago e Clipóvoa
INE – Instituto Nacional de Estatística
IPO – Initial Public Offering
Ke – Cost of Equity
Kd – Cost of Debt
NPV – Net Present Value
OECD – Organisation for Economic Co-Operation and Development
P&L – Profit and Loss

P/BV – Price to Book Value

PER – Pricing Earnings Ratio

PPP – Public Private Partnership

PY – Prior Year

ROE – Return on Equity

SGHL – Sociedade Gestora do Hospital de Loures

SML – Small minus Big

SNS – Serviço Nacional de Saúde

TV – Terminal Value

WACC –Weighted Average Cost of Capital

WC – Working Capital

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1. Introduction

Luz Saúde Group is a private entity that operates in Portuguese healthcare and wellness business with 29 medical unities under its control.

The group has been growing across time and emerges as one of the key players in the market, holding around 9% of market share, mainly due to the vast range of quality and innovate services offered to its customers.

Regarding the overall development of the healthcare sector in Portugal (Public and Private), which is illustrated by the increase in the life expectancy at birth (81.2 years in 2016 against 77.4 in 2002), *Luz Saúde* historical revenue has been also growing year after year, going from €341.4 million in 2013 to €483.82 million in 2017; also, every year *Luz Saúde* was able to manage a revenue growth rate above 5%.

Among all the unities, *Hospital da Luz* stands out from the others, being the largest source of revenue, managing in 2017 sales around €155 million, equivalent to 32% of the group total revenue.

As it is currently at the maximum of its capacity, the firm decided to double its facilities, forecasting that the unit will generate until 2023, €350 million annually. The cost of this expansion is estimated to be around €100 million.

The company become listed in 2014, and still remains as the first and the only healthcare care Portuguese firm going public. At that time, *Luz Saúde* dispersed 49% of its capital. In the same year, the insurance company, *Fidelidade*, bought 96% of the company and become the majority shareholder.

Nowadays the capital structure is mainly divided into two major shareholders, 49% to *Fosun* and 49.7% to *Fidelidade*.

Luz Saúde shares are strongly characterized by the low liquidity that offers to investors and due to that it was announced by these two main shareholders the intention to turn *Luz Saúde* private again, with an offered buyout price per share of €5.71, representing a 87% premium against the price as of 31st December 2017 (€3.05).

The aim of this thesis is to value the equity side of *Luz Saúde* and reach a fair price per share. After this, it is possible to compare with the buyout price suggested by the major shareholders and identify whether minority investors should accept or not the proposal.

In order to reach a proper valuation and as the goal is to value the equity of the firm, the valuation approach to be used will be equity discounted cash-flows model and relative valuation.

All the data provided by the company (Annual Reports, Press Releases and published board interviews, among others) as well the information about the sector and the economic perspectives were used as a starting point to forecast the group revenue for the period in analysis. The historical performance was used to estimate the rest of the variables used in the valuation model.

Then, this thesis firstly describes the methodology behind valuation models, identified as the Literature Review; the second part is the overview of the global health conditions and then the characterization of the private health sector in Portugal.

The third part is a brief description of *Luz Saúde*, among the history of the firm, the historical financial results as well the capital structure of it and the behavior of the share price in the market.

Finally it is presented all the valuation methodology used and the assumptions made to the model as well the limitations of the work and the final results comparison with the buyout price offered by *Fidelidade* and *Fosun*.

2. Literature Review

2.1. Why Value?

Every asset has a value and people invest in a given asset through the expectation that the value of it will grow enough that pays off the risk taken at the time of the investment (Koller *et al.*, 2015).

However, the process of valuing accurately a business is not a straightforward process; the challenge of getting a fair value of a company is a topic discussed across the years in our society and solid investment decisions are dependent on the information that is available for the investor to decide whether to invest or not, and therefore, a fairly estimation of an asset relies mainly on the information available about that asset (Copeland *et al.*, 2000).

2.2. Valuation Models

Among the models used by analysts to evaluate companies, there are three approaches that emerge from the rest: Discounted Cash Flow (DCF), Relative valuation and contingent claim valuation. However, Damodaran (2012) defends that the majority of analysts only use two of them - the Discounted Cash Flow model (DCF) and the multiples approach.

The first approach relies on predicted cash-flows that a company may generate in the future, discounted at a rate that reflects the risk associated with the uncertainty and remains as the “*most accurate and flexible method for valuing*” (Koller *et al.*, 2010:313).

The second approach values a company against comparable and similar peers in the market under a range of standardized ratios related with earnings, book-value, among others.

However, both approaches can and may be used to triangulate results and a get a most accurate and careful valuation result (Koller *et al.*, 2010).

2.2.1. Discounted Cash-Flows

The DCF model values a company based on an income approach that would be generated by it and reflects the effect of “*the right discount rate to value these cash flows*” (Damodaran, 2012:12).

Koller *et al.* (2010:103) defend the use of this valuation method as a reference and states that “*Discounted Cash-Flow remains a favorite of practitioners and academic because it relies solely on the flow of cash in and out of the company, rather than on accounting-based earning*”.

As this approach deals with expected cash flows, there is some uncertainty type of risk that should be reflected in the valuation model; this risk is reflected in the valuation process as a discount rate.

$$Value = \sum_{t=1}^{t=n} \frac{CF_t}{(1+r)^t} \quad (1)$$

Where:

n – Life of the asset

CF – Expected Cash Flows in period t

r – Discount rate

However, according to the aim of each valuation model, this discounted cash-flows approach can be used either to value a firm's entire business, also known as Firm valuation, or to value only the equity side of the business, called Equity valuation (Damodaran, 2012).

Of course, in both, the risk associated (reflected through a discount rate) has to be different, since in the first the model is valuing the whole business and the second model is only valuing the portion of the company related with the equity side of the business.

2.2.1.1. Free Cash-Flow to Equity

In order to estimate the available cash for shareholders, there is the Free Cash-Flow to Equity (FCFE) valuation model. As the Free Cash Flow to the Firm (FCFF) approach, this equity valuation technic also relies on future predicted cash-flows that a company will generate but only after "*meeting reinvestment needs*" (Damodaran, 2012: 351).

The discount rate to be used is the required return demanded by shareholders, known as cost of equity.

Despite measuring the cash amount that could be available to shareholders, it should not be considered the same approach as discount dividends model, as the amount available after all obligations being paid may be or may be not be distributed as dividends to investors.

Therefore, FCFE emerges as a useful tool to help investors value a non-dividend policy firm or to analyze whether the company is paying back properly its investors, through a reasonable dividend payout ratio. FCFE then, should be considered as a model that represents "*potential dividends rather than actual dividends*" (Damodaran, 2012: 357).

Free cash-flows can be described as the following:

$$\begin{aligned}
 FCFE = & \text{Net Income} + \text{Depreciations} - \text{Capital Expenditures} \\
 & - \text{Changes in noncash working capital} + (\text{New Debt Issued} \\
 & - \text{Debt Repayment})
 \end{aligned} \tag{2}$$

The equity value is then computed by discounting all the projected cash-flows at the return demanded by the investors (cost of equity). If the firm in analysis is expected to have a stable growth rate, a perpetuity may be assumed to value it:

$$\text{Equity Value} = \frac{FCFE_1}{(k_e - g)} \tag{3}$$

Where:

$FCFE_1$ – Expected FCFE next year

k_e – Cost of equity

g – Perpetuity growth rate

However, and if the valuation models is dealing with more than one year projections, it is needed to discount not just the FCFE expected for the next year, but also the remaining years with a perpetuity expected cash-flow at the end (Terminal Value):

$$\text{Equity Value} = \frac{FCFE_1}{(1 + k_e)^1} + \frac{FCFE_2}{(1 + k_e)^2} + \dots + \frac{FCFE_t + TV_{t+1}}{(1 + k_e)^t} \tag{4}$$

Terminal Value can be expressed as the following:

$$TV_{t+1} = \frac{FCFE_t \times (1 + g)}{k_e - g} \tag{5}$$

2.2.1.2. Dividend Discount Model

2.2.1.2.1. Gordon Growth Model

Another equity valuation approach is the dividend discount model, which also measures the amount of money available to shareholders after all obligation being paid, but with the difference that relies on the effective amount that is estimated to be distributed to investors.

Gordon and Shapiro (1956) developed an approach that values a share price of a given company as simply as the present value of the predicted constant growing dividends.

The formula proposed for that is the following:

$$\text{Value per share} = \frac{D_1}{(k_e - g)} \quad (6)$$

Where:

D_1 – Expected dividend for next year

k_e – Cost of equity

g – Perpetuity growth rate

2.2.1.2.2. Two-stage dividend discount model

However, and due to the simplicity of the formula, the Gordon's model does not take in consideration any possible change on the expected dividend growth rate, since it assumes a constant growth rate.

Then, the two-stage dividend discount model approach considers different growth rates over a period, being the second stage dividend characterized to follow a constant growth rate.

The formula proposed for that is the following:

$$\text{Value per share} = \sum_{t=1}^{t=n} \frac{D_t}{(1 + k_e)^t} + \frac{P_n}{(1 + k_e)^n} \quad (7)$$

Where D_t is the first stage dividend assumed to grow at an “*extraordinary growth rate*” (Damodaran, 2012:329) g_s , during period t , expressed as the following:

$$D_t = D_0 \times (1 + g_s)^t \quad (8)$$

After that dividend will start to grow at a “*stable growth rate*” (Damodaran, 2012: 329) identified as g_t . Therefore, terminal value P_n , is nothing more than Gordon growth model discount dividend approach, where:

$$P_n = \frac{D_0 \times (1 + g_s)^n \times (1 + g_t)}{(k_e - g_t)} \quad (9)$$

2.2.1.3. Cost of Equity (CoE)

The cost of equity is defined as the required return demanded by shareholders in order to invest in a given company. This return is “*built on three factors: the risk-free rate, the market risk premium and a company specific risk adjustment*”. (Koller *et al.*, 2010: 238).

There are two main models to estimate the cost of equity: the Capital Asset Pricing Model (CAPM) and the Fama-French three-factor model. However, Koller *et al.* (2010) defend that the most common approach that help analysts in the cost of equity estimation task is the Capital Asset Pricing Model:

$$r_e = r_f + (r_m - r_f) \times \beta_i \quad (10)$$

Where:

r_e – cost of equity,

r_f – risk-free rate,

r_m – expected return on the market,

$r_m - r_f$ – expected market risk premium,

β_i – return sensitivity of stock i to changes in the market return.

Regardless the uncertainty related with the company’s future, the investor should consider firstly the risk-free rate, the return if the investor would invest in treasury debt issued by solvent countries, where the risk is low and therefore “*has no covariance with the market*” (Koller *et al.*, 2010: 240).

Another component considered to the cost of equity computation is the risk-premium demanded by the investors that reflects the extra-return required for investing in a risky security

than in a risk-free asset. This element is computed through “*expected return of the market portfolio less the return of risk-free bonds*” (Koller *et al.*, 2010: 237).

The last component is the company specific risk given by Beta, that measures “*a stock’s co-movement with the market and represents the extent to which a stock may diversify the investor’s portfolio*” (Koller *et al.*, 2010: 237).

The CAPM approach “*defines a stock’s risk as its sensitivity to the stock market*” (Koller *et al.*, 2010: 239), considering a portfolio market as a value-weighted portfolio of the assets traded at the respective market. The return of such portfolio matches the market return on that market.

Therefore, companies that present higher Betas are demanded by investors to bring also higher “*excess returns that exceed the market risk premium*” (Koller *et al.*, 2010: 237). Conversely, lower betas are related with lower expected returns.

Beta is given by:

$$\beta_i = \frac{Cov(r_i, r_M)}{Var(r_M)} \quad (11)$$

Where,

β_i – Beta of stock i,

$Cov(r_i, r_M)$ – Covariance between stock return i and market return,

$Var(r_M)$ – Variance of market return

Giving the initial CAPM formula mentioned above, and by adding a country risk premium, the formula will be able to capture the additional risk that investors are exposed by investing in a specific market and the range of macroeconomic factors related with it rather than others low risk countries (Koller *et al.*, 2010).

As this risk exposure is the same for every asset in the country, then the risk might be added to the formula with the same impact as risk-free rate (Damodaran, 2012):

$$r_e = r_f + (r_m - r_f) \times \beta_i + CRP \quad (12)$$

The second most used approach to estimate the cost of equity is the Fama-French three-factor model (1993), that measures risk as “*stock’s sensitivity to three portfolios: the stock market, a portfolio based on firm size, and a portfolio based on book-to-market ratios*” (Koller *et al.*, 2010:239).

The stock market component risk in the Fama-French three-factor is similar to the CAPM approach, measuring the stock sensitivity against the market returns.

The firm size component risk, known as “Small minus Big” (SMB), is measured through the historical small-cap performance over big caps stocks (Koller *et al.*, 2010).

The book-to-market ratio component risk, measures the premium “High minus Low” (HML) over the difference between historical returns of high book-to-market and low book-to-market stocks (Pratt & Grabowski, 2011).

If the returns of given stock shows a correlation against the small-cap or high book-to-market returns, then it receives a premium on that (Koller *et al.*, 2010):

$$r_e = r_f + \beta_1(r_m - r_f) + \beta_2(SMB) + \beta_3(HML) \quad (13)$$

Where,

β_1 – Return sensitivity of stock i to the market return,

β_2 – Return sensitivity of stock i to the SMB factor,

β_3 – Return sensitivity of stock i to the HML factor.

