

CASE STUDY: COMPANY VALUATION OF PT GROUP

Inês Alexandra Tomás de Matos

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Supervisor:

Prof. Pedro Manuel de Sousa Leite Inácio, ISCTE Business School, Finance Department

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Abstract

Portugal is currently living in an Economic Crisis, which led to financial aid and control by the commonly called “Troika” (European Union, European Central Bank and International Monetary Fund). Therefore, it is interesting to see how companies and the Stock Exchange in general are being affected by the country’s economic problems.

Furthermore, this is a special period in the History to analyse companies and compare how they are currently valued in the market, to their fair value.

As so, this case study concerns a Portuguese company quoted on Euronext and New York Stock Exchange (NYSE), PT Group.

After the announcement of a merger between Oi (Brazilian company in the telecommunication sector) and PT, it is even more crucial to analyse the value of this company and understand how the markets reacted to it.

In this study, PT’s valuation and its fair value was found to be close to the price quoted on the market. As so, the recommendation is for the investors to hold.

Keywords: Dividend Discounted Model, Multiples, Cash Flows;

Jel Classifications: G30; G34;

Resumo

Portugal está neste momento a viver uma Crise Económica, o que levou à ajuda financeira e controlo pela comumente chamada “Troika” (União Europeia, Banco Central Europeu e Fundo Monetário Internacional). Assim sendo, é interessante ver como as empresas e a Bolsa de Valores em geral são afetados pelos problemas económicos do país.

Acresce a isso o facto de este ser um período especial na História para analisar empresas e comparar como estão avaliadas no mercado, com o seu valor justo.

Assim, este projeto tem como objeto de estudo uma empresa Portuguesa cotada no Euronext e no New York Stock Exchange (NYSE), o Grupo PT.

Após o anúncio da fusão entre a Oi (empresa Brasileira do sector das telecomunicações) e a PT, é ainda mais importante analisar o valor desta empresa e perceber como os mercados reagiram a esse anúncio.

Segundo este estudo, a avaliação da PT e o seu justo valor estão perto do preço cotado no mercado. Assim sendo, a recomendação é que os investidores a mantenham em carteira (“hold”).

Palavras-Chave: *Dividend Discounted Model*, Múltiplos, Cash Flows;

Jel Classifications: G30; G34;

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1. Introduction

The main objective of this case study is to determine the fair value of the PT Group and compare it to the stock value in the market. Based on different valuation methods (that are exposed in more detail on the Literature Review), it will be possible to advise investors whether they should buy, sell or hold.

PT Group was chosen as the centre of this study for different reasons:

- Availability of data: It was essential to choose a company quoted on the Stock Exchange, due to the fact that these companies share their financial statements not only with investors but also the general public. On the other hand, being a Portuguese company means that it may be easier to get in touch with;
- Portugal's economic and social crisis: PT is from a country going through a rough Economic and Social period and it is interesting to investigate whether this has an impact on the company's stock price or not;
- The oncoming merger with Oi: On the beginning of October, 2013, it was confirmed by Zeinal Bava, chief executive of PT Group, the merger with the Braazilian Oi, a telecommunications company that PT already had a participation in. According to the official notice on PT's website, this merger is said to be concluded in the first semester of 2014.

This case study is of interest to investors, as previously stated, and portfolio managers but also the company's managers, to understand if the company is under valuated or over valuated.

2. Telecommunications sector in Portugal

The Telecommunications sector in Portugal exists since the 18th century. So far, many things have changed. First of all, the monopoly of State Companies does no longer exist. Also, unlike when it started, nowadays companies are focused on giving a combined solution and as so, a player in this sector can offer the services of mobile telephones, landline telephones, television, and internet, among others.

In this sector, PT Group is one of the most important players, not only for its History but also in terms of revenue and market share.

2.1 History of the Sector

The History of the Telecommunications sector in Portugal is essentially the History of the PT Group as well, especially until certain point in time.

After Alexander Graham Bell invented the telephone back in 1876, everywhere around the Globe, countries started to implement this new technology.

In Portugal, it was on 1877 that the first experiences started. However, only on 1882, the Edison Gower Bell Telephone Company of Europe established on Lisbon and Oporto, and they were granted the concession of the telephone service.

This concession was then granted to The Anglo Portuguese Telephone Company (APT) until 1968. In this year, a national entity was created, called *Empresa Pública Telefones de Lisboa e Porto* (TLP), and became the one handling the telecommunications in Lisbon and Oporto. In the other parts of Portugal, it was *Correios, Telégrafos e Telefones* (CTT) that had the concession.

In 1922, Marconi's Wireless Telegraphy Company was granted the concession of Radio Telegraphy and Wireless Telephony and in 1925 *Companhia Portuguesa Rádio Marconi* was created and assumed the responsibilities of its ancestor.

CTT became a national entity on 1970. However, it was only on 1992 that CTT became fully dedicated to the Mailing business. At the same time, the telecommunications part of the business was then explored by Telecom Portugal S.A., a national entity as well, created with that purpose.

At this point, Portugal had 3 players in the Telecommunications sector: TLP, in Lisbon and Oporto; Telecom Portugal, on the remaining parts of the country, plus Europe and the Mediterranean Area; and Marconi, for intercontinental affairs.

In 1991, *Telecomunicações Móveis Nacionais* (TMN) was created by TLP and Telecom Portugal for mobile telecommunications. Also in the same year, *Teledifusora de Portugal* (TDP) was created to manage the infrastructures of Telediffusion.

Portugal Telecom, S.A. was created through the merger of Telecom Portugal, TLP and TDP, and became the only national player in the Telecommunication Sector.

In 1992, the market was introduced to the only competition Portugal Telecom had for a while: Telecel – *Comunicações Pessoais, S.A.* This company (nowadays Vodafone Portugal) was created to operate in the Mobile Telecommunications sector and, therefore, TMN was no longer the only player in that sector.

However, not only TMN would get competition. Later, in 1998, new regulation led to the liberalization of the Telecommunicated sector. That is, since that date, it was possible to have more players competing in the sector.

At this time, other companies were created such as Oni (the first one), Jazztel, as landline Telecommunications provider, and Sonae Com (through the brand Optimus), as mobile telecommunications provider.

Portugal Telecom started to be quoted on the Stock Exchange and as so, became a non-national company in 1995, with the State selling their stake of the company throughout the following 5 years.

2.2 PT Group

In this section, PT Group will be reviewed, namely the History, the role in the sector, the Ownership and the International Presence.

2.2.1 PT Group History

As it was pointed out previously, the History of the Sector in Portugal and the History of PT Group are one and the same until PT Group stopped being fully owned by the State.

However, it is important to mention that even though the State stopped controlling the company, there were still 500 Golden Shares. These shares gave the possibility to the State to veto any decision or takeover.

In 2007, Sonae, a Portuguese group, tried to acquire PT, however the attempt was not successful. PT board of directors rejected the bid.

Nevertheless, and as a consequence of this takeover attempt, PT Group spun off PT Multimédia, a media company, that nowadays does business under the brand ZON. There was part of this company Tv Cabo and Cinemas Lusomundo.

At the same time, the State was suffering pressure from the European Commission to give up on the Golden Shares, which happened on 2011.

Since 2003, PT Group owned 50% of Vivo, a Brazilian mobile company, while Telefónica owned the other half. However, in 2010, Telefónica bought PT's shares, even though the State used the Golden shares to veto the sell on a first attempt.

PT then proceeded to continuing investing in Brazil, this time by acquiring a stake in Oi, a landline telephone company.

On 2007, PT Group created the brand Meo. This brand provided triple-play subscription, that is, television network, internet service and landline telephone service. Meo was essentially created to continue providing television services that were previously provided by PT Multimédia.

With the creation of the product line M4O, PT Group started to provide to the clients an integrated subscription, including mobile phone service via TMN. This product line (quadruple play or multiple play) was innovator since no other market player was offering it at the time.

TMN, the company within the PT Group dedicated to mobile service, ceased to exist in 2014 and the services are now provided by PT under the brand Meo.

2.2.2 PT Group in the sector

As it was mentioned along the History of the Sector chapter, Portugal Telecom (and its ancestors) was for a long time the only player in the sector and still nowadays one of the most notorious and well-known companies operating in Portugal.

PT Group has around 100 companies, including the participations, both in Portugal and abroad. However, in this project, there will be a focus on the most important companies in the group.

PT Comunicações provides the services of fixed phone, internet, cable television and mobile phones.

PT Data Center is in the business of cloud solutions, or, in other words, storage of data of companies and technological services. The biggest physical infrastructure is located in Covilhã and it is one of the largest data centers in the world.

PT Inovação e Sistemas is a company whose focus is on finding innovative solutions and providing support to systems, not only in the group but also to other companies.

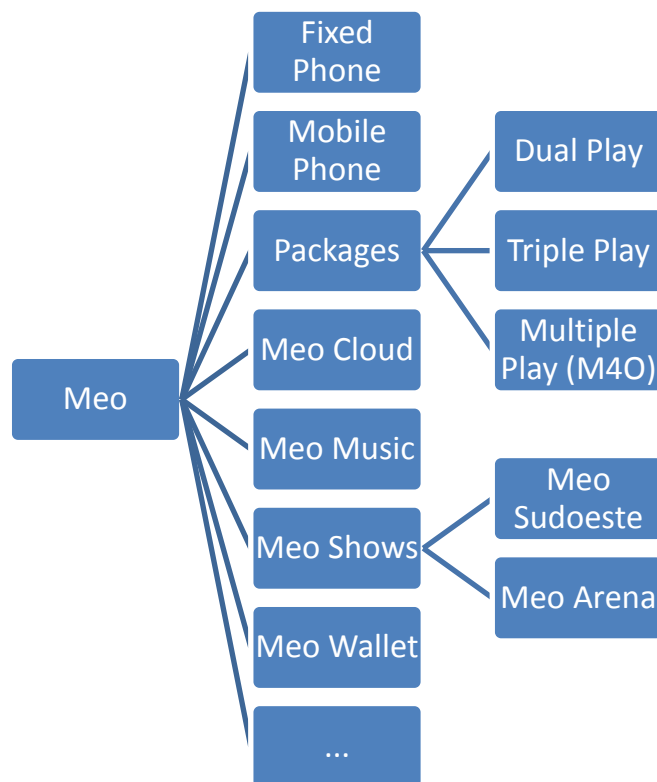
PT Pro is a transversal company that supports companies within the group with management of budgets, human resources, facilities and documents.

