CATÓLICA LISBON SCHOOL OF BUSINESS AND ECONOMICS

Novabase

Equity Research

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Abstract

The objective of this thesis is to value a Portuguese quoted equity. A detailed analysis of the main valuation methods was presented as well as the strengths and weaknesses of each one in light of an updated academic literature. The most appropriate method for the specific firm was identified and a complete equity valuation was done.

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Table of Contents

1. Introduction

This Master Thesis was written as the final assignment of the International Masters of Science in Business Administration at the Catholic University of Portugal. It is divided in two parts: the literature review and the Equity Valuation case.

In the first one, Literature Review, I make a complete analysis of the main valuation methods, presenting the advantages and disadvantages of each one. Moreover, I expose which valuation models are more suitable for certain companies, since there is no single best method for every company.

In the equity valuation case half I perform a detailed analysis and consequent valuation of a Portuguese company listed on the Lisbon Stock Exchange - Novabase, the leading company in IT Business Solutions in the domestic market. The choice of valuing Novabase was due to its recent but successful history in one of the most promising and rising industries in the World - Information Technology.

Besides the typical equity valuation, I also perform an overview of the Information Technology Industry in order to support many of the valuation assumptions, and a detailed presentation of Novabase's strategy.

In the end, I make a comparison of my valuation with one of a recognized investment bank, Millennium BCP, explaining possible differences in valuation methodologies and assumptions.

2. Executive Summary

August 2012

Company Report

IT Industry

NOVABASE (NBA:LS)

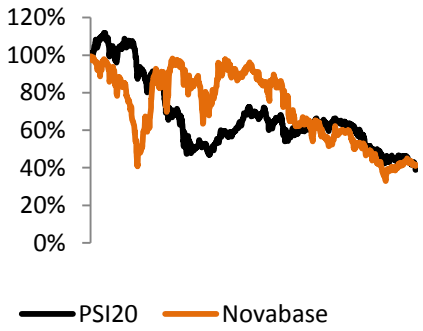
Nuno Sampaio – *Católica Lisbon School of Business and Economics*

Recommendation: BUY

Share Price: EUR 2,05

Target Price: EUR 4,04

Upside:97,2%



No. of shares (mn) 31,4

52 Wk high Price: EUR 2,60

52 Wk low Price: EUR 1,61

The lack of investment from the public and private sectors and the strong pricing pressure in its domestic market is affecting all of Novabase's divisions.

On a positive note, the company managed to sign strategic partnerships with relevant player in IT industry.

The macroeconomic environment in Portugal is proving to be quite challenging, with revenues falling 16% between 2008 and 2011. Economic downturn should still bring lower domestic revenues in both 2012 and 2013.

However, International business has in the meantime partially offset this difficult context and accounts now for 20% of consolidated revenues. Management expects business abroad to reach 25% of revenues in 2012, which implies a growth rate of

NOVABASE (NBA:LS)

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Company Report

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Tough Outlook in the Portuguese IT market: although worldwide IT spending is expected to grow by 5 % in 2012, the macro environment and austerity measures in Portugal should lead IT market to decline by 3,9%.

Novabase's Revenues and EBITDA will, however, increase due to its International Business, after an abrupt drop in the last two years.

Novabase's strong Balance Sheet should allow it to a sooner recovery.

Low liquidity continues to penalise stock. This issue may be overcome with the possible entrance in the PSI-20 index.

	(mn €)
Turnover FY11	
BS	89,6
IMS	86,0
DTV	52,8
Capital	1,2
TOTAL	**229,6**
EV	**126,9**
- Net Debt	-9,9
- Minorities	9,8
Equity Value	**127,0**
# shares (mn)	**31,4**
Price	**4,04**

DCF Assumptions			
	12-13	**14-17**	**TV**
Re	**19,2%**	**13,7%**	**9,5%**
Rf	2,5%	2,5%	2,5%
Beta	1,07	1,07	1,07
Market Premium	5,5%	5,5%	5,5%
Country R. Premium	10,1%	5,0%	1,0%
D/EV	0,0%	0,0%	0,0%
WACC	**19,2%**	**13,7%**	**9,5%**
g			2,0%

Company Presentation

Novabase, headquartered in Lisbon, Portugal, was founded in 1989 as a software-house, specialized in customized solutions development. Nowadays, it is the leading Portuguese company in IT business solutions with a turnover (2011) of €229,6 million, being almost 20% of it generated outside Portugal.

3. Literature Review

3.1. Valuation

Firm valuation, as one of the main problems in corporate finance, has been subject of detailed study in the past literature. In the past years, with the increasing capitalism, firm valuation has gained even more importance, playing a major role either in merger and acquisitions or in a shareholder value-oriented management. Fernández (2007) claims that "understanding the mechanisms of company valuation is an indispensable requisite" which goes further than its weight in mergers and acquisitions, being an unique tool to indentify sources of economic value creation and destruction within the company. Copeland, Koller and Murrin (1994) also consider valuation as useful tool for a better decision making in order to maximize the shareholder value which they believe to be the fundamental goal of all businesses.

Contrary to the general idea about valuation, it is neither a science nor a fully objective pursuit of the company or any other asset's true value (Damodaran 2002). Even though, it may be anchored in quantitative models, valuation is ultimately result of the assumptions used which are not more than subjective inputs. This fact emphasises the importance of not taking into account any prior positions on the value of a firm in the process of the valuation. Koller, Goedhart and Wessels (2005) express the same idea, defending that "valuation can be highly sensitive to small changes in assumptions about the Future".

In the literature, it is possible to find a large variety of methodologies regarding the firm valuation. In his textbook, Damodaran (2005) divides these methodologies into three main approaches: discounted cash flow valuation (present value of expected future cash flows); relative valuation (compares the price of an asset to the market value of similar or comparable assets); contingent claim valuation (option pricing models).

Figure 1: Main valuation categories and corresponding examples

Discounted Cash-Flow Valuation	**Relative Valuation**	**Contingent Claim Valuation**
E.g., PER,EV/EBITDA	E.g., Black Scholes model	E.g., Black Scholes model

Source: adapted from Fernández 2007

Although, virtually, each valuation approach is no more than a different way to express the same underlying model, each method highlights diverse aspects of the valuation problem (Young, Sullivan, Nokhasteh and Holt 1999). It is therefore clear why analysts employ a wide range of valuation models, from the most basic model to sophisticated ones.

3.2. Discounted Cash Flow

The Discounted Cash Flow method is based on the belief that ultimately what can be distributed to Shareholders is Cash and hence the phrase 'Cash is King' (Copeland 2005). Damodaran (2002) argues that DCF "is the foundation on which all other valuation approaches are built".

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

Where,

CF_t = Cash Flow at period t

r = Discount rate

There are several methods to value a firm making use of discounted cash flow approach. The finance literature includes three different methods: Firm Valuation which values the entire company; Equity Valuation which seeks for the equity stake and Adjusted Present Value (APV) that equals the values of each claim on the firm separately, beginning with values of the operations, considering the value added by debt and other non-equity claims afterwards. These three approaches differ in the relevant cash flows and discount rates used by each one as it will be further explained.

As Young et al. (1999) claim, Oded and Michel (2007) showed that every discounted cash flow method leads to the same company's value if the debt is rebalanced.

3.2.1. Firm Valuation

3.2.1.1. Free Cash Flow to the Firm - FCFF

Free Cash Flow to the Firm is the most widely accepted approach of discounted cash flow valuation, making use of the weighted average cost of capital (WACC) as the discount rate (Luehrman 1997a).

$$\text{Value of the Firm} = \sum_{t=1}^{t=n} \frac{FCFF_t}{(1+WACC)^t}$$

Where,

$FCFF_t$ = Free Cash Flow Firm in period t

WACC = Weighted average cost of capital

WACC is a calculation of a firm's cost of capital in which, each category of capital (debt and equity) is proportionately weighted (Bierman 2010).