2.2.1.4. Free Cash-Flow to the Firm

Among firm valuation models, Professor Damodaran (2012) defends that Free Cash Flow to the Firm (FCFF) approach is one of the most used model and solid models, as this approach relies on discounted cash flows generated to the debt and equity holders after taxes.

Damodarn (2012) states that there are two ways to compute free cash-flow to firm. The first approach relies on “*add up the cash flows to the claim holders, which would include cash flows to equity, cash-flow to lenders and cash flows to preferred stockholders*” (Damodaran, 2012: 380):

$$FCFF = FCFE + Interest\ Expense * (1 - Tax\ Rate) + Principal\ Repayments \\ - New\ Debt\ Issues + Preferred\ Dividends \quad (14)$$

The second approach, which manages a more intuitive formula, is to compute the free cash-flows to the firm through earnings before interest and taxes (EBIT), before any debt or equity issue take impact:

$$FCFF = EBIT * (1 - Tax Rate) + Depreciation - Capital Expenditures - Working Capital Variations \quad (15)$$

Then, to compute the firm value is necessary to compute the present value of all forecasted cash-flows, discounted at the discount rate that reflects the risk associated to the investment. This rate is considered on the valuation model through the required return demanded by investors, the weigh average cost of capital (WACC).

Since, each component brings a different associated cost to the firm, this WACC reflects the impact that each source of capital has on the firm once it measures the portion that equity and debt have on the firm's capital structure.

If the firm in analysis is expected to have a stable growth rate, a perpetuity may be assumed to value it:

$$Value\ of\ firm = \frac{FCFF_1}{(WACC - g)} \quad (16)$$

Where:

$FCFF_1$ – Expected FCFF next year

$WACC$ – Weighted average cost of capital

g – Perpetuity growth rate

However, and if the valuation models is dealing with more than one projected cash-flows, it is needed to discount not just the FCFF expected for the next year, but also the remaining years with a perpetuity expected cash-flow at the end (also known as Terminal Value):

$$Value\ of\ firm = \frac{FCFF_1}{(1 + WACC)^1} + \frac{FCFF_2}{(1 + WACC)^2} + \dots + \frac{FCFF_t + TV_{t+1}}{(1 + WACC)^t} \quad (17)$$

Terminal Value can be expressed as the following:

$$TV_{t+1} = \frac{FCFF_t \times (1 + g)}{WACC - g} \quad (18)$$

2.2.1.5. Cost of Capital

The estimation of an accurate Cost of Capital is crucial in the valuation process; however, this estimation is a challenging task, once it is computed based on estimations and in a range of assumptions and also differs from company to company and sector to sector.

Typically, a company may raise capital from two sources of budgeting, debt and equity, the two variables that reflect the “*cost of the different components of financing used by the firm*” (Damodaran, 2012: 14), widely known as the Weighted Average Cost of Capital (WACC).

On one side, there is the cost of debt, the cost associated with the issue of a bond or just a bank loans (this cost is reflected as the interest paid to the investors). On the other side, there is the cost of equity, as mentioned before, defined as the required return demanded by shareholders in order to invest in a given company (Damodaran, 2012).

$$WACC = w_d r_d (1 - t) + w_e r_e \quad (19)$$

Where:

w_d – Proportion of debt in the company capital structure,

r_d – Cost of Debt,

w_e – Proportion of equity in the company capital structure,

r_e – Cost of Equity,

t – Corporate Tax rate.

The cost of capital is nothing more than the required return demanded by the suppliers of capital by investing in such company; therefore, the riskier the investment the higher the cost of capital required by the investors.

2.2.2. Relative Valuation

Another common valuation approach used by analysts is the relative valuation that compares a stock price to “*the price multiple of a similar stock or the average or median price multiple of some group of stocks*” (Stowe *et al.*, 2007: 32).

This approach should rely on two aspects; the first one is to identify comparable assets among a given sector. This is not an easy task because even if two companies operate in the same sector, both may have different levels of risk, different capacity to free cash from their operations, growth potential, among others. (Damodaran, 2012)

The second step is to identify “how similar assets are priced in the marketplace” (Damodaran, 2012: 19), through financial ratios across a specific industry. These ratios derive from variables, such as, revenues, earnings, cash-flows or book value.

Among the wide range of multiples available in the market, Mellen (2018) defends that the most used multiple in equity valuation is the price-earnings ratio (PER). Damodaran (2012) also adds price-book value ratio (PBV) to the most widely used ratios in valuation.

As the first one is computed by dividing the market value per share of a given company by its earnings per share, the second one is computed by dividing the market capitalization of a given company by its book value.

Damodaran (2012) also adds a third multiple to the most widely used by analysts, based upon revenue which is the price-sales ratio. This multiple compares the market capitalization of a company to its sales on a given period.

3. Sector Analysis

3.1. OECD countries and Portugal Healthcare Status Overview

3.1.1. Life Expectancy at Birth

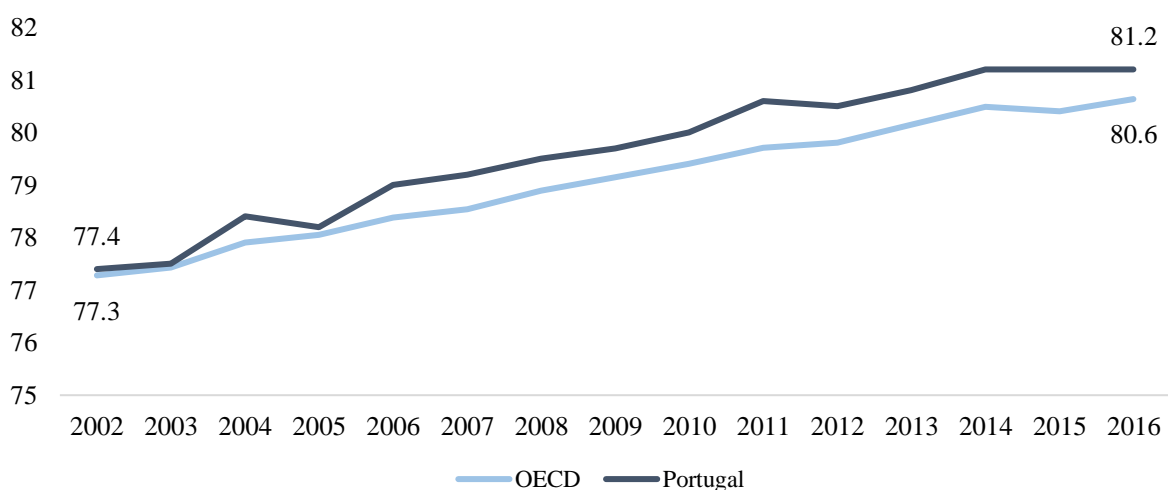
The overall healthcare conditions at Organization for Economic Co-operation and Development (OECD) countries have been improving across years leading to an increase of the average life expectancy at birth. This fact may be linked to several reasons, among them, the progress in healthcare system.

OECD defines life expectancy at birth as the “*average number of years that a person can expect to live based on current mortality conditions*” (Health at a Glance: Europe 2016) and identifies it as a “*key indicator to understanding the overall health of a population*” (Health at a Glance 2017: OECD Indicators).

In fact, and looking at the life expectancy at birth in OECD members between 2005 and 2016 (the latest available data), there is a clearly positive growth year after year, suggesting that people of these regions are expected to live, on average, 80.6 years at birth, almost more three and half years than the life expectancy reached in 2002 (77.3 years).

Debating this indicator against the numbers of Portugal, there is also a quite positive trend in the same period. In fact, after the first decade of this century, in 2010, Portuguese people, on average, already were living 80 years, more half an year that the rest of the OECD countries.

Exhibit 1: Life Expectancy at Birth in OECD Countries and Portugal



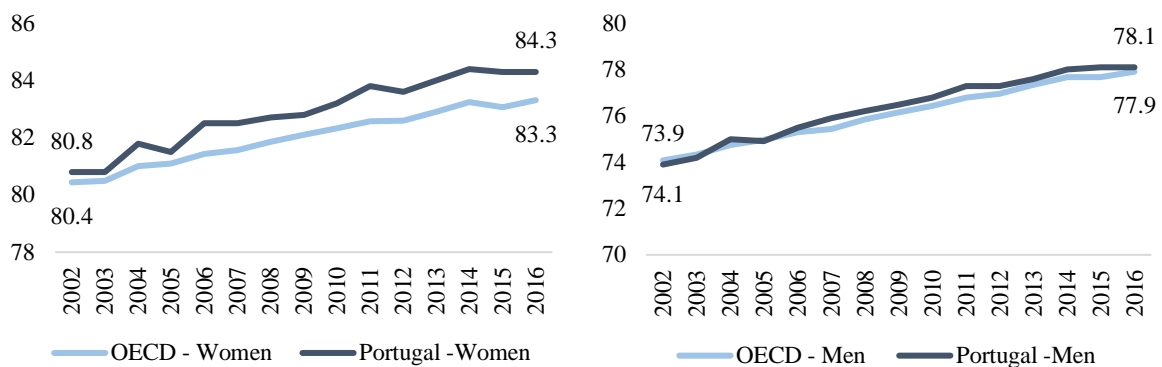
Source: OECD

However, there is a gap gender on this health indicator, suggesting that, on average, women live longer than men, as showed at Exhibit 2.

In fact, and following the numbers for OECD members, on average women were living more 6.3 years than men in 2002; although, there has been an approximation of these statistics, and in 2016, women were supposed to live 83.3 years, 5.4 more years than men.

Looking at Portugal, the trend is quite the same and it followed the OECD improvement; in 2016, Portuguese women, on average, were expectable to live 84.3 years (around one year more than the average OECD members' women). Against Portuguese men, the difference is even bigger, once on average, Portuguese men were expectable to live just 78.1 years (a number slightly above the OECD average).

Exhibit 2: Life Expectancy at Birth by gender in OECD countries and Portugal



Source: OECD

3.1.2. Share of Gross Domestic Product

The continuously improvement path on health conditions for OECD members' people has been followed also for a higher investment on healthcare sector by the respective governments.

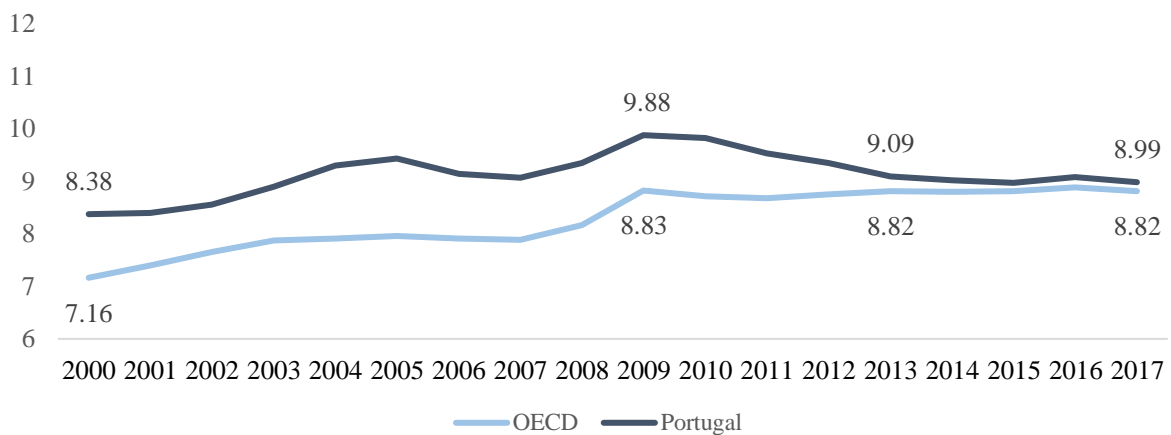
In fact, and as showed at Exhibit 3, there is also an increase on the portion of Gross Domestic Product spent on such sector in the OECD region since 2000, going from 7.2% of GDP in that year to 8.8 % in 2009.

However, and after that, it has to be highlighted a slight deceleration, in some countries even a decrease, between 2009 and 2013, mainly due to the strong financial distress that has shaken the world economy. After that period and until 2016, the investment has been rising again, and given the latest data, OECD members spend, on average, 8.8% of the total GDP in these countries (almost more 2% than in 2000).

Going into Portuguese numbers, there are some difference against the OECD stats once, on average, Portuguese governments have been investing a larger portion of country GDP in healthcare than OECD members.

Despite that, there was also a sharp break on that in 2009, when there was an emergent need to reduce Portuguese public spend. In this way, in 2009, Portugal was spending 9.9% of its GDP on health and in 2013 was spending only 9.1%, which has been quite stable until 2016 (9%).

Exhibit 3: Health Expenditure in OECD countries and Portugal (% of GDP)



Source: OECD

3.2. Portugal – Health Care Private Sector

3.2.1. The emerging of private sector

Healthcare services emerge as one of the most important services that a country may provide to its people. In Portugal, every person is covered by a public health insurance guaranteed by Portuguese government that can be used under any health problem. This coverage is known as *Serviço Nacional de Saúde* (SNS).

However, and despite the investment that has been done in public services and facilities, there are a range of issues that have been surging and leading Portuguese people to the private sector, where the quality, convenience and quickness of the services are better. Therefore, private sector has been growing year after year and currently they represent a key role for a proper and effectiveness health service in Portugal.