PT Pay manages the service Meo Wallet, which enables the client to pay for services or products through the mobile phones, televisions and computers.

PT Contact is a company directed mainly to marketing services and sales.

As it was possible to understand, PT Group offers a wide range of products and services. On the consumer product line, these products are all offered under the brand Meo.

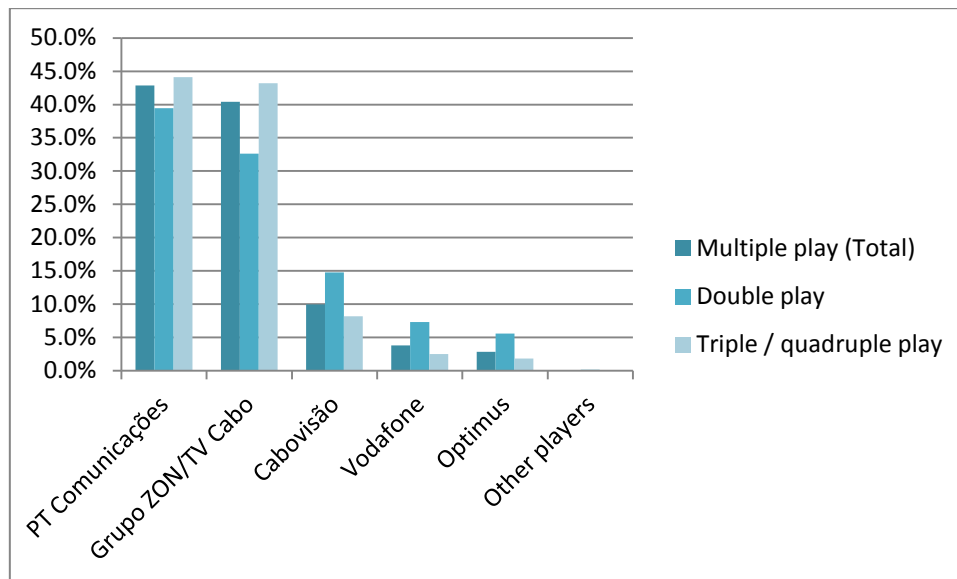
Figure 1 – Main Products of Meo



Source: Adapted from Meo.com

In terms of Market Share, it is also interesting to perceive the situation of PT Group in the sector.

Figure 2 – Market Share on Combined Services



Source: Adapted from Anacom, 2012

As we can see from the graph above, PT Group was the leader in the market in terms of combined services, in 2012.

2.2.3 Shareholders Ownership

When the State had Golden Shares of PT Group, no shareholder could have more than 10% of the company. Nowadays, the situation is not the same. However, since PT Group is quoted in the Stock Exchange, its ownership is fragmented.

The following table is to show the main shareholders in the company and the number of stocks they own. At the same time, it is possible to see the percentage of the total Equity of PT the main shareholders own.

Table 1 – Shareholders Ownership

Shareholders	Stocks	%
RS Holding	90.111.159	10.05%
Grupo Espirito Santo	90.056.485	10.05%
Telemar Norte Leste S.A.	89.651.205	10.00%
UBS AG	45.736.067	5.10%
Norges Bank	44.442.888	4.96%
Grupo Visabeira	23.642.885	2.64%
BlackRock Inc.	21.025.118	2.35%
Controlinveste International Finance	20.419.325	2.28%
Morgan Stanley	20.243.013	2.26%
Pictet Assset Management	18.246.357	2.04%
Ontario Teachers' Pension Plan Board	18.000.000	2.01%
Bestinver	17.981.057	2.01%
Others		44.25%

Source: Adapted from portugaltelecom.pt, as of end of 2013

The majority of PT Group's stock is owned by financial institutions, asset management companies and funds, and big groups.

On another note, Oi is represented by the name Telemar Norte Leste S.A.

2.2.4 International Business

PT Group, even though it is a Portuguese company, it has business in many other parts of the world.

With the participation in Oi, and other companies as well (such as UOL and Contax), Brazil is the second largest market for PT.

On the other hand, PT also has a strong participation in Africa, namely in countries that were colonies of Portugal. This is the case of Angola, Cape Verde and São Tomé e Príncipe. However, PT is also present in Namibia.

In Asia, PT has a participation in East Timor, again in an ex-colony of Portugal.

The following figure shows the countries where PT is present and the participations in the companies from those countries.

Figure 3 – International Presence of PT



Source: PT website

2.2.5 Other players

The sector of Telecommunications is often composed by big companies and not in a big number.

Since PT Group is becoming more and more international, it is interesting to analyze the competition not only in Portugal but also all over the world.

In Portugal, the biggest competition is Zon Optimus, Cabovisão and Vodafone Portugal. Although PT Group is the market leader, the competition is tough, always trying to attract clients with new products and lower prices.

Abroad, there are some big players in the sector, such as Telefónica, Vodafone Group, in Europe, and AT&T and Verizon, in the United States. These companies, like PT Group, are trying more and more to operate internationally, namely in the emerging markets.

2.3 Future of the sector

As in many other sectors, technology has had a strong impact in the telecommunications sector.

Nowadays, people are increasingly using internet as the main platform to communicate with others. Simultaneously, internet is becoming to be very wide spread and it is possible to access it from almost everywhere in the world.

At the same time, devices are improving as well. Mobile phones have been upgraded to the so-called Smart Phones that can access internet via Wi-Fi or Mobile Broad Band Internet Access (3G and 4G technologies).

Applications such as Skype and Whatsapp use internet instead of traditional telecommunications infrastructures and are replacing the usual phone calls and text messages. They are essentially free to the user, apart from the internet subscription service, which can be also replaced by a free Wi-Fi Hotspot.

On the other hand, people are also using more and more social networks as a tool to communicate, since, again through different devices, they can access Facebook and Twitter, for example, almost everywhere.

This can also be applied to television services. There are applications that allow people to see a show or a movie in other devices other than the usual one, a television.

As a consequence, people are looking to be always connected. They do not want to worry about not having internet if they leave home, for example. The answer for that is already in place with the combined solutions.

Another factor that will influence the telecommunications sector, namely in Europe, will be the so-called Euro tariff. With this law, people will be able to call any place in European Union without being charged the usual roaming fee.

As so, telecommunications companies will continue to find innovative solutions and improve velocity and quality of services.

Potentially they will evade from their usual business and focus on the data business. That is, their core business will more and more be storage of data and cloud services.

Another reason for this is the increasingly search for outsourcing solutions from companies, that prefer to do what they do best (their core business) and leave the rest for others.

All in all, the companies in this sector will have to adapt to the changes that will occur in order to fulfill their clients' needs.

3. Literature Review

In this chapter it is going to be reviewed some of the most notorious authors on the topic of Corporate Valuation, as well as some of the most popular and tested methods of valuations.

First of all, it is important to understand what value is. Value is not the price in the market; value is how much an asset is worth. That is, it is not the price you pay; it is the price you are willing to pay. Value is seen as a measure of performance (Brealey, R. *et al.*, 2011:3) and, in essence, valuation is just to analyse the performance of the company at this moment and as expected for the future.

According to Damodaran (2002), valuation is not objective, it is not a science. Even though the models used in valuation are quantitative and, ultimately, give a number, a result for the valuation, the inputs are often based on assumptions and are subjective. A valuation can never be seen as a certainty.

Furthermore, the value of the company is not static over time. The company as a whole can be affected by its surroundings, such as economic or social changes, which can modify the sales figures or the stock risk, for example. On the other hand, if there is new information available that is crucial and it was not known before, the value can change. Damodaran (2002) goes as far as saying “a valuation done on a firm ages quickly”.

For the author, there are three approaches to valuation, which will be looked over next.

3.1 Discounted Cash Flow Valuation

“Companies create value by investing capital to generate future cash flow at rates of return that exceed their cost of capital” (Koller *et al.*, 2010: 17). On another words, the value of a company today should be the present value of future cash flows.

This is the basic equation for the value of an asset:

$$\text{Value of an asset} = \sum_{t=1}^{t=n} \frac{E(CF_t)}{(1+r)^t} \quad (1)$$

Where, $E(CF_t)$ is the expected future cash flows,

t is the period correspondent, and

r is the “discount rate reflecting riskiness of estimated cash flows” (Damodaran, 2002).

The cash flow of the asset will depend on the asset as well as the class where it belongs (bonds, stocks, etc.). The period for estimating the cash flows should be long enough for the cash flows to stabilize. The discount rate should reflect the riskiness of the asset; high discount rate means a risky asset, whilst a low discount rate means the asset is not as risky.

In this discounted cash flow valuation approach, there are numerous models that could be studied. However, they can be divided into three paths: Value of Equity, Value of the Firm and Adjusted Present Value (Damodaran, 2002).

The Value of Equity is essentially the value to the stakeholders, that is, the cash flows to equity discounted at a rate of return required by the investors.

$$\text{Value of Equity} = \sum_{t=1}^{t=n} \frac{E(\text{Free CF to Equity}_t)}{(1+K_e)^t} \quad (2)$$

Where, $E(\text{Free CF to Equity}_t)$ is the expected future cash flows to Equity, and

k_e is the “cost of equity” (Damodaran, 2002).