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

Where,

$\frac{D}{D+E}$ = Debt-to-value ratio

K^d =Cost of Debt

t = taxes

$\frac{E}{D+E}$ = Equity-to-value ratio

Ke = Cost of Equity

The cost of equity represents the rate of return required by an investor to own and bear the risk of owning a stake of the firm. The most common procedure for its estimation is the Capital Asset Pricing Model (CAPM). According to CAPM, the expected return on

any asset is equal to the risk free rate plus a risk premium which is calculated through the company's expected systematic risk relative to the "market" portfolio (beta).

$$Ke = R_f - \beta_L \times (R_m - R_f)$$

Where,

Ke= cost of equity

R_f = Risk free Rate

β_L= Systematic risk of the company

$R_m - R_f$ = Market Risk Premium

Despite its simplicity, the controversy in CAPM arrives with the calculation of the risk-free rate, the market risk premium and the beta:

3.2.1.1.1. Risk free rate

The risk-free rate plays an important role in the when determining the cost of capital. There is an (implicit) consensus that the yields on long-term government bonds should be considered as a proxy of risk free rate. Although theoretically, the maturity of these bonds should be aligned with the investment life (Damodaran 2008), practitioners typically just opt for a ten-year bond.

Damodaran (2002) and Koller et al. (2005) recommend that the appropriate risk-free rate should be determined using a 10 year government bond. Fernandez (2004) points that the expected risk-free rate should have nothing to do with historical returns.

3.2.1.1.2. Beta

The beta is defined by Damodaran (2002) as the covariance of the asset divided by the variance of the market portfolio which measures the risk that the investment adds to the market portfolio.

$$\beta = \frac{Covariance(R_i, R_m)}{Variance(R_m)}$$

Where,

Ri =Share's returns
Rm = Market return

According to Fama and French (2004) the Market beta is commonly (and correctly) interpreted as a measure of the sensitivity of the asset's return to variation in the market return. The same authors consider it the slope in the regression of the asset's return on the market return. If this definition is broadly accepted, the discussion among academics arises with the choice of the market portfolio which is commonly assumed to be a certain stock market index (such as S&P 500), depending on the asset industry and location. However, Macqueen (1980) considers this proxy an inefficient market portfolio, since it contains diversifiable risk and it is no more than a subset of the efficient market. Rosenber and Rudd (2002) consider that this efficient market should be a composition of all the assets in the world, proportionate to their value.

Koller et al. (2005) follow an alternative approach, recommending an industry-derived unlevered beta, levered to the company's target D/E ratio. Damodaran (2002) calls this approach Bottom-Up Betas and states that it represents a significant improvement on regression betas since, averaging across a number of regression betas has much lower standard error than each regression beta and it can be adapted to reflect actual and expected changes in a firm's business.

Rosenberg and Guy (1976) also suggest a different approach, which may be related whether to industry-specific features or company-specific, such as balance-sheet items or earnings performance. This method links more closely the beta to the firm's intrinsic operating and financial characteristics. Rosenberg and Rudd (1982) propose adjusting upward the beta for companies showing: persistent growth (implied by the total assets growth rate or low dividend payout ratios); strong earnings variability; and high leverage, given the debt's constraints and risk of financial distress. However, companies with low business risk and steady cash-flow tend to be more strongly levered in order to build tax shields, which can lead to mixed effects. The authors also propose the introduction of a downward adjustment for size (smaller firms are, on average, riskier).

3.2.1.1.3. Risk Premium

Risk Premium is not a consensual issue amongst academics or practitioners. A wide variety of methods are used to compute the Risk Premium (Damodaran 2008), however, the most popular one among practitioners is, by far, to infer it from past stock returns relative to riskless investments.

Whether country risk's adjustment should or not be introduced is a sensitive issue regarding the risk premium. Although the literature does not usually support this view, analysts often decide to include a country risk premium in some markets.

Stulz (1995) argues that, with the globalization capital markets, the risk of securities is now efficiently spread among investors with globally diversified portfolios. On the other hand, James and Koller (2000) claim that the country risk should not be reflected in the discount rate but, instead, in the cash flows projections – through the computation of different scenarios – rather than in the discount rate and support this idea with three arguments: (i) investors can diversify most of the risks (ii) risks are idiosyncratic, meaning that "they don't apply equally to all industries or even to all companies within an industry"; (iii) equity investments in a company can often be less risky than investments in government bonds which is overlooked when using the country's credit risk as a proxy for firm's risk. However, the author recommends that the cost of capital should be adjusted for macroeconomic variables (e.g. it is easy to understand that an increase in inflation leads to a higher cost of debt) but not in order to incorporate the country risk.

Damodaran (2008) is not a proponent of adjusting cash flows rationale, arguing that allowing for the possibility of poor outcomes, is not risk adjustment given that the expected cash-flow outcome will still be risky and therefore require an extra risk adjustment. The author suggests that expected cash-flow should be adjusted for the country risk premium in order to generate truly "certainty equivalent".

Other authors (e.g. Goedhart and Haden 2003), consider that there is no single proper method, being the choice dependent on the underlying valuation.

After presented the most controversial issues in CAPM, it is important to have in mind, regarding the FCFF valuation that, if one wants to know how much the equity of a firm

is worth, one must subtract the value of all the nonequity claims to the value of the company (Koller et al. 2005). Nonequity claims can be grouped into four different categories: debt such as bonds, short-term and long-term bonds; debt equivalents including operating leases, pensions, specific types of provisions, preferred stock, and contingent liabilities; hybrid claims such as employee stock options and convertible bonds and minority interests.

If before the appearance of advanced computers, the FCFF method was regarded as being relatively practical (Luehrman 1997b), Ruback (2002) claims that this model is proven today to be the easiest to develop, given that it does not need forecasting debt levels and interest paid on a year-to-year basis. Instead, it only requires analysts to determine WACC's implicit target leverage ratio, which is a delicate feature compared to APV approach.

The very same reason is pointed out by many academics as a weakness when studying the FCFF's effectiveness due to its inflexibility concerning a change in capital structure. Luehrman (1997a) states that, if with a stable D/E ratio, the method works fairly well, it seems to be a fragile approach when facing changes in this ratio. Researchers discuss the use of firms' optimal capital structure or the industry's long-term trend when calculating the WACC, in order to minimize this limitation.

A changing capital structure leads not only to a changing WACC but also to a modified cost of equity "since debt payments have priority over cash flows to equity, adding leverage increases the risk to equity holders" (Koller et al. 2005).

According to Luehrman (1997b), in most real situations (non-static capital structures), FCFF approach still needs to be largely adjusted – "not only for tax shields but also for issue costs, subsidies, hedges, exotic debt securities, and dynamic capital structures".

Under complex and constantly changing capital structures, the computation of the appropriate WACCs based on a yearly estimation of the D/E ratios would be extremely impractical (Koller et al. 2005).

Ruback (2002) suggests that, in these cases, the WACC needs to be re-estimated every "because the WACC depends on value weights, the value of the firm has to be estimated simultaneously".

This FCFF limitation has left space to the development and notoriety of models, like the Capital Cash Flow (CCF) and the Adjusted Present Value (APV) which will be discussed further ahead.

3.2.1.2. Adjusted Present Value – APV

Although FCFF remains as the most used DCF valuation method, an alternative approach, Adjusted Present Value, has emerged in the literature as a valid method.

Luehrman (1997a) explas that the APV method esintablishes a barrier between the intrinsic value of the assets and the value added by a favourable capital structure. In other words, APV's approach unbundles the components of the value, analysing them separately and then adding their value to the base-case value (value of the project as it was exclusively financed with equity). Damodaran (2006) explained the APV's main difference when compared to other typical DCF valuations: APV starts by valuing the firm without any debt and then consider the net effects (both benefits and costs) of adding debt to the firm, in contrast to the conventional approach, where those effects are captured in the discount rate.