In fact, and looking at the number of hospitals and beds in private sector against public sector, there is no other conclusion than that, once in 2016, it was the first year that private sector presented a larger number of hospitals than public sector (114 against 107), representing

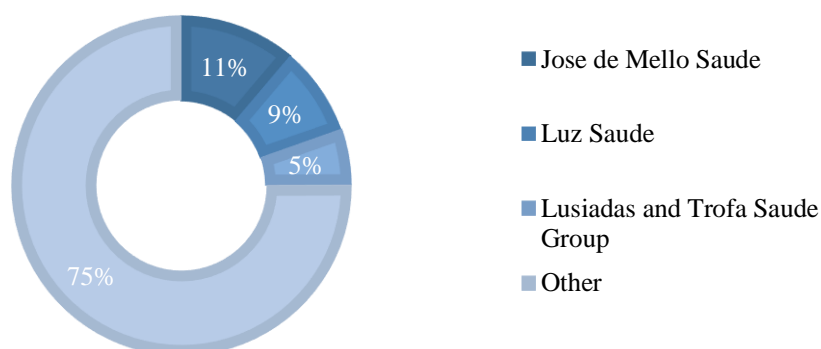
51% of the entire number of Portuguese Hospitals. The number of public-private partnerships ascends to 4. In terms of available beds, the public sector still dominates the business, presenting a total of 22.4 thousand beds (63% of the total available beds) against 11.3 thousand in private sector.

Following these facts, the private healthcare sector achieved a key position on Portuguese wellness and according with the latest market research by the consulting firm *Augusto Mateus & Associados* in association with the Portuguese bank *Millenium BCP*, the private health sector is estimated to generate over €5.7 billion annually (approximately 3% of Portuguese GDP); the business is also composed for 79 thousand companies that employ 130 thousand people.

Among the range of players in the market, *Jose de Mello Saúde*, *Luz Saúde*, *Lusiadas* and *Trofa Saúde Group* are estimated to have near 25% of the whole health private business; the first two, stands out from the rest and emerge as the main players in the market, with a total revenue in 2017 close to €1.121 million - €637 million from *Jose de Mello Saúde* and €484 from *Luz Saúde*.

The others two are estimated to generate annually over €300 million together, representing both around 5% of the business. The remains private companies are expected to have 75% of the entire market. These market estimations were computed with the revenue from the public-private partnerships that these four groups have.

Exhibit 4: Portuguese Private Healthcare sector market share estimation



Source: Augusto Mateus & Associado, Setor Privado da Saúde em Portugal (2016)

3.2.2. The role of insurances in the healthcare business

Besides the coverage that Portuguese state provides to any citizen (SNS) that may be used at public hospitals and clinics, there is also another public health insurance provided by Portuguese state but only to its workers; this insurance is called *Assistência na Doença aos Servidores do Estado* (ADSE). However, this one differs from SNS, the other public health insurance, once the people covered by ADSE might be assisted at private facilities that have an agreement with this public insurance system.

Although, a large number of people do have their personal health insurance coverage which able them to use the services provided by private entities at a reasonable and affordable price and in a more efficient time.

With the widely range network partnerships that insurances companies establish with these private health companies, they lead more often Portuguese people to private health companies instead of public facilities.

In fact, and looking at the *Autoridade de Supervisão de Seguros e Fundos de Pensões* (ASF) historical data regarding the number of Portuguese people covered by these health insurance policies, the numbers confirm how crucial has been the private sector to the overall Portuguese health status.

Analyzing the annual results presented in Exhibit 5, the number of Portuguese covered by a health insurance policy different from those provided by Portuguese government has been growing year after year, and in 2016, more than 25% of Portuguese total population were already covered by a private health insurance policy.

Exhibit 5: Number of Portuguese people covered by a private health insurance policy

Year	2013	2014	2015	2016
Individual	1.074.106	1.134.719	1.190.101	1.175.749
Group	1.111.349	1.174.902	1.464.131	1.507.425
Total	2.185.455	2.309.621	2.654.232	2.683.174

Source: ASF Annual Report (2016)

4. Company Overview

4.1. History

Luz Saúde Group is a private entity that operates in healthcare and wellness business being established in 2000 under the name *Espirio Santo Saúde* (ESS) with minority position at *Aveiro Private Hospital* and *Arrábida Hospital* equity. The group has been growing strongly over the years and has become one of the key players in this market.

In 2002, ESS started a management partnership with a third party at *Évora Hospital* followed in 2003 by the beginning of the construction of one of the most important units of the group so far and currently also one of the most valuable assets, *Hospital da Luz*. Inside of this unit was also planned to be constructed the first senior house of the group which led nowadays to the name *Casas da Cidade*. Four years later, in 2007, *Hospital da Luz* started its activity.

The year of 2009 was also another important mark for the group, by becoming the year that dated the contract signature for the management of *Hospital Beatriz Ângelo*, the public-private partnership of the group. This unit is also known by *Sociedade Gestora do Hospital de Loures* (SGHL).

In 2010, one of the first unities of the group, *Hospital da Arrábida* doubled its capacity and also this year marked the beginning of the process for SGHL operations which open doors two years later, in February 2012.

One year later, this Hospital received an international accreditation revealing its high quality standards by the Joint Commission International entity. Also in this year, another important unit from the group, *Hospital da Luz*, was awarded for the third year in a row, as the best Portuguese facility in healthcare business by the magazine *Exame*.

The year of 2014 emerged as the most important year for the company so far, with two remarkable moments. In February, *Luz Saúde*, still under the name of ESS Group, has become the first healthcare private firm listed in Portugal with 49% of its capital to be subscribed. Eight months later, in October, there was a huge transaction, with the insurance *Fidelidade* Group becoming the majority shareholder of the group, buying 96% of its shares.

Fidelidade, as the new ESS owner, decided to rebrand the name *Espírito Santo Saúde* to *Luz Saúde Group*, moving away the healthcare unit from the *Espírito Santo Group* (that was emerging as one of the biggest fraud scandals in Portugal history) with a clear move and message to the market that *Luz Saúde* had no fraud issues as the rest of the group.

In 2016, the works for the *Hospital da Luz* expansion started, with the goal to double its production capacity; the year of 2017 was also marked for another two significant purchases

from *Luz Saúde*, the acquisition of both *British Hospital* group and the clinic *Sociedade Clínica Hospital, SA*.

In 2018, *Luz Saúde* also announced the purchase of 70% of the *Idealmed* group; despite that, *Luz Saúde* already had a minority position of 10%, holding after this transaction 80% of the medical group.

Nowadays, *Luz Saúde* Group has 29 unities under control spread all over Portugal, along 20 private hospitals, one public-private partnership, 6 private clinics and 2 senior houses.

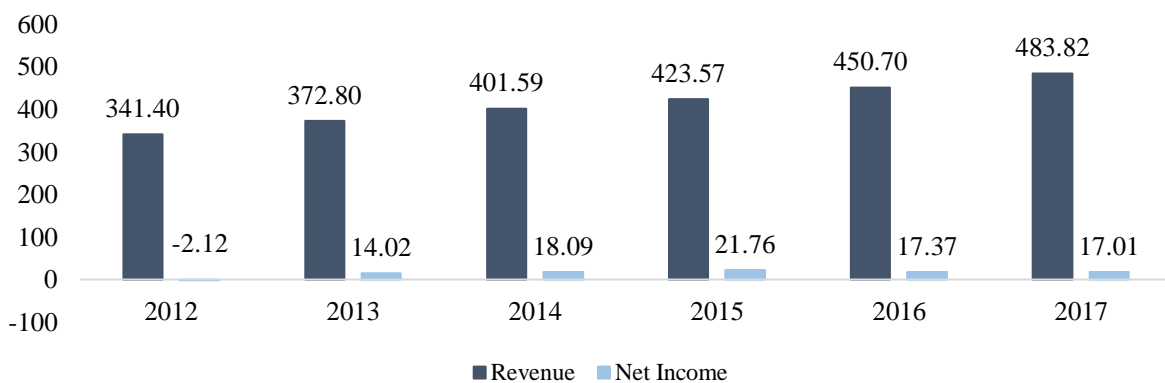
4.2. Economic and Operating Performance

After the negative results in 2012 (- €2.12 million net loss), *Luz Saúde* has been recovering since that, achieving in 2017 a positive result of €17.01 million.

However, and despite the positive annually results since 2012, *Luz Saude* managed an increasing net income until 2015, once after that the result has been lowering despite the revenue growth, highlighting 2017 as the worst year of the group in a four years range. The best result since *Luz Saude* become a listed company was achieved in 2015, with a net profit of €21.76M.

In terms of overall revenue, the numbers have been increasing year after year, going from €341.4M revenue in 2012 to €483.8M in 2017. Despite the lower sales growth rate managed in 2015 and 2016, where *Luz Saude* only grew 5.47% and 6.40% (the only two years since 2012 where it has been recorded a growth below 7%), in 2017 *Luz Saúde* managed again a revenue growth above that, going from €450.7M in 2016 to €483.8M in 2017 (+7.35%).

Exhibit 6: *Luz Saúde* Revenue and Net Income (€M)

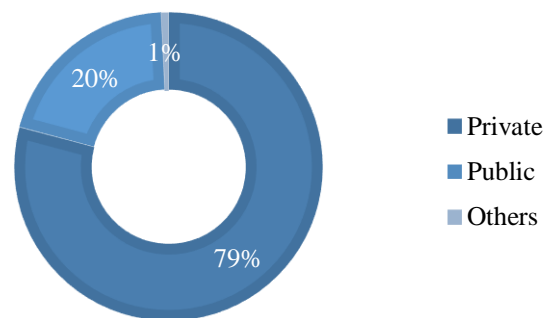


Source: *Luz Saúde* Annual Reports

Looking at the activity per segment, historically the private sector emerges as key-role for the group, representing every year more than 75% of total group activity; according with the last annual report from *Luz Saúde*, the private sector, in 2017, was responsible from 79% of the group total revenue.

Luz Saúde also has a position at public healthcare sector, with the private-public partnership *Hospital Beatriz Ângelo*, where the weight over the total activity has been decreasing, once in 2013, it represented 22% of the total group activity against 20% reported in 2017. Despite this loss at public sector, the group was able to absorb it through the growth at the private sector. The remaining belongs to activity generated mainly by the two Senior Houses.

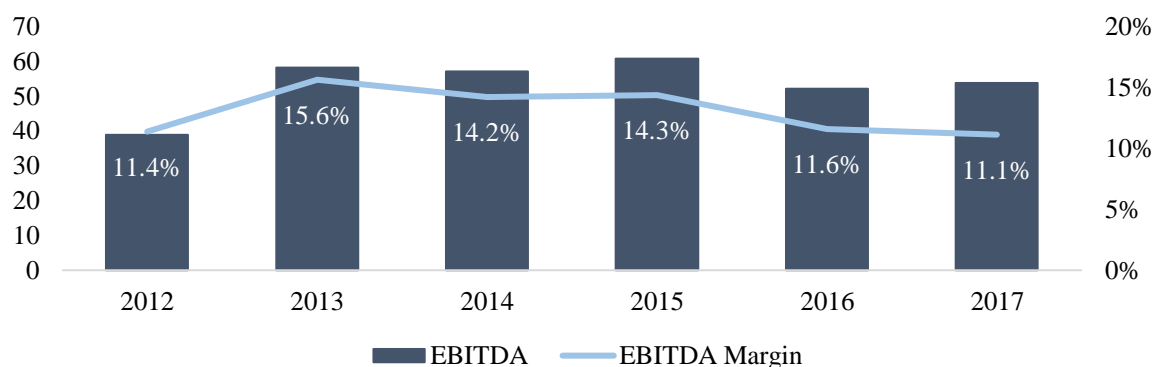
Exhibit 7: Luz Saúde activity by segment



Source: *Luz Saúde* Annual Reports

In terms of operational margin, the scenario has been changing across time with a clear negative trend, highlighted in 2017 with the worst result by managing an operational margin of 11.1% (the lowest margin since *Luz Saúde* become a listed company).

Exhibit 8: Luz Saúde operational margin (€M)



Source: *Luz Saúde* Annual Reports

4.3. Capital Structure

On 12th February 2014, *Luz Saúde* became the first healthcare listed company at NYSE Euronext Lisbon, at that time, still under the old name of *Espírito Santo Saúde* (ESS). The IPO placed 46,815,704 shares in the market (representing 49% of its capital) with an opening share price of €3.20, valuing ESS at €305,735,213. The other 51% of the capital still remained to the majority shareholder *Espírito Santo Health Care Investments*.

In early September, *Luz Saúde* share price had already a 15.6% rise against February, going from €3.20 to €3.70; also in this period, the Mexican healthcare group *Ángeles* launched a takeover bid to *Luz Saúde* with an initial share price of €4.20, representing a 16.2% premium facing the €3.70 in the market.

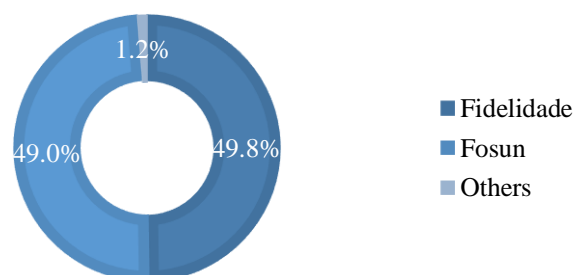
Although, the Mexican group was not alone in the “race”, as the major competitor, *José de Mello* group, offered €4.40 for share, which led *Ángeles* group reviewing its initial offer, increasing it to €4.30.

However, in October, the insurance Portuguese company *Fidelidade*, also made an offer to *Luz Saúde* largely higher than the two first offers, with an initial share price bid of €4.82, a value nearly 51% higher than the €3.20 in February 2014 and a premium of 30% facing the current market value of €3.70 at that time.