These cash flows mentioned are simply the cash amount left after paying the operating expenses, the capital needs and taxes, and considering the effect of the cash flow coming from (and going to) debtholders. The cost of equity is often obtained from the Capital Asset Pricing Model (CAPM) formula:

$$K_e = r_f + \beta(E(r_m) - r_f) \quad (3)$$

Where, r_f is the risk free rate,

β is the coefficient of systematic risk, and

$E(r_m)$ is the expected return of the market.

The Value of the Firm can be seen as the cash flows to the firm discounted at an average cost of capital, i.e. including both cost of equity and cost of debt.

$$\text{Entreprise value} = \sum_{t=1}^{t=n} \frac{E(\text{Free CF to Firm}_t)}{(1 + WACC)^t} \quad (4)$$

Where, $E(\text{Free CF to Firm}_t)$ is the expected future cash flows to Firm, and

WACC is the Weighted Average Cost of Capital.

$$\text{Value of Firm} = \text{Entreprise value} + \text{Market value Non operating assets} \quad (5)$$

The adjusted present value (APV) method just looks at each part of the valuation in separate. First, it gets to the value of a company fully financed by Equity. Then it considers the benefits (tax benefits) and the problems (financial stress costs) of acquiring debt.

The limitations of these models are very much related to how predictable are the company's cash flows and how difficult is it to understand the risk of the company.

3.2 Relative Valuation (Multiples)

This valuation approach is one of the most used in the real world, as it is simple and easy to work with. Relative valuation is based on the premises that “the value of an asset is derived from the pricing of “comparable” assets” (Damoradan, 2002). In another words, relative valuation compares the value of the company with other similar companies or with the industry itself, using multiples.

In order to do so, some assumptions are implicit: those similar companies are correctly priced in the market and, in long term, the performance of the companies tends to be the performance of the industry.

“When computing and comparing industry multiples, always start with enterprise value to EBITA.” (Koller *et al.*, 2010: 315). This is one of the multiples of the Firm approach, but we can also consider the enterprise value to invested capital or to sales.

On the Equity approach, we have the Price to Earnings, Price Earnings to Growth, Dividend Yield, and Market to Book value, among others.

Most of multiples or ratios are self-explanatory in terms of calculation. The interesting part is to know what companies we should consider as “comparable”. The similar company must be similar in many aspects, such as size, industry, capital structure, etc.

This approach is very limited when it comes to very unique companies or very recent companies, with not very large revenues.

3.3 Contingent claim (Real Options)

This model is based on the option pricing models. Basically, in options, if we have a call option, we have the right to buy an asset at a previously agreed price (strike price) at or until a previously agreed date. If we have a put option, the essence is the same except that, in this case, we have the right to sell an asset.

One of the most important models of option pricing is the Black-Scholes model. It uses the variance, the risk free rate, the strike price, the time to expiration and the current market value as inputs in order to get the option value.

However, in this case study, it is important to talk about Real Options – options on real assets.

It is relatively easy to understand how a project or a patent can be an option in that sense, because, at some point in time, there is a decision to make: invest or not invest. However, this may not be easy to value, due to the lack of information to do so.

In fact, that is one of the limitations of the model: when the asset is not traded in the market, it is very difficult to value it.

This approach will not be explored in this case study.

Apart from this division proposed by Damodaran, there are also two other models to have into consideration and that will be reviewed as well in this case study.

3.4 Dividend Discounted Model

This model assumes that the dividends paid by the company are the return of the shareholders' investment. Therefore, the following equation applies:

$$\text{Value of Share} = \sum_{t=1}^{t=n} \frac{E(DPS_t)}{(1 + K_e)^t} \quad (6)$$

There is a big assumption under this model: the dividends are strongly correlated with earnings. In practice, that might not be the case. For example, a very lucrative company may not pay dividends at all if they are considering a large investment in a near future.

Another limitation of this model concerns the estimation of the dividends, especially if the company is not paying dividends at the moment.

3.5 Economic Value Added (EVA[®])

The EVA[®] model is a model created by Stern & Stewart focuses on the abnormal profit. The main equations are as follows:

$$\begin{aligned} EVA &= \text{Expected profit} - \text{Normal Profit} \\ &= (\text{Return on Capital Invested} - \text{Cost of capital}) \\ &\quad * \text{Capital Invested} \quad (7) \end{aligned}$$

$$\text{Firm value} = \text{Capital Invested} + \sum_{t=1}^{t=n} \frac{(EVA_t)}{(1 + K_e)^t} \quad (8)$$

The present value of the EVA[®] discounted at the opportunity cost of capital is often called the MVA[®] (Market Value Added).

For listed firms, it is possible to determine the implied MVA[®] with the following formula:

$$\text{Implied MVA} = \text{EV according to the market value} - \text{Invested Capital} \quad (8)$$

This method is equivalent to the discounted cash flows and they both should achieve the same final result for the valuation.

4. Data and Methodology

The financial data, specifically the financial statements of the PT Group, was collected directly from its website and Bloomberg. In order to get the most accurate possible valuation of the company, the data period will be from 2011 to 2013 and the frequency will be yearly.

The choice of the data period needed to reflect a not very long period because PT is often creating new services and products (typical in a very innovating-driven sector such as the telecommunications one) and also periodically acquiring new participations in other companies. Another reason was due to the fact that only in 2011, PT acquired the stake of 25.5% (nowadays, after restructuration, 23.26%) in Oi.

Other financial data concerning the company and its competitors was collected from Bloomberg. The competitors' website was also used as an information source.

The economic factors, interest rates and risk factors were found in INE (Instituto Nacional de Estatística, i.e., Statistics of Portugal), IMF (International Monetary Fund), Damodaran's website, among others.

Analysts' reports were used as a comparison tool or a benchmark, to have an idea on what to expect of this valuation.

All these sources are clearly cited when used.

For this purpose, the methodology to be used is the one described in "Literature Review", with the right adaptations, except the Contingent Claim approach.

5. Company Valuation

In the first part of this chapter, PT Group will be analysed in terms of its financial health. In the second part, the valuation itself will take place.

5.1 Financial Overview

Apart from valuating a company, it is also interesting to analyse how PT Group stands today. As so, a summary will be presented with the Key Figures.

Table 2 – Key Figures on Financial Overview

	2011	2012	2013	3 years
Return on Sales	8.41%	15.18%	13.59%	12.39%
ROA	2.21%	3.64%	3.29%	3.05%
ROE	6.02%	12.22%	20.78%	13.01%
ROIC	5.21%	9.87%	8.45%	7.85%
Current Ratio	1.31	2.77	2.69	2.26
Quick Ratio or Acid Test	1.30	2.73	2.66	2.23
TIE	1.33	2.19	1.54	1.69

On the average of the 3 years, the return on sales has been around 12.4%, which means that, for each euro of sales, the company gets an operational income of roughly 0.12 euro.

The Return on Assets ratio gives the profitability of a company compared to its Total Assets. On average, PT Group has a profit which is around 3% of the Total Assets.

The Return on Equity ratio in the past 3 years has been, on average, 13%. It measures the profit generated by the company when compared to the money invested by its shareholders.

The Return on Invested Capital ratio is another profitability ratio that gives the profit generated by the company when compared to the Total Capital Invested. In the past 3 years, the ratio has been roughly 8%.

The current ratio is a liquidity ratio that gives the capacity of the company to reimburse the short term liabilities. The essence of the quick ratio is the same as the current ratio, however it does not take in account the inventories in the current assets as they cannot be considered liquid assets. Both ratios are around 2, meanings that the company short term liquidity seems assured.

The Times Interest Earned ratio is a ratio that measures the ability of a company to pay the interest and basically meet the obligations. The TIE has been really low for the past 3 years. This can be problematic and can lead the company to not fulfil its obligations towards debtholders.

5.2 Valuation of PT Group

This is the core part of this case study: to get to a value of the share according to its past performance and forecasting of the future. It is also essential to compare this valuation against the share price quoted in the market and see if PT Group is under-valuated or over-valuated.

For this purpose, the Share Market Price considered for this valuation was the closing price of the last day of 2013.

Consequently, the aim is to answer to the question: should an investor buy, hold or sell their position on PT Group?

5.2.1 Growth

In order to estimate the future cash flows of a company, the growth rate is the key element.

In the case of PT Group, this growth rate should represent a stable pace since the company is already in the maturity stage of the life cycle.

Based on the last 3 years, there are the following growth rates for several indicators:

Table 3 – Growth rates

	g 2013/2011
Total Operating revenues	3%
EBITDA	22%
Net operating Income (NOI) = Operating Profit = EBIT	21%
Group Net Income	42%
Earnings per Share (EPS)	32%
Dividends per Share (DPS)	-61%
Total Assets	7%
Total Equity (including Minority Interests)	-23%
Total Liabilities	18%

The growth rate chosen and that will be applied for the forecast of the continuity value was the Total Operating Revenues growth rate. The assumption is that the company will invest proportionally to the increase in sales.

5.2.2 Cost of Equity, Cost of Debt and Weighted Cost of Capital

One of the most fundamental parts of any valuation is the discount rate to be applied. As it was explained before, there are several discount rates to be used on valuation, depending on the method to be used.

Nevertheless, in this section there will be an estimate of the rates that will be used and the assumptions behind them.

Cost of Equity

The cost of Equity is basically the cost of Capital provided by the shareholders. As it was mentioned before, the cost of equity is often calculated based on the CAPM model. Hence, in order to obtain this discount rate, it is crucial to estimate the risk free rate, the market premium and the beta of PT Group.

Risk free rate

For an investment to be risk free, certain conditions have to be met: there has to be no default risk and no reinvestment risk (Damodaran, 2008). As so, the risk free rate should be the rate of a security issued by an entity with no default risk (usually a Government). At the same time, this security should have in account the period of the investment that we are trying to value, without reinvestment until its maturity.

Consequently, it is not possible to use Portuguese Government Bonds as the risk free asset, because they are not seen in the market as having no default risk (the rating of Portugal is currently Ba3 for Moody's, BB+ for Fitch and BB for Standard & Poor's).