The Modigliani and Miller's work (1958), who studied the leverage's effect on value of the firm, is the base of APV approach. The authors postulated in their first proposition that, in a perfect market under a no taxes assumption, the value of the levered firm is the same as the value of the unlevered firm, being the firm's value independent of the capital structure. When taxes are introduced, given that interest payments on debt are tax-deductibles, debt does add value:

$$V^{firm}_{levered} = V^{firm}_{unlevered} + T_c * D$$

Where,

$V^{firm}_{levered}$ = Firm value if levered

Tc = Corporate Income Tax

D = Firm Debt

Myers (1974) followed the same rationale when, later, developed the APV. Damodaran (2006), presented the model in a simple way:

$$\text{Adjusted Present Value} = V^{firm}_{unlevered} + PV_{\text{tax shields}} - \text{Expected Bankruptcy costs}$$

Where,

$PV_{\text{tax shields}} = T_c * D$

If the calculation of an all equity firm is quite straightforward:

$$\text{Value of all equity firm} = \frac{\sum_{t=0}^{t=n} \text{FCFFt}}{Ku}$$

Where,

K_u = cost of equity of the unlevered firm

The same straightforwardness doesn't apply to the computation of the Present Values of Tax Shields and Expected Bankruptcy Costs.

3.2.1.2.1. Tax Shields

There is absolutely no consensus in the computation of the value of tax Shields. Initiating the debate, Modigliani and Miller (1958) discount interest tax deductions using the unlevered equity rate. However, in 1963, they corrected it discounting interest tax shields ate the riskless debt rate.

Nevertheless some authors, including Miles and Ezzell (1980, 1985), Harris and Pringle (1985), and Kaplan and Ruback (1995), subsequently returned to Modigliani and Miller's original tax approach, discounting tax deduction at the unlevered equity discount rate.

Harris and Pringle (1980) proposed discounting the tax shields at the unlevered cost of capital. Miles and Ezzell (1980), suggests that a firm with a fixed debt-to-equity target should discount its interest tax shields with cost of debt in the first year, and in the following periods at a cost of capital for the unlevered firm. In turn, Ruback (2002) argues that if there is a fixed amount of debt overtime, interest tax shields should be discounted with cost of debt.

Other researchers have used the cost of risky debt to discount interest tax deductions, such as Myers (1974), Luehrman (1997), Damodaran (2006).

On the other hand, Fernandez (2001) reaches the value of tax shields calculating the difference between two different cash flows (each one with its own risk): the present value of an unlevered firm's taxes and the present value of taxes for a levered firm. The author adds that it does not means the unlevered cost of equity is the appropriate discount rate.

3.2.1.2.2. Expected Bankruptcy Costs

The calculation of the expected bankruptcy costs requires not only direct (i.e. liquidation cots) and indirect costs (i.e. change in the perception of customer) of bankruptcy, but also the estimation of the probability of default with the additional debt.

$$\text{Expected Value of Bankruptcy costs} = \text{Probability}_{\text{bankruptcy costs}} \times \text{PV}_{\text{bankruptcy costs}}$$

The bankruptcy costs may be computed, making use of historical data and literature which have analyzed the scale of this cost. The estimation of the probability of bankruptcy can be done aided by historical default rates provided by rating agencies that links each level of debt to a bankruptcy probability (Vernimmen 2005).

Damodaran (2006) discusses the idea of discounted cash flow valuation, not explicitly considering the possibility of firms failing. The author considers and refutes two types of arguments of the proponents of this valuation: those of who believe that there is no need to consider distress explicitly (i.e. we value only large, publicly traded firms and distress is very unlikely for these firm); and those of who believe that discounted cash

flow valuations already incorporate the effect of distress (i.e. we adjust either the discount rates, or the expected cash flows for the possibility of distress).

Damodaran (2006) claims that, "even large publicly traded firms sometimes become distressed for one reason or the other" which highlights the fact the growth is inevitable and costs of financial distress should be properly determined. In the same reading, he proposes several methods for that propose, including APV methodology.

The impact of financial distress in valuation has been subject of other author's empirical studies. Korteweg (2007) studied 244 firms in 22 industries between 1994 and 2004 and found, an average ex-ante costs of financial distress of 5% of firm value, not exceeding 11% for any industry. However, in bankruptcy, the costs of distress can rise as high as 31% of firm value. He also found that industries with large growth opportunities development tend to have high potential costs of financial distress, which is consistent with the debt overhang problem (Myers 1977).

Expected bankruptcy costs play a key role in the capital structure decision-making since they impose limits from which the benefits of interest tax shields do not compensate anymore. There is a mass support Modigliani and Miller's idea that bankruptcy costs provide the basis for the existence of an optimal capital structure.

However, some authors have challenged this view of optimal capital structure. Haugen and Senbet (1978), argue that "bankruptcy costs, which affect the capital structure decisions, must be trivial or nonexistent if one merely assumes that capital market prices are competitively determined by rational investor".

The authors claim that, under the assumption that if the market value of the dismantled assets exceeds their aggregate value as an ongoing firm, liquidation takes place, even if bankruptcy do not occur, the liquidation will still take place. This would happen since it is in the best interest of existing shareholders. Therefore they conclude that the firm's financial structure and the bankruptcy event are irrelevant for the liquidation decision. Consequently, bankruptcy costs should not play a major role in the determination of the optimal capital structure.

3.2.1.3. APV vs. FCFF

Luehrman (1997a) claims that APV is less restrictive than FCFF since it works perfectly well whether there is a variable capital structure or in cases of a target capital structure. The author also points the benefits of APV as a managerial tool allowing decision-makers to understand from where value (or loss) is coming. In addition, WACC as a discounting rate is unable to deal with complex capital structures.

According to Sabal (2007) APV is more easily applicable in a non-perpetuity situation and, contrarily to FCFF, it does not require constant corporate tax rate and Market Debt ratio - two of the main WACC method's assumptions. As mentioned before, these FCFF drawbacks can be mitigated or even eliminated if the discount rate is calculated in a yearly basis which, however, turns the method very complicated and time demanding. Goedhart et al (2005) is, as well, a proponent of the APV's adequacy for companies with a changing capital structure.

Luehrman (1997b), as mentioned in the APV literature, also emphasizes the lack of FCFF's adequacy in the real world due to its extensive required adjustments, as well as the reduced fit for cross-border valuation.

Booth (2002) suggests the APV as the best method to value highly levered transactions (such as levered buyouts, LBOs) due to the fact that a large part of the post-transaction value comes from a favourable financing structure.

Nevertheless, WACC's based methods (FCFF) are more appropriate, with a fixed debt ratio under a perpetuity situation, whereas there is no consensus on which discount rates to use in tax shields valuation when using the APV approach (Sabal 2007). This argument, however, may be challenged by the Fernández's study (2006) in which he shows that the differences in valuing tax shields are precisely in the origin of several formulas for the calculation of WACC (differences in authors' WACCS correspond to different ways to value tax shields). Thus, there is no reason for FCFF methods being more adequate in perpetuities than the APV since they would be equivalent, from a theoretical point of view.

3.2.1.4. Capital Cash Flow – CCF

According to Ruback (2002), Capital Cash Flow approach is algebraically equivalent to the FCFF method. The simplicity is its advantage when comparing to FCFF given that

the interest tax shields are included in the cash flows. In other words, Capital Cash Flows equal Free Cash Flows plus the interest tax shields, being the appropriate discount rate a before-tax WACC which corresponds to the riskiness of the assets.

$$\text{Value of the firm} = \sum_{t=1}^{t=n} \frac{FCFF_1}{(WACC_{bf} - g_n)}$$

Where,

$FCFF_1$ = Free Cash Flow to the Firm in the next period

$WACC_{bf}$ = Weighted average cost of capital before taxes

g_n =Growth rate

$$\text{Pre-tax WACC} = \frac{D}{V} \times K_d + \frac{E}{V} \times K_e$$

Choosing between FCFF and CCF depends uniquely on their ease to use, "determined by the complexity of applying the method and the likelihood of error" (Ruback 2002). Generally, this choice of method is determined by the form of the cash flows projections. When the cash flows do not include the interest tax shields and the target capital structure is not expected to change over time, one should apply the FCFF. Whereas if the there is a financing plan with detailed information, the CCF is, usually, the best option.