In mid-October, *Fidelidade* announced that had successfully acquired *Luz Saúde* for a final price of €5.01 (4% higher than the initial offer and 11.3% above the other two offers), becoming its major shareholder, owning 96% of its capital. During 2016, *Fidelidade* reinforced its position at *Luz Saúde* capital, owning already 98.7% at the end of the same year.

In 2017, another big transaction placed at *Luz Saúde* equity, since *Fidelidade* transferred 49% of its position to *Fosun* (*Fidelidade* majority shareholder), starting to control indirectly *Luz Saúde*, due to the majority position also at *Fidelidade* equity.

Exhibit 9: Luz Saúde shareholders structure (2017)



Source: *Luz Saúde* Annual Reports

5. Valuation Methodology

The valuation of *Luz Saúde* was based on available financial historical information between 2012 and 2017, once it allows to understand the economic performance over time. A five years range seems a reasonable period to understand possible trends of the business as well to identify any non-recurring result.

As the goal of this thesis is to identify a possible over or underpriced offer from the majority shareholders of the Group (*Fosun* and *Fidelidade*), the share price estimation was computed by forecasting future cash flows generated from the business also to the next five years (until 2022) and at the end of that period a perpetuity was assumed under a constant growth rate.

All the estimations were computed based on historical financial information gathered from annual reports published, being both BS and PL indicators computed on majority through ratios.

The operational revenue was estimated not only based on *Luz Saúde* and Portuguese Healthcare sector historical growth but also based on differing type of service lines (private and public) as well on forecasted *Luz Saúde* acquisitions and investments according to the news, board interviews and press releases from the company.

The different valuations models approaches were compared in the end once they produce different results giving the different variables that each model relies on as explained before at literature review.

Considering that *Luz Saúde* is under a non-dividends policy distribution, and it has never paid any dividend since it became a listed company, the valuation models considered were the free cash-flow to the equity and the relative valuation using market multiples from the comparable peers.

Finally, and despite being a listed company, not all the information is published and therefore some estimations were assumed under forecasted circumstances.

6. Assumptions

6.1. General Assumptions

Some balance sheet and income statement rubrics were estimated under forecasted Portuguese macroeconomic indicators, such as Gross Domestic Product (GDP), Public and Private Consumption and Inflation.

The most accurate indicator to estimate each rubric was identified through historical correlation during the time range in analysis, between the rubric itself and the macroeconomic indicator, being chosen the one that showed a higher correlate coefficient.

All the historical data was gathered from *Instituto Nacional de Estatística* (INE) reports and the forecasted economic indicators were collected through *Banco de Portugal* economics country reports.

As this thesis is studying a time range until 2022 and considering that *Banco de Portugal* only estimates data till 2020, the estimated rates to be used in 2021 and 2022 projections were assumed to remain the same as 2020.

The full historical data (from 2012 till 2017) can be consulted at Appendix section (Appendix 13).

Exhibit 10: Portuguese macroeconomic indicators

Portugal	Units	2017	2018E	2019E	2020E	2021E	2022E
Gross Domestic Product	Billion EUR	193,072	197,513	201,265	204,687	208,167	211,705
Growth Rate			2.30%	1.90%	1.70%	1.70%	1.70%
Public Consumption	% of GDP	17.60%					
Public Consumption	Billion EUR	33,989	34,193	34,330	34,399	34,468	34,537
Growth Rate			0.60%	0.40%	0.20%	0.20%	0.20%
Private Consumption	% of GDP	65.10%					
Private Consumption	Billion EUR	125,690	128,329	130,639	132,860	135,119	137,416
Growth Rate			2.10%	1.80%	1.70%	1.70%	1.70%
Inflation, Consumer Prices			1.5%	1.4%	1.6%	1.6%	1.6%

Source: *Author*

Other general assumptions assumed to compute the Free Cash Flow to Equity model, such as, all the investment in Fixed and Intangible assets was fully paid at the same year of the investment and also corporate income tax is paid in the end of each year.

6.2. Income Statement Assumptions

6.2.1. Operational Revenue – Acquisitions and Investments Assumptions

To properly estimate the revenue for the next 5 years it is important to not only break the overall revenue into the categories mentioned above (private, public and others), it is also crucial to consider the available public information about the expansion of the largest unit of the group: *Hospital da Luz*.

Following the most recent interview with the CEO of the group, *Isabel Vaz*, where she mentioned that *Luz Saúde* intends to double the current capacity of this unit and that the project will be concluded in end of 2018, leading to an estimated €350 million revenue in 2023. The total amount projected for this investment will be close to €100 million.

On other hand, should be also considered the revenue that the most recent acquisition might bring to the group, with the purchase of 70% of *Idealmed* group in March 2018.

However, and as there are no public financial data available about this group, it was assumed the numbers stated in an interview by *José Alexandre Cunha*, the group board president, where he stated that *Idealmed* achieved, in 2016, a €23 million revenue. Therefore, to estimate the revenue after that, it was assumed that this continued to grow at the forecasted Portuguese inflation rate, being only considered the impact on the valuation model after 2017, since *Idealmed* was only acquired in 2018.

The last two assumptions considered are related with the acquisitions of British Hospital Group and SCH, reported in 2017 *Luz Saúde Annual Report*, since both unities were bought during the year of 2017 and therefore the revenue impact was only 5 month for British and 9 for SCH instead of 12 months.

Following this assumption, British that brought in 2017 a €8.3 million in 5 months, will have an impact of extra €11.7 million in 2018 plus the growth rate estimated for sales in private sector other units (as showed at section 6.2.2.3.).

On the other hand, SCH that achieved €7.2 million in sales in 9 months during 2017, it will manage an extra revenue of €2.4 million in 2018 plus also the growth rate estimated for other private units in 2018 (as showed at section 6.2.2.3.).

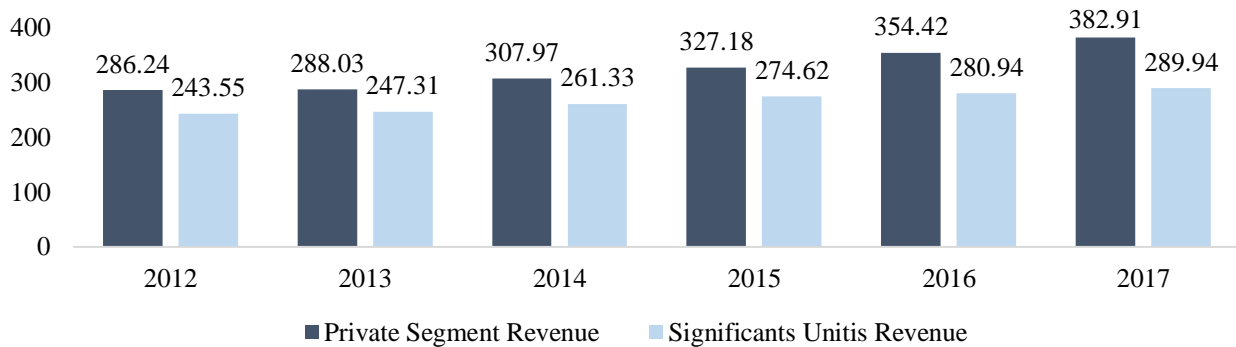
6.2.2. Operational Revenue – Private Sector

Following the revenue for private sector, it also important to understand the role that some of units have in terms of historical growth behavior and the weight of each one in the total group revenue.

Therefore, and as showed at Exhibit 11, there are three units that historically have been representing more than three quarters of private segment total revenue every year: *Hospital da Luz* (HLUZ), *Hospital da Arrábida* (HAG) and *Hospital de Santiago e Clipóvoa* (HOSPOR).

In 2017, these units generated nearly €290 million, which represents 76% of the total private segment revenue.

Exhibit 11: The role of significant units at Luz Saúde private segment revenue (€M)



Source: *Luz Saúde* Annual Reports

Therefore it is crucial to analyze separately from the rest of the units that compose the Private Segment Revenue, the impact that these three units might bring to the total revenue of the group individually.

As shown in Exhibit 12, to predict accurately the revenue for *Luz Saúde* private sector, it was computed the correlations between the annual sales against the macroeconomic indicators previously discussed, such as, Portuguese GDP and Private and Public consumption.

Exhibit 12: Correlation between Portuguese macroeconomic indicators and private segment

	Gross Domestic Product	Public Consumption	Private Consumption
Private Segment			
Hospital da Luz	96.5%	90.3%	95.9%
HAG	97.7%	83.0%	98.8%
HOSPOR	94.8%	82.7%	95.5%
Rest of Unities	97.2%	87.6%	97.5%

Source: *Author*

The formula used to compute the correlations follows below:

$$r_{xy} = \frac{\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^n (x_i - \bar{x})^2 \sum_{i=1}^n (y_i - \bar{y})^2}} \quad (20)$$

Where,

\bar{x} and \bar{y} are averages of x and y

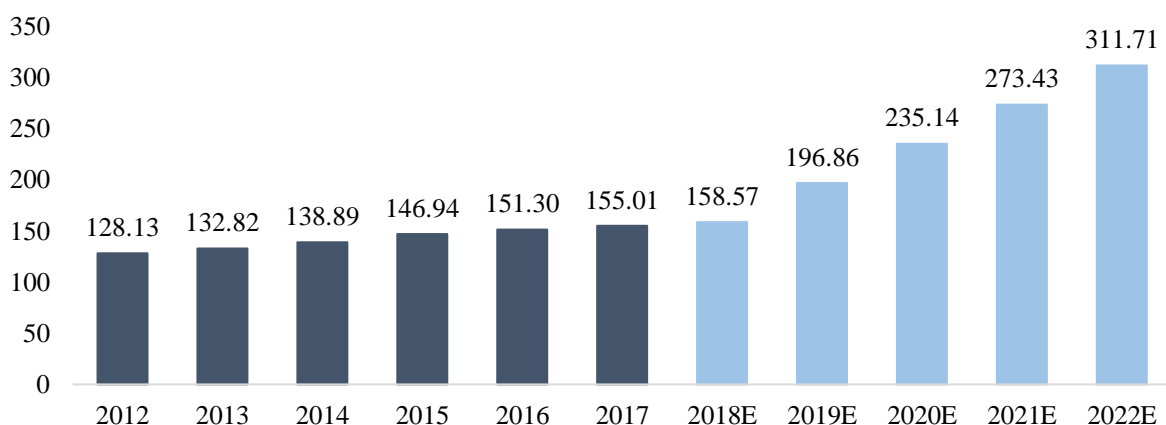
6.2.2.1. Operational Revenue – *Hospital da Luz*

Despite the high correlation between Portuguese GDP and historical revenue (96.5%), there is crucial public information that must be considered to forecast *Hospital da Luz* revenue, as mentioned at section 6.2.1., following the interview with CEO group, *Isabel Vaz*, where she mentioned an estimated €350 million revenue in 2023 and that the expansion will be ready at the end of 2018.

It was assumed that the revenue for 2018 will follow the forecasted Portuguese GDP for that year, and after that, the expansion of the unity will start to have its financial impact and achieving the €350 million in 2023. In this way, and assuming a constant growth yearly, the increase in revenue for each year (2019 till 2022) is estimated to be around €38.3 million.

Therefore, in 2018, *Hospital da Luz* will have sales around €158.6 million (2.30% more than in 2017, giving the GDP growth rate) and after that a constant growth of €38.3 million.

Exhibit 13: Hospital da Luz revenue forecasts (€M)



Source: *Author*

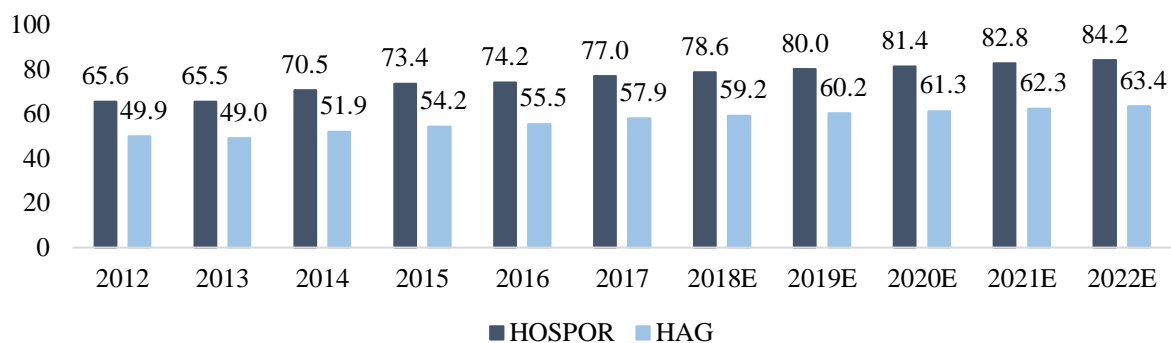
6.2.2.2. Operational Revenue – HOSPOR and HAG

The estimated revenue for both HOSPOR and HAG was computed considering that it will grow at the forecasted Portuguese private consumption rate for the next 5 years, in accordance with the high correlation between the historical revenue growth during the past 6 years for both units and this macroeconomic indicator (95.5% for HOSPOR and 98.8% for HAG).

Therefore, it is forecasted that HOSPOR will pass from €77 million euros annually in 2017 to €84.2 million euros. For HAG, it is assumed that will generate €63.4 million in 2022 against the current €58 million.

Both presented a similar growth sales rate between 2012 and 2017 (14.8% and 14% respectively), and will manage an 8.5% growth rate in the next 5 years, since they are forecasted under the same macroeconomic indicator.