At the same time, since the valuation takes in account a very large period of forecasting (ultimately forever, with its continuity value), the asset whose rate is considered risk free needs to have a long maturity.

Therefore, for this purpose, the German Government 10-year bond was the security chosen. However, since PT Group operates mainly from Portugal, it is important to consider the country risk inherent.

Market Premium

The market premium can be defined as the return of the market over the risk free rate. In order to obtain this market premium, it is necessary to define the market, get the historical prices and estimate its return against the risk free.

In this case, the market is well represented by the PSI-20 index, which is composed of the 20 biggest Portuguese companies quoted in the Stock Exchange. PT Group is present in PSI-20.

Based on the Prices from 2011 to 2013, the average return of the PSI-20 over the risk free was roughly -0.04%. This unusual negative premium is very likely due to the unusual country risk premium included in the Portuguese risk “free” rate.

Beta

The beta is a measure of systematic risk and volatility in the market. In this case study it was calculated using regression analysis.

For analysis purposes, and as it was mentioned previously, the PSI-20 index was considered to be the market, the German Bond was considered to be the risk free asset and the time frame was 3 years (2011 to 2013) as well.

Table 4 – Beta

Beta	0.998
------	-------

One can say that a company with a beta of 1 has a strong correlation with the market and moves in the same direction as the market does. That is, when the market is rising in value so are the shares of PT Group.

This beta is a levered beta, that is, it takes in consideration the structure of the company. The assumption is that the leverage level will be constant throughout the following years.

Estimate of Cost of Equity

Given the assumptions and calculated, it was possible to estimate the Cost of Equity.

Table 5 – Cost of Equity

Risk Free Rate	1.94%
Country risk	7.00%
Risk Free Rate + Country risk	8.94%
Market Premium (Return Market – Risk Free Rate)	-0.04%
Beta	0.9978
Cost of Equity	8.90%

The cost of Equity of PT Group is even lower than the risk free rate including the country risk. As it is possible to observe, this is due to the return of the market being low (typical when it is a crisis) and due to the strong correlation with the market (beta). At the same time, the country risk is unusually high.

Cost of debt

The cost of debt is basically the interest rate the company would pay if the financing was made only with Debt.

For the estimation of cost of debt, it is necessary to analyse the interest rate that the company has been paying.

Table 6 – Cost of Debt

	2011	2012	2013	3 years
Average Interest Rate on Net Debt	5.88%	9.58%	9.90%	8.45%

Even though the interest rate seems to be increasing, it is important to notice that, due to the crisis, banks and other debtholders are more and more increasing their spreads in order to compensate a possible default. As so, and considering that the economy is usually cyclical, an average level should be found.

Taking in consideration the past 3 years, the average interest rate has been 8.45%, and this should be used as the cost of debt.

Weighted Average Cost of Capital

The Weighted Average Cost of Capital is a discount rate that takes in consideration the Leverage Level of the company.

$$WACC = \frac{E}{D + E} \times Re + \frac{D}{D + E} \times Rd \times (1 - t) \quad (9)$$

Where E is Equity

D is Debt

Re is cost of Equity

Rd is cost of Debts

t is the tax rate

Table 7 – Weighted Average Cost of Capital

Cost of Equity	8.90%
Equity	2832.94
Debt	10153.58
Cost of Debt	8.45%
Tax rate	15.45%
WACC	7.53%

The values of Equity and Debt correspond to Market Capitalization and Net Interest Bearing Debt on December 31st, 2013.

The tax rate used was an average of the tax rates in the last 3 years. This tax rate seems very low when compared to other tax rates normally considered for Portuguese companies. However, it is important to say that some companies of PT Group have fiscal Headquarters on The Netherlands, country that has lower tax rates.

5.2.3 Dividend Discounted Model

In order to apply the dividend discounted model, it is necessary to estimate the dividend for the next periods.

Table 8 – Dividend Payout Ratio

	2011	2012	2013
Dividend Pay Out	308.48%	123.06%	88.03%

As we can see in the table above, the dividend payout ratio has not been stable and in the first 2 years was indeed very high, due to extraordinary dividends. And that is the reason the dividend payout ratio was considered to be the 2013 value instead of an average of the 3 years.

In the table below, it is possible to see the estimation of the dividends for the following years.

Table 9 – Dividend Estimation

	Historical	Planning				Continuing
Expected Dividends Valuation	2013	2014	2015	2016	2017	2018
DPS = Dividends per Share		0.17	0.17	0.17	0.17	0.17

Since the net income is not expected to increase exponentially, the dividends are also expected to be around the same throughout the period in study.

Calculating the present value, using the cost of equity and a perpetual growth rate of 2.55%, of the future dividends it is possible to estimate the value of the Share for the PT Group.

Table10 – Share Price with Dividend Discounted Model

Present Value = Value of the Share	2.43
Share Market Price	3.16
Difference	-0.73

According to this valuation, the company seems to be over-valuated in the market.

5.2.4 Discounted Cash Flows

In the discounted cash flows model, there are 2 approaches: Free Cash Flow to the Firm and Free Cash Flow to the Equity.

Starting with the first approach, the first important thing to do is to estimate the Free Cash Flow to the Firm.

Table 11 – Free Cash Flow to the Firm

	Historical	Planning				Continuing
	2013	2014	2015	2016	2017	2018
Discounted Cash Flow (FCFF=Firm)						
Operating Profit After Taxes (= EBIT * (1 - t))		202	207	212	218	223
Investment in Net Working Capital		3.70	3.79	3.89	3.99	4.09
Investment in Fixed Assets		160	165	169	173	177
= Free Cash Flow for the Firm		366	375	385	395	405

On a first analysis, the cash flows seem interesting since they are increasing. However, in practical terms, since they are not in today's values they are not easily compared.

In order to get to the fair value using this method, the Free Cash Flow for the Firm needs to be actualized until 2013 (the year 0), using the WACC.

Table 12 – Share Price with Discounted Cash Flows (FCFF)

Present Value = Value of the Share	2.42
Share Market Price	3.16
Difference	-0.74

The difference between the Value of the Share using the model and the Share Market Price is -0.74, which indicated that PT Group is perceived to worth more by the market than its fair valuation (over-valuated).

The second approach consists in estimating the Free Cash Flow to the Equity.

Table 13 – Free Cash Flow for Equity

	Historical	Planning				Continuing
Discounted Cash Flow(FCFE=Equity)	2013	2014	2015	2016	2017	2018
Net Income = Earnings After Taxes		172	177	181	186	191
Total Investments (Fixed Assets + Net Working Capital)		-164	-168	-173	-177	-182
Debt Increase		172	177	181	186	191
Needed Earnings Retention		8	8	9	9	9
FCFE= Free Cash Flow for the Shareholders		180	185	190	195	200

Again, the cash flows are increasing throughout the time. However, just by discounting them at the cost of Equity, it is possible to get to a share price.

Table 14 – Share Price with Discounted Cash Flows (FCFE)

Present Value = Value of the Share	4.91
Share Market Price	3.16
Difference	1.75

As it is possible to see in the table above, the value of the share with this method seems higher than the market value. As so, it is possible to say that the company seems to be under-valuated.

Differences between the two different DCF valuations usually tend to reflect inconsistencies in the cost of capital estimates.

5.2.5 Economic Value Added (EVA)

In this part, it is essential to understand if PT Group is indeed creating value for its investors.

Table 15 – MVA and EVA

MVA and EVA	Historical	Planning				Continuing
	2013	2014	2015	2016	2017	2018
Enterprise Value = PV of Future FCFF @ WACC	7,353	7,541	7,733	7,931	8,133	8,341
Implied MVA in PV of Future FCFF	926	950	974	999	1,024	1,051
EVA = Economic Value Added		-282	-289	-297	-304	-312

EVA[®] is essentially a measure of financial health and since, in this case, it is negative, it means that the company will not generate enough profit to support their investments.

Table 16 – EVA spread

MVA and EVA	Historical	Planning				Continuing
	2013	2014	2015	2016	2017	2018
ROIC = Return On Invested Capital		3.14%	3.14%	3.14%	3.14%	3.14%
WACC = Weighted Average Cost of Capital		7.53%	7.53%	7.53%	7.53%	7.53%
EVA Spread = Value Creation Gap		-4.39%	-4.39%	-4.39%	-4.39%	-4.39%

In the table above, it is also possible to see that the Return on Invested Capital is lower than the Weighted Average Cost of Capital, confirming what was said before.

5.2.6 Relative Valuation – Multiples

The goal of this method is to compare the company with its peers (other companies in the same sector). For this purpose, multiples are used for this comparison.

The following table is to show some multiples of PT Group as well as other companies in the sector, both from Portugal and from abroad.

Table 17 - Multiples

Multiples Valuation - 2013	PT	Zon Optimus	Telefonica	Vodafone	Orange	Telecom Italia	Oi	Mean
Price to Book Value	2.28	2.67	2.49	0.69	1.16	0.97	0.36	1.52
Price to Earnings Ratio	20.74	28.46	11.67	15.04	12.71	9.93	7.78	15.19
ROE (%)	20.78	1.71	17.37	23.58	0.58	-21.94	-12.96	4.16
Debt/Equity	5.44	1.09	2.94	0.41	1.56	2.20	0.40	2.01
Dividend Yield (%)	4.24	2.18	6.43	3.26	9.51	2.19	10.41	5.46
Beta	0.997	1.25	1.66	0.59	0.71	1.37	1.29	1.12
Stock Price	3.16	5.40	11.84	28.88	9.00	0.72	1.15	8.59

The price to book value ratio compares the price of the stock in the market with the price present in the company's books. In this case, PT Group has a price to book value higher than 1, meaning that the stock is more valuable in the market than in PT's books.

The price to earnings ratio compares the price in the market with the earnings per share that the company has. PT's ratio is higher than the average, which suggests that the market believes that PT's earnings will increase in the future.