When comparing the CCF with the APV method, the author states that APV results in a higher valuation than the CFF, because it uses a lower discount rate in the computation of the tax shields. While CCF discounts the tax shields with the cost of assets, the APV discounts tax shields using the debt rate. Being the first one higher than the last one, APV considers interests tax shields to be less risky than the firm as a whole.

Nevertheless, Booth (2007) disapproves the use of CCF model, claiming that it does not offer any advantage over the traditional WACC approach.

3.2.2. Equity Valuation

3.2.2.1. Free Cash Flow to Equity – FCFE

Damodaran (2006) defines FCFE as a direct valuation method consisting in discounting the expected cash flows to shareholders, at an appropriate rate of return appropriate regarding the level of risk in the firm.

$$\text{Equity value} = \sum_{t=1}^{t=n} \frac{FCFE_t}{(1+k_e)^t}$$

Where,

FCFE = Free Cash Flow to Equity

K_e = Cost of Equity

The FCFE corresponds to the value that, after the company reinvests enough to maintain its business running and after repay most of its debt obligations available to be paid as dividends.

FCFE = Net Income – (CAPEX - Depreciation) - Change in Non-cash Working Capital + (New Debt Issued - Debt Repayments)

Damodaran (2006) noticed that the disadvantage of FCFE that cash flows relating to debt have to be considered explicitly. While FCFF is a pre-debt cash flow, FCFE has to take into account new debt issuances and debt repayments. The author argues that FCFE predictions are much more difficult than optimal target of debt-to-equity ratio, required for the WACC discounting. Koller et al. (2005) follow the same rationale, considering that the method becomes pretty difficult to implement due to the fact that it requires forecasting changing debt and interest payments on a year-to year basis.

Nevertheless, both models are theoretically equivalent and result in the same if one adopts consistent assumptions regarding the financial leverage (Damodaran 2006).

3.2.2.2. Dividend Discounted Method – DDM

DDM valuation is based on the premise that when investors purchase stock in publically traded companies, they generally expect to receive two types of cash flows: dividends during the holding period and an expected price at the end of that period (Damodaran

2006). Since the expected selling price is itself defined by future dividends, the value of the stock equals present value of all dividends through infinity.

$$\text{Value of the firm} = \sum_{t=1}^{t=n} \frac{Dividend_1}{(K_e - g_n)}$$

Where,

g_n = Expected Growth Rate

It is important to notice that, in the dividend discount model, the expected growth rate can be written as a function of the retention ratio and the return on equity.

Expected Growth Rate = Retention ratio * Return on Equity

This model, although theoretically simple, lacks support from practitioners, who argue that it is tremendously difficult to implement (Vernimmen et al. 2005). The dividend's growth rate is the biggest concern since it is not only affected by economic performance, but also by other factors such as gearing or the payout ratio. This model can turn quite tricky in situations when a firm opts to accumulate cash instead of reward the shareholders (even if it is affordable) resulting in an underestimation of the true value of equity (Damodaran 2002)

Nonetheless, Damodaran (2006) states that DDM requires fewer assumptions than other DCF methods since in the end it boils down to defining a growth rate for dividends.

3.3. Relative Valuation – Multiples

In a relative valuation - peer comparison – one values an asset "based upon how other similar assets are priced in the market". Making use of this approach, one estimates the value of a stock by looking at the market pricing of "similar" stocks. (Damodaran 2006). This rationale requires markets to correctly assess the value of the firms, at least in average. Otherwise, if the markets systematically underprice or overprice an entire sector, it can lead to a mispricing of the intrinsic value of the asset.

Since multiples reflect the market's perceptions of a firm's growth expectations, two firms with similar perspectives and operating features should have similar multiples. Using multiples may improve DCF valuation due to the fact that cash flows do not provide any information on the competitive and strategic positioning of the company (Koller et al. 2005).

In multiples valuation, it is essential to correct any differences concerning specific characteristics of the assets. Usually, the firm is valued making use of a multiple regarding the profit-generating capacity. While in the company value have to be compared with operating data, such as EBITDA, the equity value need to be compared with data after debt expenses, such as net profit or cash flow. According to Vernimmen (2005) there are two types of multiples: market multiples and transaction multiples. For market multiples, "a peer group comparison consists in setting up a sample of comparable, listed companies that have not only similar sector characteristics, but also similar operating characteristics" whereas for transaction multiples one "should use transactions in the same sector as the company you are trying to value".

Figure 2: Relative Valuation's multiples and main drivers

Relative Valuation	Multiple	Main Drivers
Enterprise Value multiples	EV/EBITDA	Expected growth, reinvestment rate, risk, ROCE, tax rate
	EV/EBIT	Expected growth, risk, ROCE, tax rate
	EV/Sales	Expected growth, risk, margins, ROCE, tax rate
Equity Value multiples	Price-to-Earnings (PER)	Expected growth, risk, payout, financial structure
	Price-to-Cash Flow	Expected growth, risk, reinvestment rate, ROCE, tax rate, financial structure
	Price-to-Book Value	Expected growth, risk, payout, ROE

Source: Damodaran (2006)

In order to calculate the firm's value using a multiples valuation, one simply multiply a value driver such as sales, earnings, EBITDA, cash flows or some other industry specific metric, by the corresponding multiple. These multiples are basically an average of the ratios of the selected value driver for all the existing comparable companies (Liu et al. 2007).

When comparing with absolute valuation, the multiples approach has relative advantages, such as its simplicity and quickness, as well as being relatively straightforward and easily understandable.

Relative valuation, nevertheless, is very difficult to implement in individual companies' valuation with no existing comparable firms. Comparable companies are basically firms with similar expected growth rate, ROIC, cost of capital and capital structure (Koller et al. 2005). Nevertheless, according to the same author, having the same value drivers may be very useful to multiples valuation, but "differences in accounting, the effects of inflation, cyclicality, and other factors can distort multiples".

One of the most used Enterprise Valuation multiples is the EV/EBIT, which allows comparing the true profit-generating capacity of the various companies. An essential issue in order to get a truthful comparison is the need to normalize the earnings, excluding all non-recurring items. On the other hand, the EV/EBITDA multiple can eliminate differences between diverse depreciation policies and capital structures.

Concerning equity multiples, they all present stock price or market capitalization in the numerators and book value for figures such as earnings, cash-flows or equity capital in the denominator. Attention shall be paid to the fact that the company's capital structure may affect these multiples, creating distortions in the valuation. This requires further attention in the definition of the peer group. Goedhart et al. (2005) argues that it is key to look at differences among firms within the same sector, being essential to identify a good quality peer group, which may be a difficult task.

The PER ratio has the ability to capture risk and growth of a stock. It means that one can fairly assess the value of a firm based on the PER of its comparable companies which present similar growth and risk. Boatsman and Baskin (1981) claim that this valuation method is particularly useful when the firm's value is not observable. Alford (1992) explores few criteria for the comparable firms, including size (a surrogate for risk), ROE (a surrogate for growth) and industry membership. Although Bhojraj and Lee (2001) defend that industry membership is not a reliable condition for company comparability, according to the author mentioned above, the industry membership is the major element, capturing the cross-sectional differences in the Price-Earnings ratio and size.

It is interesting to notice that, if a firms is expected to have a 100% payoff ratio and no earnings growth, then the shareholders' required rate of return is the inverse of the PER (Vernimmen, 2005).

Regarding the PBV multiple, it attempts to capture future value creation. Given that, under perfect markets, the discrepancy between the market value and book value is the value added, the PBV corresponds to the present value of future residual income. Past literature relates PBV to return for shareholders' profitability, risk and growth.

Both Chan and Chen (1991) and Ohlson (1995) studied the importance of PBV in valuation. While the first authors suggest that the PBV multiple represents the production efficiency of a firm, the last one claims that PBV reflects a firm's excess rate of return caused by the firm's superior performance.