Exhibit 14: HOSPOR and HAG revenue forecasts (€M)



Source: *Author*

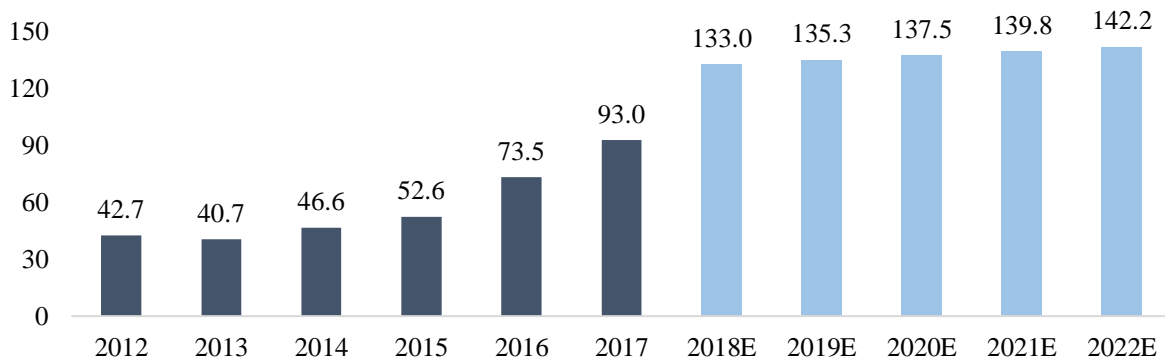
6.2.2.3. Operational Revenue – Other Private Units

For the other private units, once there is no financial data available for all *Luz Saúde* units, the historical revenue of them was computed as the difference from the summed revenue of those three units above to the total private segment revenue; the revenue projections for them were estimated also considering the forecasted Portuguese private consumption (97.5% correlation).

To estimate the revenue for 2018, it was considered the extra revenue that both British Group and SCH, acquired during 2017 are expected to add in 2018 (as mentioned at section 6.2.1); this extra value was summed to the €93 million in 2017 and applied the Private Consumption growth rate for the following years.

Also, it was considered the impact that the acquisition of *Idealmed* Group shall bring to *Luz Saúde* operational revenue; this impact was forecasted under the assumption that the total revenue of €23 million in 2016, as stated by the group board president, has been growing and will remain growing at Portuguese inflation rate speed, meaning that in 2017, achieved around €23.3 million in revenue and in 2022 will manage a total revenue of €25.2 million.

Exhibit 15: Other Private Units revenue forecasts (€M)



Source: *Author*

6.2.3. Operational Revenue – Public Sector

Regarding Public Sector, it is expected to follow the trend forecasted for the Portuguese private consumption, once this economic indicator show a 90% correlation with the SGHL unit operational revenue in the period of 2013 and 2017.

Exhibit 16: Correlation between Portuguese macroeconomic indicators and public segment

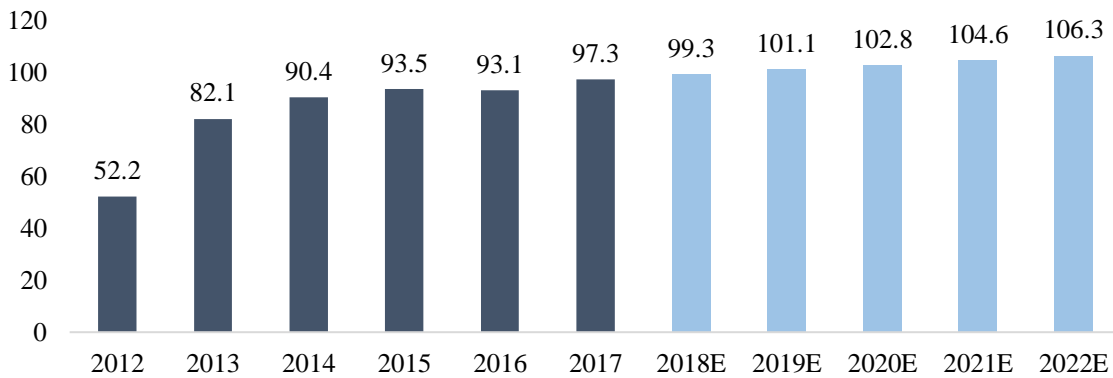
	Gross Domestic Product	Public Consumption	Private Consumption
Public Segment			
SGHL	87.0%	63.7%	90.0%

Source: *Author*

For this unit, the year of 2012 has not been considered to the correlation computation since *Luz Saúde* just bought this unit in February the same year, and as the monthly sales of the unit are not public available, the author decided to not considered the year of 2012 to the computations.

Therefore, and following Exhibit 17, SGHL is expected to generate sales around €99.3 million in 2018 and €106.3 in 2022, managing an average annually growth revenue rate of 1.80%.

Exhibit 17: SGHL revenue forecasts (€M)



Source: *Author*

6.2.4. Operational Revenue – Other Activities

This segment is composed mainly by the senior houses from the group, and as they have a limited capacity to receive new customers as well it is not expected that *Luz Saúde* will invest on property expansion of them, it was assumed that the revenue from these units will only grow by keeping up the Portuguese prices and therefore, at Portuguese inflation rate.

Also, among other activities segment, there are also the debits from *Luz Saúde* Holding related with all the services shared with the others units from the group.

Once these debit values depends on the revenue from the unities, the value of them as computed through the weight against the revenue from private and public segments. As the weight has been increasing year after year, it was assumed that the debits will represent, for the next 5 years, 3.89% from private and public sales, as result of the 3.60% managed in 2017 plus the average increase in the last 2 years.

6.2.5. Operational Revenue – Intercompany

As intercompany revenue has to be excluded from total revenue, in order to estimate the impact that these kind of transactions will generate in the next 5 years, it was considered that the weight against total revenue managed in 2017 will remain stable over time.

6.2.6. COGS, Operating Expenses, Personnel Costs and Other Expenses

All the operational costs were forecasted considering the behavior of historical weight against the total revenue.

The costs of goods sold has been increasing year after year, and therefore, it was assumed that COGS for the next 5 years will remain as the weight against sales presented in the end of 2017 (15.71%) plus the increase accounted from 2016 to 2017. Then, the weight considered to the forecasts is around 15.95%.

The same approach was followed to estimate Personnel Costs due to the constant increasing weights that have been showed over the past 6 years. In this way, it was considered the weight against sales in 2017 (27.31%) plus the variation occurred in 2016 to 2017, giving a forecasted weight close to 27.56%.

To estimate Operating Expenses and Other Expenses, it was considered the average weight of each rubric against sales in the last 6 years, since there is no trend and the numbers have been increasing and decreasing over time. Further details at Appendix section (Appendix 3).

6.2.7. Provisions and Impairment Losses

Due to historical volatility of Provisions over the years and considering that this topic may include provision related with several areas, it was assumed that Provisions will represent the average of the past 6 years.

In other hand, Impairment Losses were computed through the average weight over the respective counterpart in balance sheet (Customers Receivables).

Giving the positive trend variation occurred since 2015, the weight considered was the one managed in the end of 2017 (0.76%) plus the average variations occurred in 2016 to 2017, giving a projected weight of 1.11%. Further details at Appendix section (Appendix 8).

6.2.8. Depreciations and Amortizations

As there are tangible and intangible assets, and for a proper estimation, both values were detached and depreciation was computed giving both natures.

For intangible assets, and giving the positive trend variation since 2014, depreciations were computed through the depreciation rate reported by *Luz Saúde* in the end of 2017 plus the average increase between 2016 and 2017, achieving a rate of 0.89%.

For tangible assets, despite the visible decreasing depreciation rate trend over the years, there was a stagnation of it in 2016 and 2017, and therefore, the forecasted rate for the next 5 years was the average of the 4.74% managed in 2016 and of 4.75% in 2017.

The depreciation rate was computed through the period depreciation against gross value less the working-in-progress fixed assets, once these only depreciate when are to use and start to generate cash-flows to the company. Therefore, the *Hospital da Luz* €100 million estimation cost that has been accounted in in-progress fixed assets will only depreciate in 2019, the predicted end year of the project expansion.

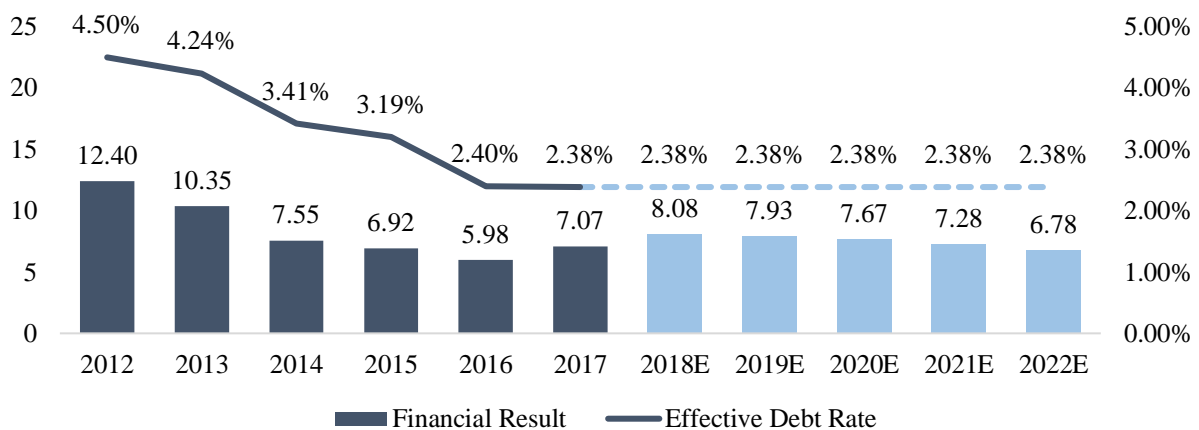
Further details related with Tangible and Intangible Assets are explained at section 6.3.1.

6.2.9. Financial Results

To estimate the financial results, it was considered the debt average rate in 2017 against the amount reported in balance sheet related with Loans and Operational Leasing, once both generate interests.

It was considered the effective debt rate in 2017, because as showed in Exhibit 18, there has been a significant rate decline since 2012 and as the majority loans were conceded in 2017, it was considered the interest rate associated with those contracts to remain stable.

Exhibit 18: Financial Results and Effective Debt rate (€M)



Source: *Author*

6.2.10. Corporate Income Tax

To compute the corporate income tax, it was not considered the rate established in Portuguese state budget, but the average historical effective tax rate over the last two years against the EBT.

A two years range was considered due to the fact that was only in 2016 that *Luz Saúde* accounted deferred taxes and as consequence, it started to have impact on corporate income tax. Further details at Appendix section (Appendix 7).

6.3. Balance Sheet Assumptions

6.3.1. Tangible and Intangible Assets

To estimate the investment in Tangible assets, it was analyzed either the historical variation of gross value as well the amount spent by *Luz Saúde* in acquisitions and in project expansions.

Through *Luz Saúde* annual reports, it was identified the investment that it has been made in non-equipment investment (acquisitions and expansions), and therefore it is possible to isolate the historical investment behavior in two different topics: non-equipment and equipment investment (medical tools and equipment for hospitals and clinics).

After getting the historical investment in equipment for hospitals and clinics, it was computed the correlation against the three macroeconomic indicators mentioned at section 6.1., being the strongest relationship found with Portuguese Private Consumption (99.62%).

Therefore it was assumed that investment in medical equipment will follow the Portuguese Private Consumption growth rate in the next 5 years.

On the other way, some assumption were took in consideration under the historical acquisitions and project expansion investments made since 2012.

It was assumed that the value stated in 2017 *Luz Saúde* annual report for the variation of in progress fixed assets (€35.96 million), was fully allocated to *Hospital da Luz* project expansion.

So, following what the group CEO said, the remaining value between the sum of that value with the investment already allocated in 2014 (€15 million) and 2015 (€1.4 million) and the €100 million estimated cost of this expansion will be fully invested in 2018 (€47.64), the predicted conclusion year of this ongoing project.

Also, it was assumed that *Luz Saúde* will continue to invest on other expansion projects, bringing an annual investment of €3 million in the next 5 years (close to the average of these kind of investments in the last 6 years: €2.87 million). It was also added the impact of the €19.99 million *Idealmed* Group acquisition for 2018

The Tangible assets Gross Value for each year was computed as the sum of Equipment investment in the previous year plus the impact of the forecasted Portuguese Private Consumption variation rate and added the cumulative Non Equipment Investment.

For Intangible assets, as there are no historical significant investments described at *Luz Saúde* annual reports, and due to the strong correlation with Portuguese GDP growth between 2012 and 2017 (94.95%), it was assumed that the investment will follow this macroeconomic indicator.

Capital Expenditures were computed as the variation of gross value for each year. As mention at section 6.1., all the investment in Fixed and Intangible assets was fully paid at the same year of the investment.

Cumulative depreciation in both, tangible and intangible, as there are disposals every year, was estimated for the next 5 years as the average weight against the gross value managed in 2016 and 2017. Further details at Appendix section (Appendices 4, 5 and 6).

6.3.2. Accounts Receivables

As the topic of Accounts Receivables being the counterpart in balance sheet of revenue, the value of it for the next 5 years was assumed to remain as the weight against total revenue managed in 2017 due to the fact that *Luz Saúde* started to use factoring services, which also explains the decrease of the ratio when compared with previous years. Further details at Appendix section (Appendix 1).

6.3.3. Inventory and Other Receivables

Inventory and Other Receivables were estimated also to follow the historical weight against total revenue, as their values depends on such account.

Inventory has been increasing its weigh against sales in the last 4 years and therefore it is expected to represent for the next 5 years 2.59% of sales (2.38% managed in 2017 plus the variation occurred in 2016 to 2017).