Return on Equity (ROE) is, as mentioned previously, the profit generated by the company when compared to the money invested by its shareholders. PT Group's ROE is the second higher of the companies mentioned.

Debt to Equity ratio gives essentially the leverage of the company, that is, if the company finances itself more from debt or from equity. PT has the highest ratio, meaning it depends more on debt for financing.

The dividend yield compares the dividends per share with the stock price in the market, giving a somehow rate of return. PT's dividend yield is slightly lower than the market.

The beta, as it was mentioned before, is essentially a measure of risk and since PT's beta is very close to 1, this means that PT is a representative stock and moves in the same direction as the market.

Since it seems that the group has a better financial health, considering these multiples, than the average of its peers but the stock price is below average, one can say that the stock appears to be under-valuated.

However, this is very simplistic because it doesn't take in account the dimensions of the companies in the markets and if they can really be compared.

5.2.7 Comparison between methods

So far, it has been analyzed the share price according to each model. However, it is also interesting to compare the models and the different conclusions.

Table 18 – Comparison between models

Valuation Method	Value of the share	Difference to Market Price	Comment
Expected Dividends Valuation	2.43	-0.73	Over-valuated
Discounted Cash Flow (FCFF=Firm)	2.42	-0.74	Over-valuated
Discounted Cash Flow(FCFE=Equity)	4.91	1.75	Under-valuated
Multiples Valuation - 2013	N/A	N/A	Under-valuated

Observing the table above, the value of the share for Expected Dividends Valuation and for the Discounted Cash Flow (for the Firm) is very similar and indicates that PT Group is over-valuated.

On the other hand, the models Discounted Cash Flow (for Equity) and the Relative Valuation indicate that PT Group is under-valuated.

So, when comparing all the valuations, it is not easily perceived if the company is worth more or less than its quoted price in the market.

5.2.8 Sensitivity Analysis

In this part, the goal is to understand what happens to the share price and to the company valuation by changing some factors.

A big part of the valuation is the discount rate used, as well as the perpetual growth rate. This sensitivity analysis focus on that and what happens to the share price (on the Discounted Cash Flows model) if there is a change in WACC and the growth rate.

Table 19 – Growth Rate and WACC Sensitivity Analysis

g/WACC	7.03%	7.43%	7.53%	7.63%	8.03%
2.05%	2.56	1.94	1.80	1.66	1.16
2.45%	3.17	2.45	2.28	2.13	1.56
2.55%	3.33	2.59	2.42	2.26	1.67
2.65%	3.51	2.73	2.56	2.39	1.78
3.05%	4.30	3.38	3.17	2.98	2.28

As it is possible to observe on the table above, maintaining the WACC rate but increasing the perpetual growth rate to the 3.05%, the fair value for the share price gets very similar to the share price on the market (3.16€).

6. Future of PT

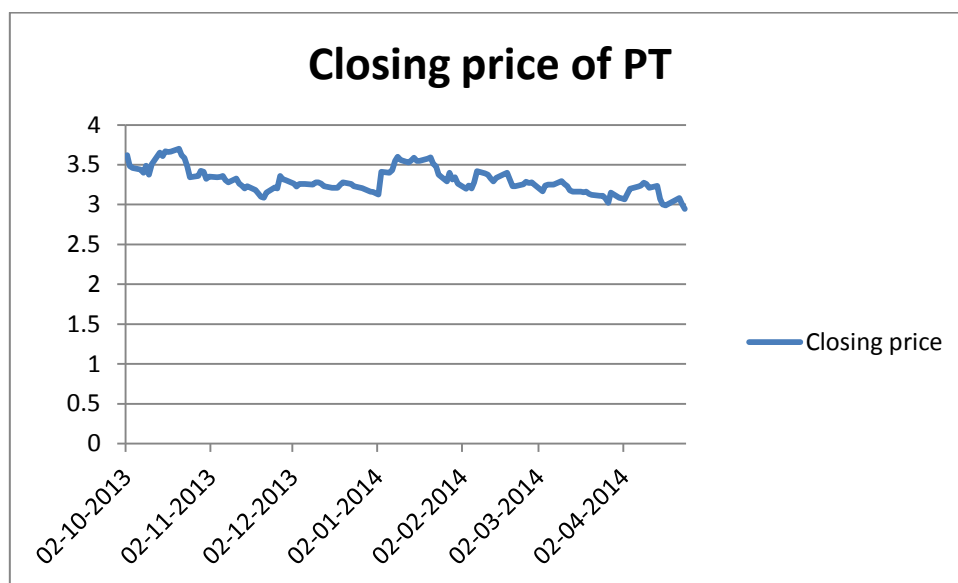
As it was mentioned along this case study, PT Group will merge with Oi in this year of 2014, if everything goes accordingly to the plan. This means essentially that this might have been the last chance to value PT as an independent entity and not part of the Telemar Group.

Due to this merger, a new company called CorpCo will be created and it will be composed by Oi and PT, with PT's shareholders to become CorpCo's shareholders (payment in stock). The number of stock each shareholder of PT will receive of this new company is yet unknown, since it depends on Oi's increase of capital.

CorpCo will have its Headquarters in Brazil and it will be quoted in Euronext, New York Stock Exchange and Bovespa (São Paulo).

This is a time of uncertainty regarding the future of PT. Since the announcement of the merger on October 2nd, 2013, the stock price of PT has decreased slightly, as it is possible to see in the following graph.

Figure 4 – Stock Price of PT



Source: Adapted from Euronext.com

All in all, the markets are also unsure about the future of PT and this alliance with Oi. However, since the decrease in the stock price is not very large, the investors seem to be expectant, waiting to see what happens.

7. Conclusion

The goal of this case study was to value PT Group and compare the valuation against its quoted price, in order to advise investors on whether they should buy, sell or hold.

Since the different methods of valuation gave different results, but always near the price quoted on the stock market, one can say that the company seems to be correctly priced. Even though some models showed a slight over-valuation in the market, the stock price has been decreasing since the end of 2013, converging more to the fair price.

As so, the recommendation is to hold. Taking in consideration the slight over-valuation mentioned, selling could also be seen as an option, since the fair value appears to be lower than the market price. However, as it was mentioned, the price at the moment is lower than the price used for the comparison and as so, the stock may not be perceived as over-valued any longer.

The limitations of this study are essentially the limitations of the models used and mainly of the assumptions according to which they were built. It is important to take in consideration that the forecasted values may vary, especially in a period like this for this company. On the other hand, the models used are static, that is, they take a picture of the company at a given moment, without granting that in the next period it will be the same. Also, according to EVA analysis, the company seems to be destroying value; however it is very likely that the management will try to reverse the situation in a nearby future.

For future studies, it will be important to analyze not the group as a whole, but each company individually and truly understand which companies are influencing the value of the group in a positive way and those that are not.

On the other hand, it can also be interesting to investigate the different markets where the company operates and analyze the different risks of the different countries and currencies. That would help to understand better what actions are needed in order to ensure value creation in the future.

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Appendix

A. Income Statement

Euro million	2011	2012	2013
Operating revenues	2,768	3,079	2,911
Operating costs	1,986	1,789	1,749
Wages and salaries	505	414	399
Direct costs	521	457	459
Commercial costs	362	319	310
Other operating costs	597	599	581
EBITDA	782	1,290	1,162
Post retirement benefits	5	58	40
Depreciation and amortization	545	765	726
Income from operations	233	467	396
Other expenses (income)	(2)	(25)	50
Curtailment costs	0	2	127
Net losses (gains) on disposal of fixed assets	9	(3)	(3)
Net other costs	(11)	(23)	(73)
Income before financ. & inc. taxes	235	492	345
Financial expenses (Income)	36	56	(105)
Net interest expenses	175	213	257
Equity in earnings of affiliates, net	(209)	(207)	(441)
Net other costs (gains)	70	50	79
Income before income taxes	199	436	450
Provision for income taxes	(7)	(126)	(62)
Income before non-controlling interests	191	310	388
Losses (income) attrib. to non-controlling interests	(10)	(84)	(57)
Consolidated net income	181	226	331

Source: Earnings Release (portugaltelecom.pt)

B. Other relevant data

	2011	2012	2013
Tax rate	3.72%	28.83%	13.78%
Inflation Rate	3.73%	2.80%	0.25%
Number of Shares	860	855	897
EPS = Earnings per share	0.21	0.26	0.37
DPS = Dividends per share	0.65	0.325	0.325
Dividend Pay Out	308.48%	123.06%	88.03%
Plow Back Ratio	32.42%	81.26%	113.60%

Source: portugaltelecom.pt

C. Balance Sheet

Euro million	2011	2012	2013
Cash and equivalents	1,288	2,615	2,573
Accounts receivable, net	798	1,197	1,171
Inventories, net	53	105	86
Judicial Deposits	1,084	0	1
Financial investments	276	3,400	2,942
Intangible assets, net	3,401	1,183	1,098
Tangible assets, net	2,573	3,579	3,438
Accrued post retirement benefits	12	2	2
Other assets	118	127	80
Deferred tax assets and prepaid expenses	913	623	630
Total assets	10,515	12,829	12,020
Accounts payable	536	682	588
Gross debt	3,882	7,375	7,371
Accrued post retirement liability	74	835	961
Other liabilities	664	862	743
Deferred tax liabilities and deferred income	2,184	538	491
Total liabilities	7,341	10,292	10,154
Equity before non-controlling interests	2,480	2,305	1,641
Non-controlling interests	694	233	225
Total shareholders' equity	3,175	2,537	1,867
Total liabilities and shareholders' equity	10,515	12,829	12,020

Source: Earnings Release (portugaltelecom.pt)

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D. Income Statement Analysis