Cheng and McNamara (2000) found that the P/E multiple valuation method performs better than the PBV valuation approach, but, more important than that, a combination of P/E and PBV method outperforms both P/E and PBV individual methods.

3.4. Contingent Claim Valuation - Option Theory

According to Vernimmen (2005), the contingent claim valuation allows analysts to value flexibility which is particularly relevant when valuing projects. This methodology is mostly used when deciding whether or not to explore an opportunity (Luehrman 1997).

Although it is not a common valuation approach, it can be appropriate to particular cases such as companies with a single product, companies in a commodity-based industry, or companies in (or near) financial distress" (Koller et al. 2005).

According to Damodaran (2002), "an option can be valued as a function of the following variables - the current value, the variance in value of the underlying asset, the strike price, the time to expiration of the option and the riskless interest rate".

Due to this model's complexity and the irrelevance for my valuation case, I will no further discuss this subject.

4. Novabase – Company Presentation

4.1. History

Novabase, headquartered in Lisbon, Portugal, was founded in 1989 as a software-house, specialized in customized solutions development. Nowadays, it is the leading Portuguese company in IT business solutions with a turnover (2011) of €229,6 million, being almost 20% of it generated outside Portugal.

During its first years of existence, the company has developed a notable list of key clients, mainly in the public sector (agriculture, social security etc.) and created its own products, such as GEMEO (occupational medicine), GPLO (work licensing) and NOVAMAIL (correspondence management and archiving).

Then, in a second stage of development, Novabase developed services for other business sectors, essentially for the financial market. Along with this evolution, the company set up a more horizontal structure in order to smooth the launch of new service offers and developed new areas of expertise - workflow, BI, e-learning etc.

In 2008, after a major reorganization, Novabase is now organized in four different business areas: Business Solutions & Consulting; Infrastructures & Managed Services (IMS); Digital TV and Venture Capital.

Novabase, despite its independency, has important partnerships with important players in the market, such as Microsoft, Sony, Cisco and SAP, which ensures the customer access to industry-leading solutions in each area.

The company's operations are now worldwide, being present in 33 countries on 5 continents. With over 2000 employees Novabase currently has offices in Portugal, Spain Germany, France, the Middle East and Angola.

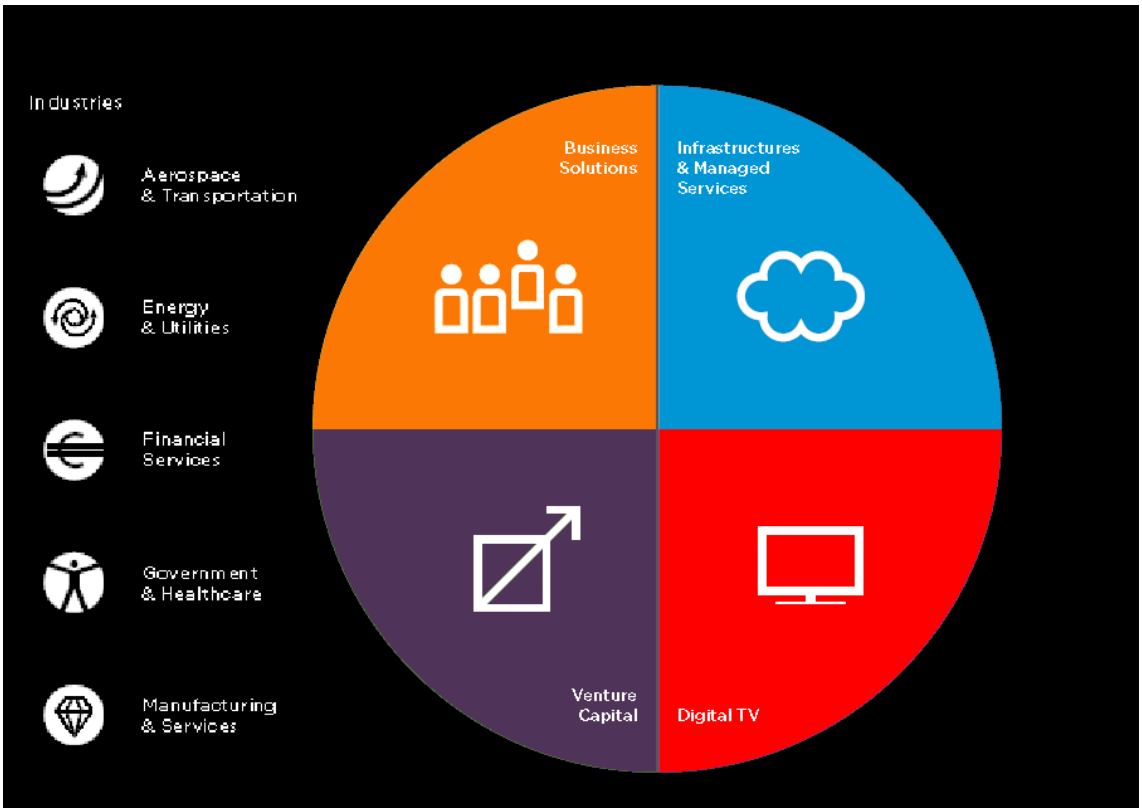
Novabase has been listed on the Euronext Lisbon stock exchange since July 2000.

4.2. Structure

Novabase's activity is now structured around six industries: Telecoms & Media, Financial Services, Government & Healthcare, Energy & Utilities, Aerospace & Transportation and Manufacturing & Services sectors. Each industry has a specialized team who provide personalized products and services.

In 2011, a new offer structure was defined, consisting of four business areas: Business Solutions, Infrastructures & Managed Services, Digital TV and Venture Capital. (For a full map of the competences used in each area see exhibit 1, 2 and 3)

Figure 3: Industries and Business Areas



Source: Novabase Annual Report

4.2.1. Business Solutions (BS)

Novabase's Business Solutions area is responsible for conceiving, designing and deploying individual solutions for the customers. This business area incorporates diverse competencies in technology, management, design and business expertise.

BS segment includes today the business of Novabase Consulting and the areas of Ticketing and Managed Services previously considered within IMS segment.

4.2.2. Infrastructures & Managed Services (IMS)

This Novabase's business area, making use of its engineering and consulting expertise in information and communication technologies, designs, plans and deploys complex infrastructures. Moreover, in this area, the company strives to transform, manage, operate and optimize these assets through comprehensive projects such as outsourcing services.

IMS's IT management services and solutions include auditing, consulting and training services in process's reengineering and automation, streamlining, risk and internal control, IS/IT strategic plans, best practices integration, certification in standards and compliance with regulations.

4.2.3. Digital TV (DTV)

Digital TV is a product and service portfolio including all set-top boxes available on the market, through licensing, middleware platforms and solutions.

The customers in this area include set-top box manufacturers (OEM/ ODM market), cable and pay-TV operators (operator market) and residential customers (retail market). This division has been the least profitable. Owing to the saturation on the market and the consolidation taking place, the business saw a constant shrinkage since 2008, dropping to 21% of the total operations by 2010.