Other receivables, as it has been generating similar values in the last 4 years, without any visible trend, is expected to remain as the average of those years (10.55%). Further details at Appendix section (Appendix 1).

6.3.4. Accounts Payables and Others Payables

Accounts Payables and Others Payables were estimated to follow the historical behavior against the sum of the major operational costs (COGS, Operating Expenses, Personnel Costs and Other Expenses), due to the high correlation that both topics have been managed over the years with these costs (91.51% and 99.07%, respectively).

However, both have been presenting opposite trends, hence Accounts payables has been increasing its weight against costs, and therefore the forecasted weight for the next 5 years is 10.96%, as result of the 9.89% presented in 2017 plus the variation against 2016.

On the other way, Others Payable is expected to represent annually 16.44% of costs (16.64% managed in 2017 less the decrease against 2016). Further details at Appendix section (Appendix 9).

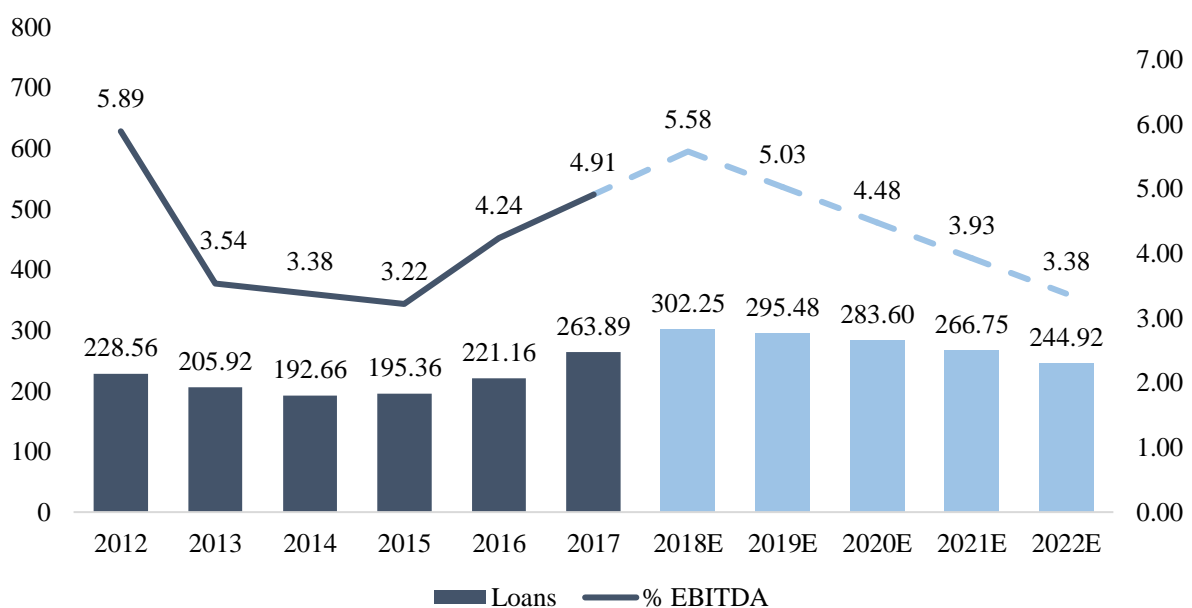
6.3.5. Financial Liabilities

To estimate the amount of Debt Loans for the next 5 years, it was considered to analyze the historical behavior of them against EBITDA as follows in Exhibit 19.

Also, it was matched the behavior of this multiple and the Capital Expenditures done during the time in analysis. In fact, the multiple started to rise in 2016, when *Luz Saúde* made a considerable investment in medical equipment renewal and even more in 2017 with the first big step investment of €35.96 million in *Hospital da Luz* expansion, as explained at section 6.3.1.

Therefore, the forecasted value for 2018 is that financial liabilities to EBITDA multiple will increase slightly in 2018 once there is still capital needs to *Hospital da Luz* expansion. This increase is expected to be the same as Debt/EBITDA multiple variation in 2016 to 2017, once it was at this time that *Luz Saúde* started to gathered capital for this expansion purpose. So, Debt to EBITDA in 2018 will be 5.58.

Exhibit 19: Debt against EBITDA (€M)



Source: Author

After that, hence the project will be completed in the end of 2018 and as there are no other meaningful expansions announced, it is assumed that *Luz Saúde* will start to repay gradually its debt and achieve financial levels near the average multiples presented in 2013 and 2015 (3.38).

Financial Leasing, as the majority are related to medical equipment to be used at *Luz Saúde* Hospitals and Clinics, it was forecasted to follow the weight against net tangible assets accounted in Balance Sheet regarding 2017 (Appendix 10).

The value of Financial Derivative Instruments, as directly related with Financial Debt, was forecasted as the average weight in 2016 and 2017 against the value of Financial Debt itself.

6.4. Discount Rate

6.4.1. Discount rate components

In order to estimate an accurate share price it is mandatory to compute the cost of equity, the return required by shareholders.

As discussed in literature review, to compute the equity discount rate it was used the CAPM approach and added the Country Risk Premium.

$$r_e = r_f + (r_m - r_f) \times \beta_i + CRP \quad (21)$$

Where:

r_e – cost of equity

r_f – risk-free rate

r_m – expected return on the market

$r_m - r_f$ – expected market risk premium

β_i – return sensitivity of stock i to changes in the market return

CRP – country risk-premium

6.4.2. Beta computation problematic

The first component in analysis of the previous formula is the Beta and its computation emerged as a crucial step to this valuation once the liquidity of this stock has been severely affected through the largest position that *Fidelidade* and *Fosun* have on it, leaving less than 2% dispersed into the market.

As result of that, and in a 2 years period (2016 and 2017), the share was traded only in 116 days, a very low number when compared with its index (512 days of trade), which impacts

largely the movement of the stock, making the regression of beta against any market a tough task.

However, and to ensure that the Beta of the company is measured in the most proper way, the author computed the regression of the stock against two European Healthcare Index in order to conclude over the volatility of *Luz Saúde* against an European weighted healthcare portfolio.

The two chosen Indices were the Stoxx Europe 600 Health Care (SXDP) and Euronext Health Care Equipment & Services EW (ENMEW).

The data was collected from a 2 years weekly data range (2016 and 2017), measuring *Luz Saúde* stock and market weekly returns on such period and applied the Beta regression formula, mentioned at Section 2.2.1.3. It was chosen weekly data over daily data to avoid possible outliers.

To make beta regressions, all the historical price data of *Luz Saúde* and SXDP Index were gathered from Yahoo Finance and for the ENMEW Index the data was gathered directly from Euronext database.

As both generated different beta results, 0.219 and 0.433 respectively, the author decided to take the SXDP Index as the main reference beta for this thesis, once this Index is more representative of the European healthcare sector than the ENMEW, given the diversity of represented companies (incorporates 41 companies against 28) and countries. The impact of considering one beta instead of another is covered at Sensitivity Analysis (Section 7.1.1.).

6.4.3. Cost of Equity (CoE)

To estimate the risk-free rate, and as considered one of the safest and reliable investment nowadays, it emerges the 2017 daily 10 years German bond, gathered from Bloomberg.

Both, expected market risk premium and country risk-premium, were gathered from Professor Damodaran's website regarding data as of 31st December 2017.

The results for both scenarios were the following:

Exhibit 20: Cost of equity

Components	SXDP Index	ENMEW Index	Period
Risk-free rate	0.38%	0.38%	Daily data, 2017
Equity risk premium	7.96%	7.96%	31st December 2017
Country risk premium	2.88%	2.88%	31st December 2017
Beta	0.219	0.433	2 years weekly data, 2016 and 2017
CoE	5.00%	6.71%	

Source: *Author*

7. Valuation

7.1. Free cash flow to the Equity

The first valuation approach is the free cash-flow to the equity model, which relies on the available cash to shareholders after all costs, investments and debt are paid. The cash-flows proposed for this thesis can be found at Appendix section (Appendix 11).

Capital Expenditures on tangible and intangible assets, as mentioned in Section 6.3.1., were assumed to be fully paid at the same year of the investment. Therefore CAPEX is computed through the annually variation on tangible and intangible gross value.

Working capital is calculated with current liquid assets, such as, Inventory, Accounts Receivable and Others Receivables. On the liability side, were considered the rubrics of Accounts Payable and Others Payables.

For Financial Liabilities, besides the loans conceded with financial institutions, it was considered also the amount related with operational leasing once it works as a financial liability with interest associated.

Net Income and Depreciations are identified directly from the Income Statement.

Then, the computed cash-flows were discounted at the estimated cost of equity regarding beta regression against SXDP Index and a perpetuity growth of 1.8% was established, under the assumption mentioned at the latest available *Luz Saúde* annual report, which indicates this rate as a reference to the market and the sector itself.

Therefore, it was computed an equity value of €557.11 million, which divided by the outstanding shares, suggest a share price of €5.83.

Exhibit 21: Free cash flow to the Equity valuation (scenario SXDP)

FCFE	Units: Million Euros
NPV	71.16
Terminal Value	485.95
Discount Rate	5.00%
Perpetuity Growth Rate	1.80%
Equity Value	557.11
Shares Outstanding as of 31st December 2017	95.54
Value per share	5.83

Source: *Author*

Considering a discount rate of 6.71% due to the regression against ENMEW Index, the valuation suggests a share price of €3.77, which values *Luz Saúde* equity on €359.90 million (less €197.22 million than the first scenario).

Exhibit 22: Free cash flow to the Equity valuation (scenario ENMEW)

FCFE	Units: Million Euros
NPV	67.40
Terminal Value	292.50
Discount Rate	6.71%
Perpetuity Growth Rate	1.80%
Equity Value	359.90
Shares Outstanding as of 31st December 2017	95.54
Value per share	3.77

Source: *Author*

However, and as discussed at Section 6.4.2., the valuation approach of this thesis will follow the beta regression against the Stoxx Europe 600 Health Care (SXDP) Index, once it reflects a more reliable European healthcare scenario due to the diversity that this Index represents.

7.1.1. Sensitivity Analysis

As the estimation of the return demanded by investors is one of the toughest and crucial steps in the valuation process, it was studied the impact that cost of equity and perpetuity rates variations might have on the final share price.

Exhibit 23: Sensitivity Analysis

Perpetuity	Cost of Equity				
	3.00%	4.00%	5.00%	6.00%	7.00%
2.20%	23.23	10.29	6.58	4.82	3.80
2.00%	18.72	9.32	6.18	4.61	3.67
1.80%	15.71	8.53	5.83	4.42	3.55
1.60%	13.56	7.87	5.52	4.24	3.44
1.40%	9.68	6.42	4.78	3.80	3.15

Source: *Author*

As showed at Exhibit 23, the equity value is strongly affected with a small change at the cost of equity and changes in the perpetuity, reinforcing the importance that an accurate discount rate estimation has in a discounted cash flow model.

Additionally, there is the variable of *Hospital da Luz* revenue estimation of €350 million in 2012 due to the expansion project shall be included in the sensitivity analysis once it is expected to generate sales to take *Luz Saúde* to a different level as a company, achieving revenue records every year as a group.

Therefore, it was studied the impact of changes in the forecasted revenue for HLUZ, giving a stable perpetuity of 1.80%, as suggested in *Luz Saúde* annual report.

Exhibit 24: Sensitivity analysis with HLUZ revenue forecasts

HLUZ Revenue target in 2023	Cost of Equity				
	3.00%	4.00%	5.00%	6.00%	7.00%
€390 million	18.29	9.93	6.79	5.15	4.13
€370 million	17.00	9.23	6.31	4.78	3.84
€350 million	15.71	8.53	5.83	4.42	3.55
€330 million	14.42	7.83	5.35	4.05	3.25
€310 million	13.13	7.13	4.87	3.69	2.96

Source: *Author*

Again, and as showed at Exhibit 24, the share price of *Luz Saúde* is very susceptible to the revenue projections for *Hospital da Luz*, due to the key role that this unit has on the group (in 2017 it represented 32% of the group total revenue).

It was also studied the impact in the valuation from possible changes in the €100 million projected cost for this expansion, being concluded that is not a significant variable when compared with the other variables mentioned before: discount rate, perpetuity and *Hospital da Luz* revenue.

7.2. Relative Valuation

The second valuation approach is the multiple valuation, which relies on the price of an asset with comparable peers as mentioned in the literature review section.

The main challenge of this approach is to choose wisely a peer group comparable with *Luz Saúde* in order to compute a worthy and accurate valuation. The first criteria that could be considered was the country of operation, in this case Portugal.

However, the main *Luz Saúde* competitors in Portugal, such as *José de Mello Saúde*, *Grupo Lusíadas* or *Trofa Saúde* are not listed and it is impossible to use any multiple regarding equity valuation. In this case, it has to be considered peers from another European markets.

The second criteria, as the healthcare sector has a widely range of industries (pharmaceuticals, healthcare equipment & supplies, life sciences tools & services, biotechnology, healthcare providers & services, among others), was to identify only peers with similar business models as *Luz Saúde*, providing mainly healthcare services.

The remaining criteria, as peers are from others markets besides Portugal, were based on standardized values instead of absolute values, in order to identify comparable assets: return on equity and debt-to-equity similar with *Luz Saúde* historical performance.

It was chosen both multiple price-earnings ratio (PER) and price-book value ratio (PBV) as the most commonly used multiples to value a business.