Euro million	2011	2012	2013	2011 in %	2012 in %	2013 in %	g 2012/2011	g 2013/2012	g 2013/2011
Operating revenues	2,768	3,079	2,911	100%	100%	100%	11%	-5%	3%
Variable Charges	883	776	769	32%	25%	26%	-12%	-1%	-7%
Gross Profit	1,885	2,303	2,142	68%	75%	74%	22%	-7%	7%
Operating Fixed Charges	1,103	1,013	980	40%	33%	34%	-8%	-3%	-6%
EBITDA	782	1,290	1,162	28%	42%	40%	65%	-10%	22%
Post retirement benefits	5	58	40	0%	2%	1%	1174%	-30%	199%
Depreciation and amortisation	545	765	726	20%	25%	25%	40%	-5%	15%
Income from operations (EBIT)	233	467	396	8%	15%	14%	101%	-15%	30%
Other expenses (income)	(2)	(25)	50	0%	-1%	2%	1025%	-305%	235%
Curtailement costs	0	2	127	0%	0%	4%	#DIV/0!	5270%	633%
Net losses (gains) on disposal of fixed assets	9	(3)	(3)	0%	0%	0%	-140%	-3%	-2%
Net other costs	(11)	(23)	(73)	0%	-1%	-3%	116%	214%	160%
Income before financ. & inc. taxes	235	492	345	8%	16%	12%	109%	-30%	21%
Financial expenses (Income)	36	56	(105)	1%	2%	-4%	54%	-287%	24%
Net interest expenses	175	213	257	6%	7%	9%	22%	21%	21%
Equity in earnings of affiliates, net	(209)	(207)	(441)	-8%	-7%	-15%	-1%	113%	45%
Net other costs (gains)	70	50	79	3%	2%	3%	-29%	56%	6%
Income before income taxes (EBT)	199	436	450	7%	14%	15%	119%	3%	51%
Provision for income taxes	(7)	(126)	(62)	0%	-4%	-2%	1598%	-51%	190%
Income before non-controlling interests	191	310	388	7%	10%	13%	62%	25%	42%
Losses (income) attrib. to non-controlling interests	(10)	(84)	(57)	0%	-3%	-2%	734%	-32%	137%
Consolidated net income	181	226	331	7%	7%	11%	25%	47%	35%
Dividends	559	278	291	20%	9%	10%	-50%	5%	-28%
Retained Earnings	(378)	(52)	40	-14%	-2%	1%	-86%	-176%	-63%

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E. Balance Sheet Analysis

Euro million	2011	2012	2013	2011 in %	2012 in %	2013 in %	g 2012/2011	g 2013/2012	g 2013/2011
Non current Assets	5,973	4,762	4,537	57%	37%	38%	-20%	-5%	-13%
Intangible assets, net	3,401	1,183	1,098	32%	9%	9%	-65%	-7%	-43%
Tangible assets, net	2,573	3,579	3,438	24%	28%	29%	39%	-4%	16%
Current Assets	4,542	8,067	7,484	43%	63%	62%	78%	-7%	28%
Judicial Deposits	1,084	0	1	10%	0%	0%	-100%	#DIV/0!	-98%
Financial investments	276	3,400	2,942	3%	26%	24%	1131%	-13%	226%
Accrued post retirement benefits	12	2	2	0%	0%	0%	-86%	12%	-61%
Cash and equivalents	1,288	2,615	2,573	12%	20%	21%	103%	-2%	41%
Accounts receivable, net	798	1,197	1,171	8%	9%	10%	50%	-2%	21%
Inventories, net	53	105	86	1%	1%	1%	99%	-18%	28%
Other assets	118	127	80	1%	1%	1%	7%	-37%	-18%
Deferred tax assets and prepaid expenses	913	623	630	9%	5%	5%	-32%	1%	-17%
Total assets	10,515	12,829	12,020	100%	100%	100%	22%	-6%	7%
Non current Liabilities	3,882	7,375	7,371	37%	57%	61%	90%	0%	38%
Gross debt	3,882	7,375	7,371	37%	57%	61%	90%	0%	38%
Current Liabilities	3,458	2,917	2,782	33%	23%	23%	-16%	-5%	-10%
Accounts payable	536	682	588	5%	5%	5%	27%	-14%	5%
Accrued post retirement liability	74	835	961	1%	7%	8%	1034%	15%	261%
Other liabilities	664	862	743	6%	7%	6%	30%	-14%	6%
Deferred tax liabilities and deferred income	2,184	538	491	21%	4%	4%	-75%	-9%	-53%
Total liabilities	7,341	10,292	10,154	70%	80%	84%	40%	-1%	18%
Equity before non-controlling interests	2,480	2,305	1,641	24%	18%	14%	-7%	-29%	-19%
Non-controlling interests	694	233	225	7%	2%	2%	-66%	-3%	-43%
Total shareholders' equity	3,175	2,537	1,867	30%	20%	16%	-20%	-26%	-23%
Total liabilities and shareholders' equity	10,515	12,829	12,020	100%	100%	100%	22%	-6%	7%

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F. General Growth Analysis

	2011	2012	2013	g 2012/2011	g 2013/2012	g 2013/2011
Total Operating revenues	2,768	3,079	2,911	11%	-5%	3%
EBITDA	782	1,290	1,162	65%	-10%	22%
Net operating Income (NOI) = Operating Profit = EBIT	235	492	345	109%	-30%	21%
Group Net Income	191	310	388	62%	25%	42%
Earnings per Share (EPS)	0.21	0.26	0.37	25%	40%	32%
Dividends per Share (DPS)	0.65	0.33	0.33	-50%	0%	-29%
Total Assets	10,515	12,829	12,020	22%	-6%	7%
Total Equity (including Minority Interests)	3,175	2,537	1,867	-20%	-26%	-23%
Total Liabilities	7,341	10,292	10,154	40%	-1%	18%

G. Revenue Growth Analysis

	2011	2012	2013
Revenues	2,768	3,079	2,911
Nominal Growth Rate		11.23%	-5.45%
Inflation Rate		2.80%	0.25%
Real Growth Rate		8.43%	-5.70%
Exact Real Growth Rate		8.20%	-5.68%

H. Operating Profitability Analysis

	2011	2012	2013
Sales Volume (Operating Revenues)	2,768	3,079	2,911
Variable Charges (Costs of Goods Sold and Other)	883	776	769
Gross Profit (or Contribution Margin)	1,885	2,303	2,142
Gross Profit (or Contribution Margin) as a %	68%	75%	74%
Fixed Charges (Fixed Expenses excluding depreciation)	1,103	1,013	980
EBITDA=Earnings Before Interest Taxes Depreciation & Amortization	782	1,290	1,162
Cash Flow Margim = EBITDA/Revenues or Sales	28%	42%	40%
Depreciation and Amortization Gharges	549	823	767
Profit from Operations=Net Operating Income=Operating profit=EBIT	233	467	396
Operating Profit as a % of Sales or ROS = Return On Sales	8%	15%	14%

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I. Operating or Business Risk Analysis

YEARS	2011	2012	2013
Total Fixed Charges (including Depreciation + Amortization)	1,652	1,836	1,747
Gross Profit (or Contribution Margin) as a %	68%	75%	74%
Breakeven Point in € (BE in €)	2,426	2,454	2,374
Sales Volume (Revenues)	2,768	3,079	2,911
Safety Margin = Sales/BE in € - 1	14%	25%	23%
Sustainable Sales Drop as a % = 1 - BE in €/Sales	12%	20%	18%
Variable Charges (Costs of Goods Sold and Other)	883	776	769
Gross Profit (or Contribution Margin) in €	1,885	2,303	2,142
Profit from Operations=Net Operating Income=Operating profit=EBIT	233	467	396
Degree of Operating Leverage (ex ante)	8.09	4.93	5.41
Change in Operating Profit as a %		100.63%	-15.33%
Change in Sales (€) as a %		11.23%	-5.45%
Degree of Operating Leverage (ex post)		8.96	2.81

J. Profitability Analysis (Return on Assets)

YEARS	2011	2012	2013
RETURN ON ASSETS (ROA):			
Operating Profit + Interest Income	233	467	396
Total Assets	10,515	12,829	12,020
RETURN ON ASSETS:	2.21%	3.64%	3.29%
ROA = Return On Assets			
Breakdown:			
Return on Sales	8.41%	15.18%	13.59%
Total Assets Turnover = Sales/Total Assets	0.26	0.24	0.24
ROA = Return On Assets	2.21%	3.64%	3.29%

K. Profitability Analysis (Return on Net Assets)

YEARS	2011	2012	2013
RETURN ON INVESTED CAPITAL			
Invested Capital (or Net Assets):			
Fixed or Non Current Assets	5,973	4,762	4,537
Operating Current Assets:			
Inventories	53	105	86
Operational Accounts Receivable	798	1,197	1,171
Deferrals and Other Operating Accounts receivable	1,032	749	710
Total Operating Current Assets	1,882	2,051	1,966
Operating Current Liabilities:			
Accounts Payable	536	682	588
Other Operating Accounts Payable (VAT and other related itens)	2,184	538	491
Deferrals and other operating Accounts payable	664	862	743
Total Operating Current Liabilities	3,385	2,081	1,822
Net Operating Working Capital Needs or Requirements	-1,503	-30	145
Invested Capital (or Net Assets):			
Operating Profit (or Profit from Operations)	233	467	396
ROIC = Return On Invested Capital (before taxes)	5.21%	9.87%	8.45%
Sales = Operating Revenues	2,768	3,079	2,911
ROS = Return On Sales	8.41%	15.18%	13.59%
Fixed Assets/Sales	215.79%	154.67%	155.84%
Net Operating Working Capital Needs/Sales	-54.29%	-0.99%	4.97%
Invested Capital or Net Assets /Sales	161.50%	153.68%	160.81%
Invested Capital Turnover	0.62	0.65	0.62
ROIC = Return On Invested Capital (control)	5.21%	9.87%	8.45%

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L. Return on Equity Analysis (Spread Model - Total Assets)