4.2.4. Venture Capital

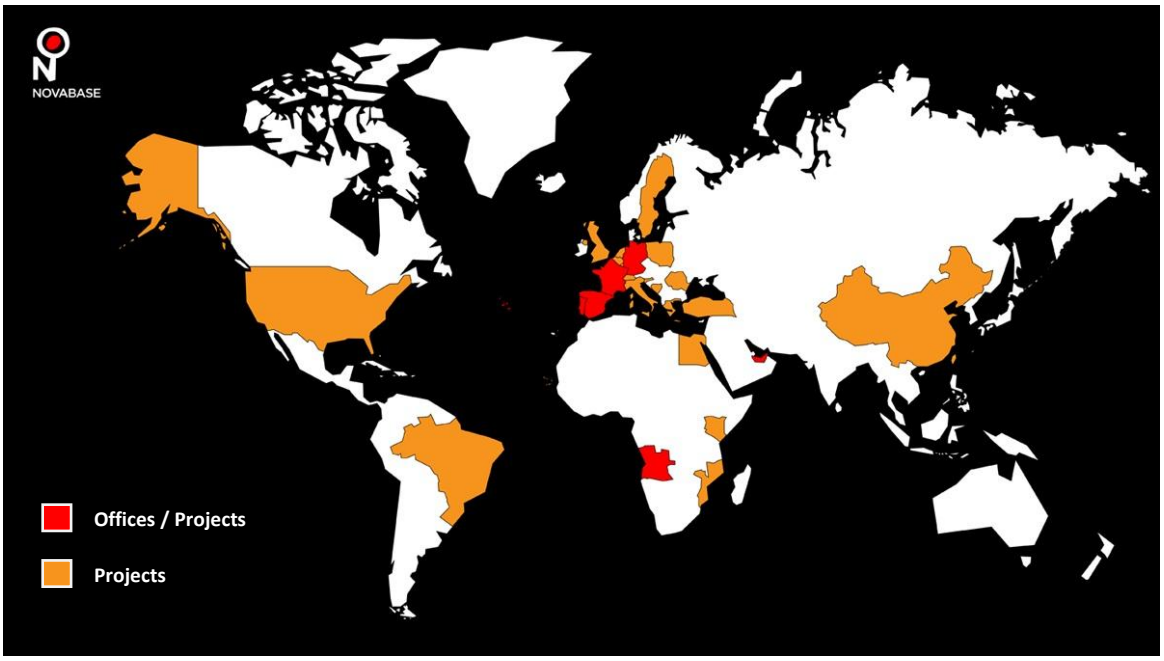
Novabase Capital, Sociedade de Capital de Risco, SA is a venture capital firm owned entirely by Novabase SGPS, SA with the purpose of finding and supporting Portuguese ICT business projects – in early development or expanding – with high value potential in collaboration with Novabase.

Novabase Capital has ownership in three venture capital funds totaling €23.5 million in capital: FCR Novabase Capital, FCR Novabase Capital Inovação e Internacionalização and FCR IStart I (the first two managed by Novabase Capital).

4.3. Geographical Presence

Novabase has now offices in five countries beside Portugal – Spain, France, Germany, Angola, United Arab Emirates – and projects in twenty two other countries.

Figure 4: Novabase's World



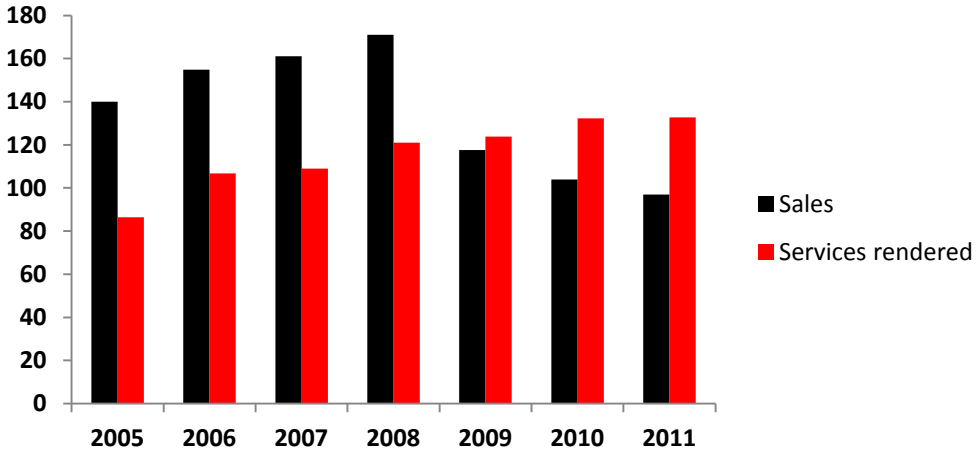
Source: Novabase Annual Report

Despite the current strategy of Internationalization, Portugal is still the geographical market which generates the major slice of the turnover (80%) followed by Africa and Spain (see exhibit 5).

4.4. Financial Performance

Novabase's turnover in 2011 was €229,6 million, a decrease of 2,8% compared to €236.3 million in 2009. It is the second straight year of decreasing turnover due to due to the contraction of business in Portugal in the product component. It is interesting to notice that in the past years, despite a declining in Sales, there has been a continuing growth of the Services Rendered in the past years which reveals that IT services remain to grow whereas sales of both hardware and software have been decreasing. This subject will be further analyzed.

Figure 5: Novabase's Turnover (in million €)

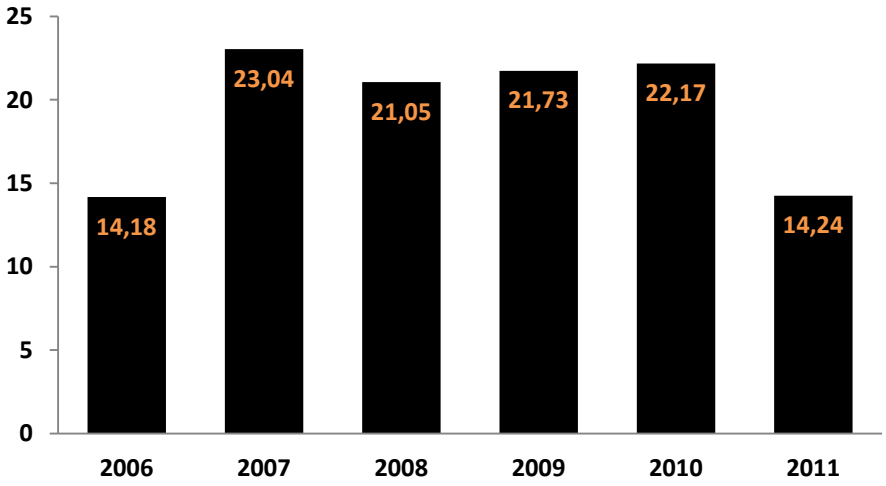


Source: Novabase Annual Report

It is important to notice that Business Solution and IMS represent 76,5% of the total turnover (39% and 37,5%, respectively). In the other hand, the Venture Capital contributes merely with 5% (see exhibit 5).

In 2011, Novabase reached an EBITDA of €14,2 million 2011, a decrease of 35.7% compared to €22.2 million in 2010, (there was no falling in EBITDA since 2008). This decline reflects the costs associated with the internationalization and the intense competitive pressure which affected mainly the IMS and DTV businesses (see exhibit 7), as well as the product sales' profitability.

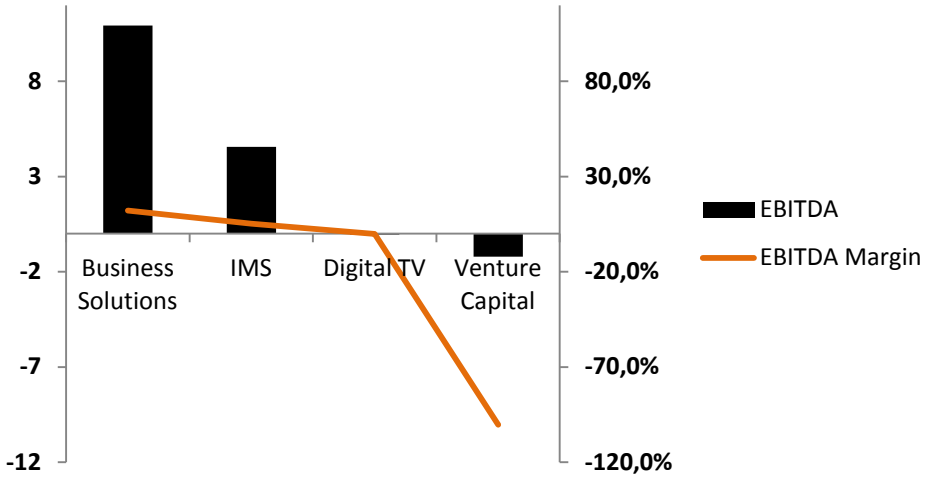
Figure 6: Novabase's EBITDA (in million €)



Source: Novabase Annual Report

The only two segments which presented positive EBITDA were Business Solutions and IMS – €10,9 million and €4,6 million – whereas Digital TV presented a slightly negative EBITDA and the Novabase Capital had a 100% negative EBITDA margin.