Exhibit 25: Luz Saúde european peers

Company	PER	PBV
Attendo AB	20.81	2.64
Capio AB	16.79	1.08
Fresenius SE & Co KGaA	19.94	1.67
Korian	14.78	0.98
Median	18.37	1.37

Source: *Author*

Then, the value of this valuation method is computed through the average of both multiples. Also the PBV approach managed a higher value per share than PER due to the high value from *Hospital da Luz* expansion being already accounted as an asset of the company and in terms of revenue does not have yet any impact on Net Income.

Further details in the Appendix section (Appendix 12).

Exhibit 26: Relative valuation

PER	Units: Million Euros	PBV	Units: Million Euros
Luz Saúde Net Income	17.01	Luz Saúde Book Value	235.38
Peers PER	18.37 x	Peers PER	1.37 x
Equity Value	312.48	Equity Value	323.04
Shares Outstanding	95.54	Shares Outstanding	95.54
Price per share	3.27	Price per share	3.38
Average Price per share			3.33

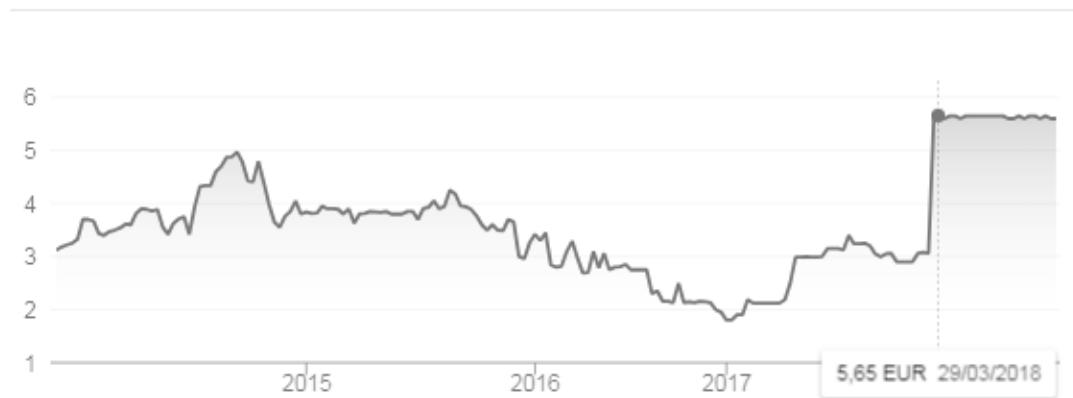
Source: Author

7.3. Final results and limitations

With the announcement of the buyout price, and given the low liquidity, the market reacted aggressively, pulling *Luz Saúde* market cap to a value close to €540 million, the highest value ever seen since the company went public (Exhibit 27).

Exhibit 27: Luz Saúde Stock Performance

Luz Saude SA
EPA: LUZ



Source: Yahoo Finance

As the goal of this thesis is to reach a fair price per share of the company and compare it with the buyout price suggested by the major shareholders, it was used different valuation models and compared the final results.

In Exhibit 28, follows the final results given by the different valuation approaches. Book Value, which divides shareholders equity by the outstanding shares, matches €2.46 per share,

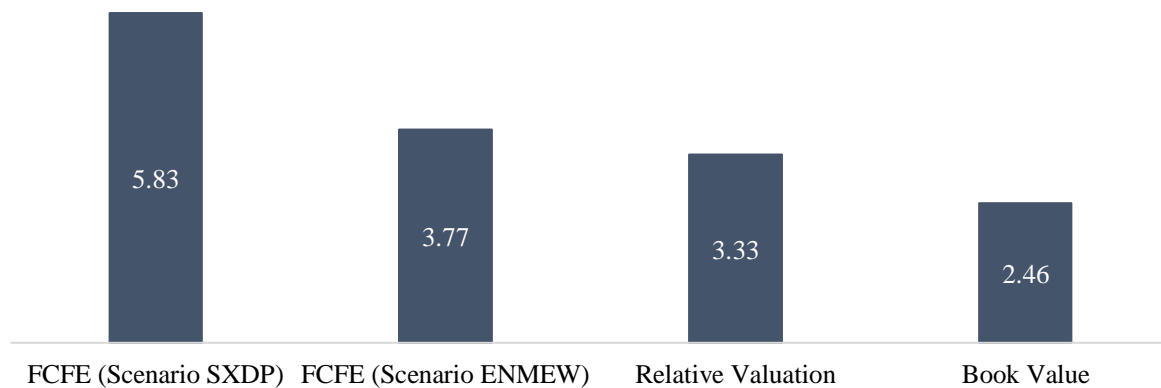
the lowest value among the three different valuation models followed in this thesis but a value close to the €2.68 average price during 2017.

The multiple approach suggested a price per share of €3.33, slightly above the market price of €3.05 as of 31st December 2017. However, this approach follows European peers since there are no comparable Portuguese companies listed in the market, which may turn out a not to be a reliable approach given the different growth market perspectives in different companies and countries.

Both previous approaches presented lower results when compared with the offer of €5.71, suggesting that neither of them is incorporating already the growth perspectives that the main shareholders have for the company which had a significant effect on the share price, as showed in Exhibit 27.

For this reason, FCFE seems the best approach to value *Luz Saúde* once it values the potential results that the company may achieve in the future through the investments that is currently doing.

Exhibit 28: Price per share for each valuation approach



Source: *Author*

Additionally, and as this approach deals with future cash-flows, the computation of a proper discount rate is a crucial step for a reasonable valuation. Again, as mention at Section 6.4.2., the Beta estimations for this thesis emerged as one of the toughest tasks due to the low liquidity that the stock offers to investors.

Nonetheless, and as mentioned before in this thesis, to get the most accurate discount factor it was computed the regression of the stock performance against the two main European healthcare indices: Stoxx Europe 600 Health Care (SXDP) and Euronext Health Care Equipment & Services EW (ENMEW).

As both presented different regression measures for *Luz Saúde* stock against a weighted healthcare portfolio, the decision of using one instead of another brings totally different results for the final share price, as showed in Exhibit 29:

Exhibit 29: Final price considerations (in euros)

Indices scenarios	SXDP	ENMEW
Final price per share (FCFE)	5.83	3.77
Shareholders Proposal	5.71	5.71
Difference	0.12	-1.94
Difference %	2.12%	-34.03%

Source: *Author*

Despite both results, and as mentioned before, the scenario which computes the discount rate through the SXDP Index, emerge as a more reliable scenario than the ENMEW Index, given the different diversity that both Indices present and the final price per share proposed by the author follows the cost of equity given by the SXDP Index.

Lastly, all the assumptions in this thesis were made under the available public information regarding *Luz Saúde*, meaning that there might be private data that is not being considered in the valuation model, such as, acquisitions perspectives or project expansions for several unities.

8. Conclusion

The average life expectancy in Portugal has been increasing across time and started to emerge private health groups in the market. Nowadays, the importance of them in Portuguese citizens well-being is crucial mainly due to the incapacity of public hospitals to respond effectively to people health needs.

As result of that, a significant part of Portuguese people decided to subscribe a personal insurance policy for themselves and to not benefit from the public health insurance provided by the Portuguese state. With that, the private health sector has been growing year after year and currently the number of private facilities is higher than public, proving the strong position of the sector.

One of the key players that provides these services is *Luz Saúde Group*, the second largest private health company in Portugal, with an estimated 9% market share. It is also the only Portuguese healthcare company listed, with a market capitalization of €291.40 million as of 31st December 2017, valuing €3.05 per share.

However, and given the low liquidity of this stock in the market due to the 98.7% position that *Fidelidade* and *Fosun* have together, it was announced in 2018 the buyout of the company offering €5.71 a share, a premium of 87% against the 3.05 in the end of 2017.

The aim of this thesis is to reach a fair price per share for *Luz Saúde* and compare it with the buyout proposal from the major shareholders. In order to do that, the Portuguese healthcare company was valued through different models, such as, book value, relative valuation and free cash flow to equity (FCFE).

Choosing the most appropriate valuation approach is not a straightforward process and decision given all the advantages and disadvantages that each model has, the nature of them and the foundation in which of them relies on.

Due to the limitations that emerged in each valuation model, the estimations in this thesis led to a final price per share of €5.83, a value 2.12% higher than the buyout price offered by the two main shareholders.

Giving all the public data available related with *Luz Saúde* and under the assumptions taken in this thesis, the final price reached by the author suggests that the buyout proposal includes the growth perspectives that both, *Fidelidade* and *Fosun*, expect for the company and therefore it is possible to conclude over the fairness of the final price offered to the minority shareholders.

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10. Appendix

Appendix 1: Luz Saúde Balance Sheet (Assets)

Units: Million Euros	2012	2013	2014	2015	2016	2017	2018E	2019E	2020E	2021E	2022E
Non Current Assets											
Tangible Assets	271.19	253.87	256.01	251.34	263.14	294.14	333.53	340.06	346.39	352.81	359.31
Intangibles Assets	94.55	95.75	95.50	95.72	113.10	125.48	128.37	130.81	133.04	135.30	137.60
Investments in Other Entities	1.83	1.55	1.47	1.20	1.01	27.06	27.06	27.06	27.06	27.06	27.06
Others non-current Receivables	0.00	0.00	0.00	1.12	1.06	1.01	1.11	1.20	1.29	1.39	1.48
% Sales	0.00%	0.00%	0.00%	0.26%	0.24%	0.21%	0.21%	0.21%	0.21%	0.21%	0.21%
Deferred Taxes	0.00	0.00	0.00	0.00	1.00	1.27	1.01	0.97	1.20	1.44	1.68
Total Non Current Assets	367.58	351.17	352.98	349.39	379.31	448.96	491.09	500.11	508.99	518.00	527.13
Current Assets											
Inventory	7.92	7.36	7.71	8.15	9.83	11.54	13.81	14.96	16.10	17.24	18.38
% Sales	2.32%	1.97%	1.92%	1.92%	2.18%	2.38%	2.59%	2.59%	2.59%	2.59%	2.59%
Accounts Receivables	71.27	50.86	82.37	87.75	105.57	89.90	99.12	107.33	115.51	123.72	131.94
% Sales	20.88%	13.64%	20.51%	20.72%	23.42%	18.58%	18.58%	18.58%	18.58%	18.58%	18.58%
Other Receivables	20.66	33.52	40.41	48.84	45.38	51.03	56.28	60.95	65.60	70.25	74.93
% Sales	6.05%	8.99%	10.06%	11.53%	10.07%	10.55%	10.55%	10.55%	10.55%	10.55%	10.55%
Tax Assets	1.10	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cash and deposits	24.26	34.82	20.68	29.41	41.49	57.78	49.33	47.56	58.81	70.38	82.29
Multiple of Net Income	-11.73	2.62	1.14	1.34	2.44	3.35	3.35	3.35	3.35	3.35	3.35
Total Current Assets	125.21	126.58	151.17	174.14	202.27	210.25	218.55	230.79	256.01	281.60	307.54
Total Assets	492.79	477.75	504.15	523.52	581.58	659.22	709.63	730.90	765.01	799.60	834.67

Appendix 2: Luz Saúde Balance Sheet (Debt)

Units: Million Euros	2012	2013	2014	2015	2016	2017	2018E	2019E	2020E	2021E	2022E
<u>Non-Current Liabilities</u>											
Provisions	5.61	7.94	8.30	6.89	8.43	10.08	10.08	10.08	10.08	10.08	10.08
Long-term Debt	144.69	139.87	149.42	176.37	207.66	244.91	280.51	274.22	263.20	247.57	227.30
Financial Derivative Instruments	0.00	0.00	0.00	0.23	4.73	3.11	5.01	4.90	4.70	4.43	4.06
Long-term Leasing	35.95	27.37	19.86	15.61	22.36	27.48	31.16	31.77	32.36	32.96	33.56
Deferred tax Liabilities	0.23	0.58	0.29	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Non-Current Liabilities	186.47	175.76	177.88	199.61	243.17	285.57	326.76	320.97	310.34	295.03	275.01
<u>Current Liabilities</u>											
Accounts Payables	29.06	24.32	28.57	31.57	34.97	42.44	52.31	56.65	60.96	65.29	69.64
Other Payables	52.47	54.58	61.26	61.48	66.81	71.42	78.45	84.95	91.43	97.92	104.43
Short-term Debt	83.87	66.05	43.24	18.99	13.50	18.98	21.74	21.25	20.40	19.19	17.62
State - Income Corporate Tax	0.73	2.73	1.44	2.39	0.22	0.36	0.00	0.00	0.00	0.00	0.00
Short-term Leasing	11.26	11.09	8.55	5.77	5.86	5.06	5.74	5.85	5.96	6.07	6.19
Total Current Liabilities	177.38	158.77	143.06	120.20	121.36	138.26	158.25	168.71	178.76	188.48	197.87
Total Liabilities	363.85	334.54	320.94	319.82	364.53	423.84	485.01	489.68	489.10	483.51	472.89