YEARS	2011	2012	2013
Spread Model with Total Assets and Total Liabilities:			
Operating Profit + Interest Income = EBIT = Earnings Before Interest and Taxes	233	467	396
Implied Tax Rate = Taxes/EBT = t	3.72%	28.83%	13.78%
Tax Effect = 1 - t	96%	71%	86%
EBIAT = Earnings Before Interest but After Taxes	224	333	341
Total Assets	10,515	12,829	12,020
After Taxes ROA (ROA AT)	2.13%	2.59%	2.84%
Interest Expense	175	213	257
Total Liabilities (D)	7,341	10,292	10,154
Average Interest Rate on Total Liabilities	2.39%	2.07%	2.54%
After Taxes Average Interest Rate (AIR AT)	2.30%	1.47%	2.19%
Financial Margin or Spread After taxes (MoS = ROA AT - AIR AT)	-0.17%	1.12%	0.65%
Total Equity (E)	3,175	2,537	1,867
Financial Leverage = D/E = Debt/Equity	2.31	4.06	5.44
Financial Leverage Effect (= MoS * D/E)	-0.38%	4.54%	3.55%
Total Return On Equity	1.75%	7.13%	6.38%
Net Income	191	310	388
ROE = Total Return On Equity	6.02%	12.22%	20.78%

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M. Return on Equity Analysis (Spread Model – Total Funding)

YEARS	2011	2012	2013
Spread Model with Total Funding:			
Total Equity	3,175	2,537	1,867
Medium and Long Term Debt	3,882	7,375	7,371
Short Term Debt	664	862	743
Total Debt (a.k.a. Interest Bearing Debt)	4,546	8,237	8,114
Marketable Securities	276	3,400	2,942
Cash and Other Equivalent	1,288	2,615	2,573
Total Cash and Equivalent (interest generating assets)	1,564	6,014	5,515
Net Debt = Total Debt - Total Cash and Equivalent = D	2,982	2,223	2,599
TOTAL FUNDING	6,157	4,760	4,466
EBIAT (Excluding Interest Income) = NOPLAT	224	333	341
EBIAT (Excluding Interest Income) = NOPLAT	3.64%	6.99%	7.64%
Net Interest Expense	175	213	257
Average Interest Rate on Net Debt	5.88%	9.58%	9.90%
Tax effect	96.28%	71.17%	86.22%
After Tax Average Interest Rate on Net Debt	5.66%	6.82%	8.54%
Financial margin or Spread	-2.02%	0.17%	-0.90%
Financial Leverage Ratio = D/E	0.94	0.88	1.39
Financial Leverage effect	-1.89%	0.14%	-1.25%
Return On Equity = Total ROE	1.75%	7.13%	6.38%

N. Return on Equity Analysis (Factor Model)

YEARS	2011	2012	2013
Factor Model with ROIC			
Gross Profit Margin as a % of Sales	68.11%	74.80%	73.59%
Fixed Expenses (cash Costs) Effect	41.50%	56.02%	54.26%
Cash Flow Margin	28.26%	41.90%	39.93%
Depreciation and Amortization Effect	0.30	0.36	0.34
ROS = Return On Sales	8.41%	15.18%	13.59%
Invested Capital Turnover	0.62	0.65	0.62
ROIC = Return on Invested Capital or Net Assets	5.21%	9.87%	8.45%
Interest Expense Effect (net from interest income)	0.85	0.93	1.14
Invested Capital/Total Equity	1.41	1.86	2.51
Financial Leverage	1.20	1.74	2.85
Tax Effect	0.96	0.71	0.86
Return On Equity = Total ROE	6.02%	12.22%	20.78%

O. Minority Interest and Dividend Policy Effect

YEARS	2011	2012	2013
Global ROE (TROE)	6.02%	12.22%	20.78%
Minority Interests Share (Income Statement)	10	84	57
Minority Interests (balance sheet) (MIBS)	694	233	225
Minority Interests Profitability rate (RIM)	1.46%	36.22%	25.28%
Intra Equity Spread (= TROE - RIM)	4.57%	-24.00%	-4.49%
Equity leverage = MIBS/Group Equity = MI/GE	0.22	0.09	0.12
Effect of Minority interest on Group ROE	1.00%	-2.20%	-0.54%
Group ROE (GROE)	7.02%	10.02%	20.24%
Group ROE (Control)	6.02%	12.22%	20.78%
Dividend Pay Out Ratio = div	308.48%	123.06%	88.03%
Plow Back or Retention Ratio = ret	32.42%	81.26%	113.60%
Internal Growth Factor (IGF) = GROE * ret =	1.95%	9.93%	23.61%

P. Group ROE Measures

YEARS	2011	2012	2013
Group Net Income	181	226	331
Total Group Equity (eoy)	3,175	2,537	1,867
Group Retained Earnings	-378	-52	40
Total Group Equity (excluding current year retained earnings) (boy)	3,552	2,589	1,827
Average Group Equity (avg)	3,364	2,563	1,847
ROE = GNI / TGE (eoy) i.e. like a discount rate	5.70%	8.90%	17.73%
ROE = GNI / TGE (boy) i.e. like an interest rate	5.10%	8.72%	18.11%
ROE = GNI / TGE (avg) i.e. like a continuously compounded rate	5.38%	8.81%	17.92%
interest rate converted into discount rate	4.85%	8.02%	15.34%
Interest rate converted to continuously compounded	4.97%	8.36%	16.65%

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Q. Financial Risk and Total Risk Analysis

YEARS	2011	2012	2013
Total Operating Fixed Charges	1,652	1,836	1,747
Net Interest Expense	175	213	257
Total Fixed Charges	1,828	2,049	2,004
Gross Profit Margin as a % of Sales	68.11%	74.80%	73.59%
Breakeven with Interest Expense in €	2,683	2,739	2,723
Sales Volume	2,768	3,079	2,911
Safety Margin = Sales/BE in € - 1	3.16%	12.41%	6.90%
Sustainable Sales Drop as a % = 1 - BE in €/Sales	3.06%	11.04%	6.45%
Total operating variable Charges	883	776	769
Gross profit in €	1,885	2,303	2,142
Operating Profit	233	467	396
Degree of Operating Leverage (ex ante)	8.09	4.93	5.41
Earnings (or Profit) Before Taxes = EBT	199	436	450
Degree of Financial Leverage	1.17	1.07	0.88
Combined Leverage Degree	9.49	5.29	4.76

R. Balance Sheet Analysis (Ratios)

YEARS	2011	2012	2013
FUNCTIONAL BALANCE SHEET			
Total Equity	3,175	2,537	1,867
Medium and Long Term Debt	3,882	7,375	7,371
Permanent Capital = Long Term Capital = Non Current Capital	7,057	9,912	9,238
(Net) Fixed Assets or Non Current Assets	5,973	4,762	4,537
Net Working Capital (NWC)	1,084	5,150	4,701
Inventories	53	105	86
Operational Accounts Receivable	798	1,197	1,171
Deferrals and Other Operating Accounts receivable	1,032	749	710
Total Operating Current Assets	1,882	2,051	1,966
Accounts Payable	536	682	588
Other Operating Accounts Payable (VAT and other related itens)	2,184	538	491
Deferrals and other operating Accounts payable	664	862	743
Total Operating Current Liabilities	3,385	2,081	1,822
Net Operating Working Capital Needs or Requirements	-1,503	-30	145
Net Treasury - First Approach Measure	2,586	5,181	4,556

S. Activity Ratios

YEARS	2011	2012	2013
Financial Cycle (in Days of Sales)			
Average Daily Sales Volume (Calendar Days = 365)	7.58	8.44	7.98
Average Inventory Period	6.94	12.44	10.77
Average Collection Period	105.17	141.86	146.78
Average Other Accounts Receivable in days	136.07	88.84	88.99
Operating Current Assets in Days of Sales	248.17	243.13	246.53
Average Payment Period	70.69	80.85	73.69
Other Operating Accounts Payable in days of sales	288.05	63.72	61.58
Deferrals and other operating Accounts payable in days of sales	87.60	102.16	93.12
Operating Current Liabilities in Days of Sales	446.33	246.73	228.38
Operating Net Working Capital Needs (in days)	-198.16	-3.60	18.14

T. Other ratios

YEARS	2011	2012	2013
Fixed Assets Coverage:			
By Total Equity	53.15%	53.28%	41.15%
By Permanent (or Long Term) Capital	118.14%	208.15%	203.62%
Liquidity:			
Current Ratio	1.31	2.77	2.69
Quick Ratio or Acid Test	1.30	2.73	2.66
Total Equity / Total Assets (including minority interests)	30.19%	19.78%	15.53%
Group Equity / Total Assets (excluding minority interests)	23.59%	17.96%	13.65%
Interest bearing debt/Total assets	43.24%	64.21%	67.50%
Total Liabilities / Total assets	70%	80%	84%
Liabilities Structure (% of Liabilities due in the Short Term)	47.11%	28.34%	27.40%
Solvency (Total Equity/Total Liabilities)	0.43	0.25	0.18

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YEARS	2011	2012	2013
Coverage ratios:			
EBITDA	782	1,290	1,162
EBIT (including Interest Income)	233	467	396
Depreciation and Amortization	545	765	726
Interest Expense	175	213	257
Short Term Debt	664	862	743
Debt Service	840	1,075	1,000
TIE = Times Interest Earned = EBIT/Interest Expense	1.33	2.19	1.54
EBITDA / Debt Service (Non Adjusted)	0.93	1.20	1.16
Tax Factor or Tax Effect	0.96	0.71	0.86
Short Term Debt / (1 - t)	690	1,211	861
Tax Adjusted Debt Service	865	1,424	1,119
EBIT (including Interest Income) /Tax Adjusted Debt Service	0.27	0.33	0.35
EBITDA/Tax Adjusted Debt Service	0.90	0.91	1.04
EBIT (including Interest Income) * (1 - t)	224	333	341
After Tax Operating Cash Flow	774	1,139	1,102
Interest Expense After Tax	169	152	222
After Tax Debt Service	833	1,013	965
EBIT (1-t) / After Tax Debt Service = the same	0.27	0.33	0.35
After Tax Operating Cash Flow / After Tax Debt Service = different!	0.93	1.12	1.14
Interest Bearing Debt / (Retained Earnings + Depreciation)	27.16	11.55	10.59