Figure 7: Novabase's EBITDA (in million €) and EBITDA margin (%) by Business Area



Source: Novabase Annual Report

Finally, the overall EBITDA margin was 6.2%, below the 9.4% margin obtained in 2010.

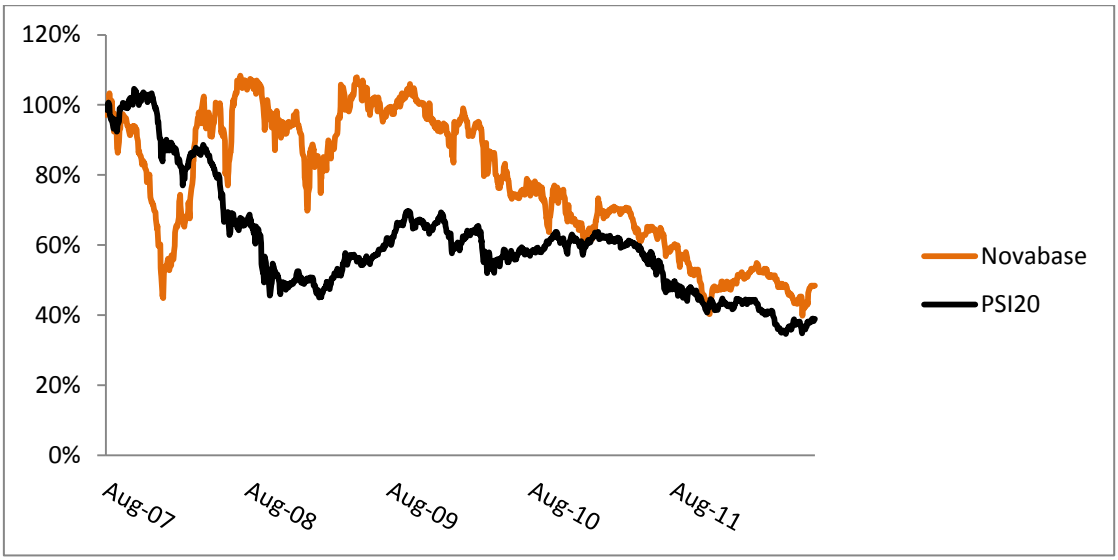
4.5. Stock Performance

Novabase stock has devaluated 52 % since 2007 compared to a 61% devaluation in the Portuguese Index – PSI-20. This is a result of the global financial crisis followed by the European Sovereign Debt crisis and economic downturn caused by them.

In 2007 the Novabase's stock performance was weaker than the PSI-20's which, along with the entry of new market players with significantly higher liquidity levels, caused its exit from the Portuguese index. However in 2008, after the mentioned major restructuring, Novabase's stock has recovered its value contrary to the loss in the value of PSI-20 due to the Lehman Brothers' bankruptcy and the following global crisis.

Since 2010, with the beginning of the European Sovereign Debt crisis which deeply affected the Portuguese market, Novabase and PSI-20 have been presenting similar performance.

Figure 8: Novabase and PSI 20 stock performance



Source: Bloomberg

4.6. Strategy

Given the difficulties on the domestic market, all the attention is given to internationalization. In the initial phases of its internationalization, Novabase is pushing into developing its presence in Angola and Spain.

The company saw its exports growing by 30% in 2011 to account for almost 20% of the total business, giving a strong leverage to the overall turnover. Particularly in Angola, the company is going after projects in the financial services and telecommunications. For 2012, Novabase provides a guidance that illustrates Novabase is committed to further overall growth, put on the back of the international expansion and the recovery of the domestic profitability through an increase in Novabase's competitiveness.

The Digital TV business provides more opportunities for international expansion, and the emerging countries are clearly targeted, particularly the BRIC ones.

One the local market, as the public sector is expected to cut on their IT expenditure, Novabase tries to balance it with its clients in the private sector. Utilities is one of the targeted areas by Novabase in Portugal, while in most other industries the company is rather safe-guarding its business and defending the existing contracts and deals. Since there is little space to grow in the Portuguese marketplace, the strategy focuses on winning market share via contractual stability and internationalization.

In technology, Novabase is looking to find its way into the Cloud market in the medium term, especially since the company has been at both ends of the IT landscape: application and infrastructure.

The Novabase Capital unit continues to go after opportunities with technology start-ups.

4.7. Novabase's positioning among its competitors

According to Pierre Audoin Consultants, IBM is, in Portugal, leader in both Software & IT services, IT services, Project Services and Outsourcing whereas Novabase's position fluctuate from second to fourth in the domestic markets in which it is present.

Figure 9: Novabase's positioning in PAC's rankings - Portugal

Segment	Rank	Leader
Software and IT services	# 3	IBM
System Infrastructure Software	Not present	Microsoft
Tools	Not present	Microsoft
IT services	# 2	IBM
Hardware Maintenance	Not present	IBM
Project Services	# 2	IBM
Outsourcing	# 4	IBM

Source: Pierre Audoin Consultants

In the IT Services segment, Novabase is leader in the public sector playing minor roles in sectors as Manufacturing, Banking or Insurance.

Figure 10: Novabase's positioning in PAC's IT Services rankings - Portugal

IT Services		
Sector	**Rank**	**Leader**
Manufacturing	# 4	IBM
Banking	# 4	IBM
Insurance	# 4	IBM
Public	# 1	Novabase
Telecom	# 2	IBM
Utilities	# 4	Logica
Retail & Wholesale	# 3	Glintt
Services and Consumers	# 2	IBM
Transport	# 2	Amadeus

Source: Pierre Audoin Consultants

4.8. SWOT Analysis

Strengths	**Weaknesses**
Plan-Build-Run capabilities Clear leader in the Public sector Critical mass relative to most other local IT services providers; the largest domestic IT services provider - at a comfortable distance from the second ranked Coverage of both the application and infrastructure services domains One of the leaders in SAP services	Still not clearly positioned in the outsourcing business - perceived as more present in the infrastructure management than in apps outsourcing Non-IT and resale account for 44% of the Business The Digital TV business delivers low profitability, while the international market is under consolidation Lack of visibility outside Portugal

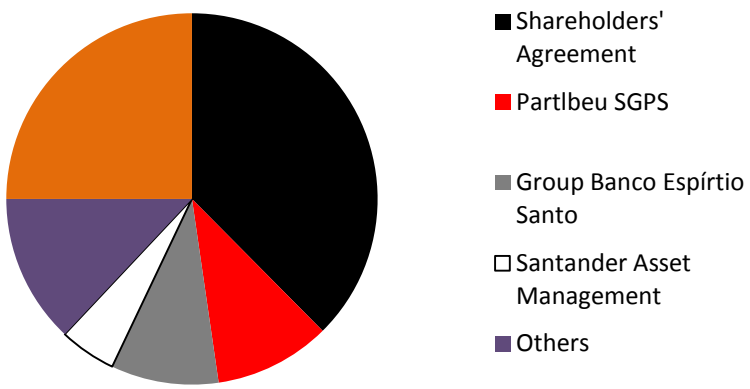
Opportunities	Threats
Various forms of outsourcing, ranging from managed services to AM Incremental development and maintenance in banking and telecom Niche areas in utilities and adjacent to EDP Cloud and Mobility as the next technologies impacting first the infrastructure, then the application layer Portuguese-speaking African countries	Tough competition from large international players (IBM, Accenture Logica, HP, Capgemini etc.) Dependence on the Portuguese public sector, which is to shrink in the next couple of years Softness of clients on domestic market, inhibiting development plans abroad and diversification Further margin deterioration, especially in its Digital TV business

4.9. Shareholder structure

The main shareholders are Novabase's members of the Corporate Boards, holding 37,57% of the stock. These shareholders signed new shareholders' agreement, valid until April 30th 2015, which sets that these shareholders exercise their voting rights in Novabase General Meetings in the way approved by the majority in the following matters: dividend policy, share capital increases and reductions, composition of corporate bodies, merger or de-merger of Novabase, and others. This agreement ensures shareholding stability for the next three years and therefore stability of management and control of corporation. This can also mean that the stock has less speculative value.