Appendix 3: Luz Saúde Income Statement

Units: Million Euros	2012	2013	2014	2015	2016	2017	2018E	2019E	2020E	2021E	2022E
Operational Revenue	341.40	372.80	401.59	423.57	450.70	483.82	533.41	577.61	621.65	665.80	710.07
Total revenue	341.40	372.80	401.59	423.57	450.70	483.82	533.41	577.61	621.65	665.80	710.07
COGS	-44.87	-51.44	-57.15	-62.14	-69.72	-76.01	-85.09	-92.14	-99.16	-106.21	-113.27
% of Sales	13.14%	13.80%	14.23%	14.67%	15.47%	15.71%	15.95%	15.95%	15.95%	15.95%	15.95%
Operating Expenses	-160.41	-167.51	-181.60	-186.55	-203.27	-217.69	-241.17	-261.15	-281.06	-301.03	-321.04
% of Sales	46.98%	44.93%	45.22%	44.04%	45.10%	44.99%	45.21%	45.21%	45.21%	45.21%	45.21%
Personnel Costs	-88.19	-94.60	-102.82	-110.74	-121.95	-132.13	-147.01	-159.19	-171.33	-183.50	-195.70
% of Sales	25.83%	25.37%	25.60%	26.14%	27.06%	27.31%	27.56%	27.56%	27.56%	27.56%	27.56%
Other Expenses	-6.78	-1.51	-1.93	-1.64	-1.65	-3.26	-3.82	-4.14	-4.45	-4.77	-5.09
% of Sales	1.99%	0.40%	0.48%	0.39%	0.37%	0.67%	0.72%	0.72%	0.72%	0.72%	0.72%
Provisions	-2.40	-0.06	-0.36	-1.56	-1.53	-0.29	-1.04	-1.04	-1.04	-1.04	-1.04
Customers' impairment	0.05	0.50	-0.72	-0.26	-0.44	-0.69	-1.10	-1.19	-1.28	-1.37	-1.46
EBITDA	38.81	58.19	57.01	60.68	52.13	53.74	54.19	58.76	63.32	67.90	72.48
Depreciation and Amortization	-28.46	-28.10	-26.45	-23.40	-24.20	-25.70	-27.64	-33.03	-33.64	-34.27	-34.90
EBIT	10.34	30.09	30.56	37.28	27.93	28.04	26.55	25.74	29.68	33.63	37.58
Other financial gains/losses	-12.40	-10.35	-7.55	-6.92	-5.98	5.80%	-7.07	-8.08	-7.94	-7.67	-6.79
EBT	-2.06	19.74	23.02	30.36	21.95	20.98	18.46	17.80	22.01	26.34	30.79
Corporate Income Tax	-0.01	-6.47	-4.92	-8.38	-4.96	-3.71	-3.72	-3.59	-4.44	-5.31	-6.21
Effective Tax Rate	0.56%	-32.77%	-21.36%	-27.62%	-22.62%	-17.69%	-20.16%	-20.16%	-20.16%	-20.16%	-20.16%
Consolidated Net Income	-2.07	13.27	18.10	21.97	16.99	17.26	14.74	14.21	17.57	21.03	24.59
Non controlling Interests	0.00	0.00	0.01	0.21	-0.38	0.25	0.21	0.21	0.26	0.31	0.36
% Consolidated Net Income	0.00%	0.00%	99.94%	99.06%	102.26%	98.55%	98.55%	98.55%	98.55%	98.55%	98.55%
Net Income	-2.07	13.27	18.09	21.76	17.37	17.01	14.53	14.00	17.32	20.73	24.23

Appendix 4: Luz Saúde Tangible Assets Investment (Equipment vs Non-Equipment)

Units: Million Euros

Hospital da Luz Project Expansion	0.00	0.00	15.00	1.40	0.00	35.96	47.64	0.00	0.00	0.00	0.00
Parking Lot Expansion Hospital da Luz	0.00	0.00	6.60	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Acquisition of Properties and Companies	0.00	0.00	0.00	7.00	6.40	14.04	19.99	0.00	0.00	0.00	0.00
Other Expansion Projects	1.40	5.20	1.00	1.30	8.30	0.00	3.00	3.00	3.00	3.00	3.00
Non Equipment Investment	1.40	5.20	22.60	11.20	14.70	50.00	70.63	3.00	3.00	3.00	3.00
Cumulative Non Equipment Investment							120.63	123.63	126.63	129.63	132.63
Equipment Investment	450.37	446.31	461.93	489.66	518.99	538.89	550.21	560.11	569.64	579.32	589.17
GDP Growth Rate							2.10%	1.80%	1.70%	1.70%	1.70%

Appendix 5: Luz Saúde Tangible Assets

Units: Million Euros

	2012	2013	2014	2015	2016	2017	2018E	2019E	2020E	2021E	2022E
Gross Value											
Tangible Assets Gross Value	451.77	451.51	484.53	500.86	533.69	588.89	670.84	683.75	696.27	708.95	721.80
Cumulative Depreciation											
Tangible Assets	180.58	197.64	222.63	244.54	265.57	288.91	331.47	337.84	344.03	350.30	356.64
% Gross Value	39.97%	43.77%	45.95%	48.82%	49.76%	49.06%	49.41%	49.41%	49.41%	49.41%	49.41%
Impairment											
Tangible Assets	0.00	0.00	5.89	4.97	4.97	5.85	5.85	5.85	5.85	5.85	5.85
Net											
Tangible Assets	271.19	253.87	256.01	251.34	263.14	294.14	333.53	340.06	346.39	352.81	359.31
Periodo Depreciation											
Tangible Assets	28.46	27.74	26.19	23.14	23.66	24.80	26.42	31.78	32.37	32.97	33.58
% Gross Value less In-Progress Tangible Assets	6.35%	6.20%	5.71%	4.89%	4.74%	4.75%	4.75%	4.75%	4.75%	4.75%	4.75%
CAPEX											
Tangible Assets		0.26	-33.02	-16.33	-32.83	-55.21	-81.95	-12.90	-12.52	-12.68	-12.85

Appendix 6: Luz Saúde Intangible Assets

Units: Million Euros	2012	2013	2014	2015	2016	2017	2018E	2019E	2020E	2021E	2022E
Gross Value											
Intangible Assets Gross Value	94.57	102.83	102.84	103.33	121.25	134.53	137.63	140.24	142.63	145.05	147.52
GDP Growth Rate							2.30%	1.90%	1.70%	1.70%	1.70%
Cumulative Depreciation											
Intangible Assets	0.01	7.08	7.34	7.61	8.15	9.05	9.25	9.43	9.59	9.75	9.92
% Gross Value	0.02%	6.89%	7.13%	7.36%	6.72%	6.73%	6.72%	6.72%	6.72%	6.72%	6.72%
Net											
Intangible Assets	94.55	95.75	95.50	95.72	113.10	125.48	128.37	130.81	133.04	135.30	137.60
Periodo Depreciation											
Intangible Assets	0.00	0.36	0.26	0.27	0.54	0.90	1.23	1.25	1.27	1.29	1.31
% Gross Value	0.00%	0.35%	0.25%	0.26%	0.45%	0.67%	0.89%	0.89%	0.89%	0.89%	0.89%
					0.19%	0.22%	0.20%				
CAPEX											
Intangible Assets		-8.26	-0.01	-0.49	-17.92	-13.28	-3.09	-2.61	-2.38	-2.42	-2.47

Appendix 7: Tax Computations

Units: Million Euros	2012	2013	2014	2015	2016	2017	2018E	2019E	2020E	2021E	2022E
EBT	-2.06	19.74	23.02	30.36	21.95	20.98	18.46	17.80	22.01	26.34	30.79
Corporate Tax Income	0.01	6.47	4.92	8.38	4.96	3.71	3.72	3.59	4.44	5.31	6.21
Effective Tax Rate	-1%	33%	21%	28%	23%	18%	20.2%	20%	20%	20%	20%
Deferred Taxes	0.00	0.00	0.00	0.00	1.00	1.27	1.01	0.97	1.20	1.44	1.68
% Corporate Tax Income	0.0%	0.0%	0.0%	0.0%	20.1%	34.1%	27.1%	27.1%	27.1%	27.1%	27.1%

Appendix 8: Impairment and provisions computations

Units: Million Euros	2012	2013	2014	2015	2016	2017	2018E	2019E	2020E	2021E	2022E
Provisions	2.40	0.06	0.36	1.56	1.53	0.29	1.04	1.04	1.04	1.04	1.04
Customers as BS Assets	71.27	50.86	82.37	87.75	105.57	89.90	99.12	107.33	115.51	123.72	131.94
Customers' Impairment	-0.05	-0.50	0.72	0.26	0.44	0.69	1.10	1.19	1.28	1.37	1.46
% Customers	-0.07%	-0.98%	0.87%	0.30%	0.42%	0.76%	1.11%	1.11%	1.11%	1.11%	1.11%

Appendix 9: Accounts Payables and Other Payables computations

Units: Million Euros	2012	2013	2014	2015	2016	2017	2018E	2019E	2020E	2021E	2022E
Costs	-300.25	-315.05	-343.50	-361.07	-396.59	-429.09	-477.09	-516.62	-556.01	-595.50	-635.09
AP	29.06	24.32	28.57	31.57	34.97	42.44	52.31	56.65	60.96	65.29	69.64
AP over Costs	-9.68%	-7.72%	-8.32%	-8.74%	-8.82%	-9.89%	-10.96%	-10.96%	-10.96%	-10.96%	-10.96%
Other Payables	52.47	54.58	61.26	61.48	66.81	71.42	78.45	84.95	91.43	97.92	104.43
Other Payables over costs	-17.48%	-17.32%	-17.83%	-17.03%	-16.84%	-16.64%	-16.44%	-16.44%	-16.44%	-16.44%	-16.44%

Appendix 10: Financial Leasings and Derivatives computations

Units: Million Euros	2012	2013	2014	2015	2016	2017	2018E	2019E	2020E	2021E	2022E
Leasings	47.20	38.46	28.42	21.38	28.22	32.54	36.90	37.62	38.32	39.03	39.75
Net Value Fixed Assets	271.19	253.87	256.01	251.34	263.14	294.14	333.53	340.06	346.39	352.81	359.31
% Leasings	17%	15%	11%	9%	11%	11%	11%	11%	11%	11%	11%
Financial Derivates	0.00	0.00	0.00	0.23	4.73	3.11	5.01	4.90	4.70	4.43	4.06
Debt	228.56	205.92	192.66	195.36	221.16	263.89	302.25	295.48	283.60	266.75	244.92
% Debt	0.0%	0.0%	0.0%	0.12%	2.14%	1.18%	1.66%	1.66%	1.66%	1.66%	1.66%

Appendix 11: Free Cash Flow to Equity computation (SXDP and ENMEW scenarios)

Units: Million Euros	2012	2013	2014	2015	2016	2017	2018E	2019E	2020E	2021E	2022E
Net Income	-2.07	13.27	18.09	21.76	17.37	17.01	14.53	14.00	17.32	20.73	24.23
Depreciations	28.46	28.10	26.45	23.40	24.20	25.70	27.64	33.03	33.64	34.27	34.90
CAPEX	0	-8.00	-33.03	-16.81	-50.75	-68.49	-85.04	-15.52	-14.91	-15.11	-15.31
WC Assets	99.85	91.73	130.49	144.73	160.78	152.48	169.21	183.23	197.21	211.21	225.25
WC Liabilities	81.53	78.90	89.83	93.05	101.77	113.86	130.76	141.60	152.40	163.22	174.07
WC Variation		5.48	-27.83	-11.02	-7.32	20.39	0.16	-3.19	-3.17	-3.18	-3.19
Financial Liabilities	275.76	244.39	221.07	216.75	249.38	296.43	339.15	333.10	321.92	305.78	284.67
Net Borrowings		-31.37	-23.31	-4.33	32.64	47.05	42.72	-6.06	-11.18	-16.14	-21.11
FCFE		7.48	-39.64	13.01	16.13	41.67	0.01	22.27	21.70	20.57	19.51
FCFE SXDP Discounted							0.01	20.20	18.75	16.92	15.29
FCFE ENMEW Discounted							0.01	19.56	17.86	15.86	14.10

FCFE	Units: Million Euros	
NPV	71.16	67.40
Terminal Value	485.95	292.50
Discount Rate	5.00%	6.71%
Perpetuity Growth Rate	1.80%	1.80%
Equity Value	557.11	359.90
Shares Outstanding as of 31st December 2017	95.54	95.54
Value per share	5.83	3.77

Appendix 12: Peer Group

Company	Country	Currency	EBIT margin	Net Profit Margin	ROE	D/E	EPS	Book Value per share	PER	PBV
Attendo AB	Sweden	SEK	8.54%	6.09%	12.67%	1.38	4.23	33.36	20.81	2.64
Capio AB	Sweden	SEK	3.60%	2.41%	6.43%	1.44	2.62	40.78	16.79	1.08
Fresenius SE & Co KGaA	Germany	EUR	13.41%	5.35%	8.35%	1.45	3.26	39.06	19.94	1.67
Korian	France	EUR	9.02%	5.21%	6.60%	1.88	1.99	30.19	14.78	0.98
		Median	8.78%	5.28%	7.48%	1.44	2.94	36.21	18.37	1.37

Appendix 13: Portuguese Macroeconomic indicators

Portugal	Units	2012	2013	2014	2015	2016	2017	2018E	2019E	2020E	2021E	2022E
Gross Domestic Product	Billion EUR	168,398	170,269	173,079	179,809	185,494	193,072	197,513	201,265	204,687	208,167	211,705
Growth Rate								2.30%	1.90%	1.70%	1.70%	1.70%
Public Consumption	% of GDP	18.50%	19.10%	18.60%	18.10%	18.00%	17.60%					
Public Consumption	Billion EUR	31,154	32,521	32,193	32,545	33,389	33,989	34,193	34,330	34,399	34,468	34,537
Growth Rate								0.60%	0.40%	0.20%	0.20%	0.20%
Private Consumption	% of GDP	66.30%	65.30%	65.90%	65.50%	65.40%	65.10%					
Private Consumption	Billion EUR	111,648	111,186	114,059	117,775	121,313	125,690	128,329	130,639	132,860	135,119	137,416
Growth Rate								2.10%	1.80%	1.70%	1.70%	1.70%
Inflation, Consumer Prices								1.5%	1.4%	1.6%	1.6%	1.6%