U. Average Closing Prices and Returns

	2011	2012	2013	3 years
PT Average Closing price	6.77	3.79	3.48	4.69
PT Average Return	-0.23%	-0.05%	-0.04%	-0.11%
PSI-20 Average Closing price	6.84	5.20	6.04	6.03
PSI-20 Average Return	-0.12%	0.02%	0.07%	-0.01%

Source: Euronext

V. Risk Free rate

	2011	2012	2013
Rf	1.83%	1.31%	1.94%
Country risk	6.50%	7%	7%
Rf + Country risk	8.33%	8.31%	8.94%

Source: Investing.com, countryeconomy.com

W. Regression results

<i>Estatística de regressão</i>	
R múltiplo	0.652743
Quadrado de R	0.426074
Quadrado de R ajustado	0.425323
Erro-padrão	0.014779
Observações	767

ANOVA

	<i>gl</i>	<i>SQ</i>	<i>MQ</i>	<i>F</i>	<i>F de significância</i>
Regressão	1	0.124039	0.124039	567.9233	2.55E-94
Residual	765	0.167082	0.000218		
Total	766	0.291121			

	<i>Coefficientes</i>	<i>Erro-padrão</i>	<i>Stat t</i>	<i>valor P</i>	<i>95% inferior</i>	<i>95% superior</i>	<i>Inferior 95.0%</i>	<i>Superior 95.0%</i>
Interceptar	-0.00095	0.000534	-1.77461	0.07636	-0.002	0.000101	-0.002	0.000101
Rm-Rf	0.997779	0.041869	23.83114	94	0.915588	1.07997	0.915588	1.07997

X. Beta and other risk measures

Beta	0.998
Standard deviation	1.95%
Systematic risk	0.00%
Specific risk	0.02%
Total risk	0.02%

Y. Weighted Average Cost of Capital

Rf	1.94%
Country risk	7.00%
Rf + Country risk	8.94%
Rm-rf	-0.04%
Beta	0.9978
RE	8.90%
Equity	2832.94
Debt	10153.58
Rd	8.45%
Tax rate	15.45%
WACC	7.53%

Z. Forecasting of 2014 to 2018

	Historical	Planning					Continuing
	2013	2014	2015	2016	2017	2018	
Sales and Other Operating Revenues	2,911	2,986	3,062	3,140	3,220	3,302	
Operating Profit (before taxes) = EBIT	233	239	245	251	258	264	
Interest Expense	175	180	184	189	194	199	
Earnings Before Taxes = EBT	199	204	209	214	220	225	
Income Taxes	-62	-31	-32	-33	-34	-35	
Net Income = Earnings After Taxes	137	172	177	181	186	191	
Dividends	120	152	155	159	164	168	
Retained Earnings	16	21	21	22	22	23	
Net Working Capital Needs	145	148	152	156	160	164	
Fixed Assets	6,282	6,443	6,607	6,776	6,949	7,126	
Invested Capital	6,427	6,591	6,759	6,932	7,109	7,290	
Cash+Marketable Securities (Non Operating Assets)	1,564	1,604	1,645	1,687	1,730	1,774	
Total Equity	1,241	1,273	1,305	1,339	1,373	1,408	
Total Liabilities	6,750	6,922	7,099	7,280	7,466	7,657	
Total Assets	7,991	8,195	8,404	8,619	8,839	9,065	
Growth Rate in Perpetuity						2.55%	
Number of Shares Outstanding	897	916	935	955	975	996	
per Share Indicators							
Share Market Price	3.16						
Share Book Value	1.38	1.39	1.40	1.40	1.41	1.41	
EPS = Earnings per Share	0.15	0.19	0.19	0.19	0.19	0.19	
DPS = Dividends per Share	0.13	0.17	0.17	0.17	0.17	0.17	

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AA. Expected Dividends Valuation

	Historical	Planning				Continuing
Expected Dividends Valuation	2013	2014	2015	2016	2017	2018
DPS = Dividends per Share		0.17	0.17	0.17	0.17	0.17
RE = Shareholders Required Rate of Return	8.90%	8.90%	8.90%	8.90%	8.90%	8.90%
Perpetuity Growth Rate						2.55%
Rate Difference						6.35%
Continuing Value					3	
SUM		0.17	0.17	0.17	2.82	
Present Value = Value of the Share	2.43					
PV of Future Dividends	2.53	2.59	2.65			
PV of Future Dividends + Current Year DPS		2.75	2.82			

BB. Discounted Cash Flow for the Firm

	Historical	Planning				Continuing
Discounted Cash Flow (FCFF=Firm)	2013	2014	2015	2016	2017	2018
Operating Profit After Taxes (= EBIT * (1 - t))		202	207	212	218	223
Investment in Net Working Capital		3.70	3.79	3.89	3.99	4.09
Investment in Fixed Assets		160	165	169	173	177
= Free Cash Flow for the Firm		366	375	385	395	405
Discount Rate = WACC	7.53%	7.53%	7.53%	7.53%	7.53%	7.53%
Perpetuity Growth Rate						2.55%
Rate Difference						4.98%
Continuing Value					8,133	
SUM		366	375	385	8,528	
Present Value (EV = Enterprise Value @ WACC)	7,353					
EV= Enterprise Value = PV of Future FCFF	7,353	7,541	7,733	7,931	8,133	
Enterprise Value + Current Year FCFF		7,907	8,109	8,316	8,528	
Cash+Marketable Securities (Non Operating Assets)	1,564					
Firm Value	8,917					
Debt (non operating liabilities)	6,749.94					
Equity Value	2,167.21					
per Share Value = Value of each Share	2.42					

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CC. Discount Cash Flow for Equity

Discounted Cash Flow(FCFE=Equity)	Historical	Planning				Continuing
	2013	2014	2015	2016	2017	2018
FCFE General Table - Free Cash Flow Break Down						
FCFF= Free Cash Flow for the Firm		366	375	385	395	405
Debt Increase		172	177	181	186	191
Interest Expense After Taxes		152	156	160	164	168
Cash Flow going to the Debt holders		-20	-21	-21	-22	-23
Cash Flow coming from the Debt holders		20	21	21	22	23
FCFE = Free Cash Flow for the Equity		386	396	406	417	428
FCFE Alternative Table - Normative Model						
Net Income = Earnings After Taxes		172	177	181	186	191
Total Investments (Fixed Assets + Net Working Capital)		-164	-168	-173	-177	-182
Debt Increase		172	177	181	186	191
Needed Earnings Retention		8	8	9	9	9
FCFE= Free Cash Flow for the Shareholders		180	185	190	195	200
RE = Shareholders Required Rate of Return	8.90%	8.90%	8.90%	8.90%	8.90%	8.90%
Perpetuity Growth Rate						2.55%
Rate Difference						6.35%
Continuing Value					3,143	
SUM		180	185	190	3,338	
Current PV of FCFE @ RE	2,842					
PV of Future FCFE @ RE	2,842	2,914	2,989	3,065	3,143	
PV of Future FCFE @ RE + Current Year FCFE		3,095	3,174	3,255	3,338	
Cash+Marketable Securities (Non Operating Assets)	1,564					
SUM = Total Equity Value	4,406					
per Share Value = Value of each Share	4.91					

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DD. MVA and EVA

	Historical	Planning				Continuing
MVA and EVA	2013	2014	2015	2016	2017	2018
Enterprise Value = PV of Future FCFF @ WACC	7,353	7,541	7,733	7,931	8,133	8,341
Invested Capital	6,427	6,591	6,759	6,932	7,109	7,290
Implied MVA in PV of Future FCFF	926	950	974	999	1,024	1,051
Operating Profit After Taxes (= EBIT * (1 - t))		202	207	212	218	223
Invested Capital at the beginning of the year (boy)		6,427	6,591	6,759	6,932	7,109
WACC = Weighted Average Cost of Capital		7.53%	7.53%	7.53%	7.53%	7.53%
Capital Charge		484	496	509	522	535
EVA = Economic Value Added		-282	-289	-297	-304	-312
ROIC = Return On Invested Capital		3.14%	3.14%	3.14%	3.14%	3.14%
WACC = Weighted Average Cost of Capital		7.53%	7.53%	7.53%	7.53%	7.53%
EVA Spread = Value Creation Gap		-4.39%	-4.39%	-4.39%	-4.39%	-4.39%
EVA = Economic Value Added		-282	-289	-297	-304	-312
MVA = PV of Future EVA @ WACC	-5,667	-5,811	-5,960	-6,112	-6,268	
MVA + Current Year EVA		-6,094	-6,249	-6,409	-6,572	
Invested Capital at the end of the year (eoy)	6,427	6,591	6,759	6,932	7,109	7,290
Enterprise Value	760	779	799	820	841	

EE. Multiples Valuation

Multiples Valuation - 2013	PT Group	Zon Optimus	Telefonica	Vodafone	Orange	Telecom Italia	Oi
Price to Book Value	2.28	2.67	2.49	0.69	1.16	0.97	0.36
Price to Earnings Ratio	20.74	28.46	11.67	15.04	12.71	9.93	7.78
ROE	20.78%	1.71%	17.37%	23.58%	0.58%	-21.94%	-12.96%
Debt/Equity	5.44	1.09	2.94	0.41	1.56	2.20	0.40
EV/Sales	2.53						
EV/Invested Capital	1.14						
EV/EBITDA	6.33						
Dividend Yield	4.24%	2.18%	6.43%	3.26%	9.51%	2.19%	10.41%
Beta	0.9978	1.25	1.66	0.59	0.71	1.37	1.29
Stock Price	3.16	5.40	11.84	28.88	9.00	0.72	1.15

Source: Bloomberg, Reuters, Financial Times