Other important shareholders are Partbleu SGPS, Grupo Banco Espírito Santo SA and Santander Asset Management owning 24,44% of the company (10,13%, 9,37% and 4,94% respectively). Novabase is floated in the stockmarket, having a free-float of 25%.

Figure 11: Shareholder's Structure



Source: Novabase Annual Report

4.10. Dividend Policy

Until 2009, Novabase had a no-dividend policy, preferring to reinvest the profits in the company's activities instead of distribute dividends.

In 2009 Novabase paid to its shareholders the first dividend since it is listing on the stock exchange, with an extraordinary dividend distribution, along with return of capital to shareholders, presenting a payout ratio of 121%.

For the next years Novabase has a solid dividend policy which considers an annual payment of a dividend in the amount corresponding to between 30% and 40% of the consolidated net profit of each financial year. This strategy has already been followed in the previous two years despite the tremendous downturn in the profits.

Figure 12: Novabase's Dividend Policy (in million €)

	2009	2010	2011
Profit of the year	13,05	13,69	2,94
Dividend	15,70	4,08	0,94
Payout Ratio	120%	30%	32%

Source: Novabase Annual Report

5. Industry Overview

5.1. Information Technology

In this section I will briefly overview the industry of Information Technologies at a time that they are present in almost every dimension of the economy, business and personal life. Information Technology is defined by the Information Technology Association of America as "the study, design, development, implementation, support or management of computer-based information systems, particularly software applications and computer hardware".

IT is an ever-changing industry, where the demand for new technological solutions and a market constantly and rapidly evolving, obliges the IT players to a persistent investment on innovation and new solutions to satisfy its customers' needs.

The great majority of the IT firms lives in frenzied innovation challenge, with an incessant need of continuous reinvention. When looking to the main companies such as Microsoft, Hewlett-Packard, Google, Cisco Systems or IBM, one can easily observe this constant effort in the pursuit of the next revolutionary technology that may overtake the market.

The information technology industry, with an increased productivity, particularly in the developed world, has become one of the most robust industries worldwide. Helping many other industries in their own development, assuring efficient utilization of skilled labour forces and easy accessibility to information, IT industry has been a key driver of global economic growth and a major source of employment.

European Commission estimates that the investment in IT is responsible for almost an half of the increased productivity in the EU. Being a sector highly dependent on R&D, IT represents about one quarter of the total R&D investment in EU.

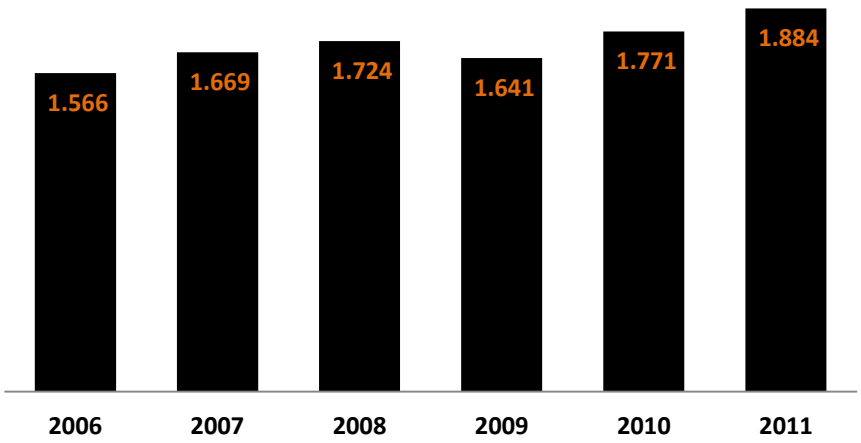
The development and evolution of the IT industry changed the ways companies internally organize themselves as well as the way they relate with their stakeholders, namely the suppliers and customers. Nowadays, regardless the industry in which they operate, firms are dependent on IT, to support their business activities or to differentiate themselves from competitors. This necessity leads companies to whether build up their own IT department or outsource IT services from specialized companies.

The Information Technology industry consists of all computer, communications, and electronics-related organizations, including hardware, software, and services (these three segments, due to its IT functionality, are the ones used when sizing the market in the next chapter). Completing tasks using Information Technology results in a rapid processing and information mobility as well as in an improved reliability and integrity of processed information.

5.2. Worldwide Market

In September 2008, the bankruptcy of Lehman Brothers led to an unprecedented fall in confidence of both consumers and business, generating a wave of destocking, fall in production, trade and capital investment. The collapse of world trade was unprecedented. During the first quarter of 2009, world exports in value terms were 31 percent lower than one year before and world imports 30 percent lower. Of course, the IT industry did not escape the worst stage of the world economic crisis.

Figure 13: Worldwide IT Spending (in billion $)



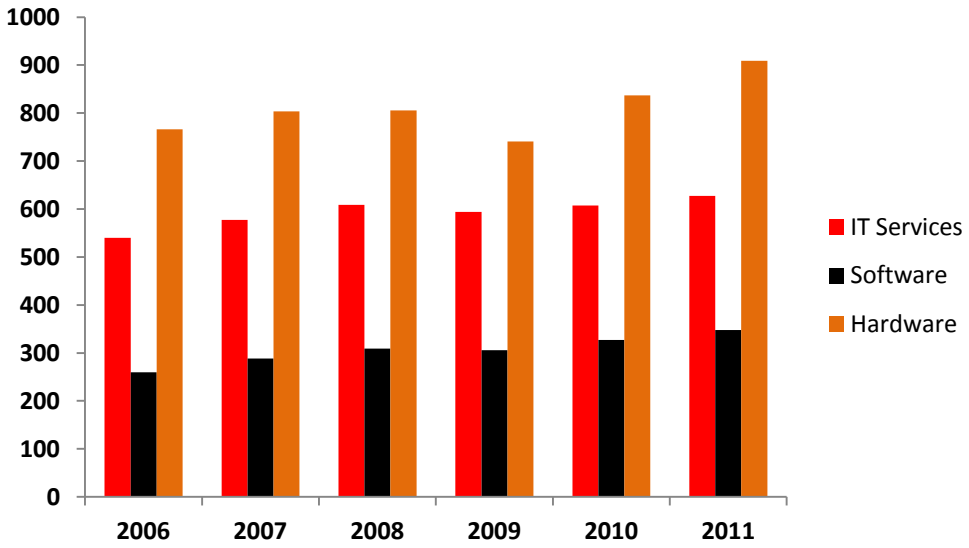
Source: IDC Reports

But the crisis was short lived. Concerning the Worldwide IT spending, there was a decline in 2009 - the peak of the crisis - for the first time in the past few years but it was followed by a rapid recuperation in 2010, exceeding the pre-crisis values. The biggest reason why this industry remained strong was due to the fact that business models are changing, going online, web-enabling everything they touch. Compliance is also one of

the drivers, being just not an option to cut. Nevertheless, during the recession, the IT industry was sustained by a wave of innovations combining social networks, mobile Internet, cloud computing, and consumer electronics.

Hardware is the biggest contributor for the worldwide spending, accounting today for almost an half of the market. The Hardware segment was also the segment which suffered the most in 2009, diminishing its revenues by 8% (against a decrease of 2% and 1% of the IT services and Software segments, respectively). This is explained by the fact that Hardware is the easiest segment of IT spend to cut from budgets as there is no ongoing spend to support. Hardware spending is also heavily impacted by the poor access to credit, both for individuals and companies.

Figure 14: Worldwide IT Spending by Segment (in billion $)



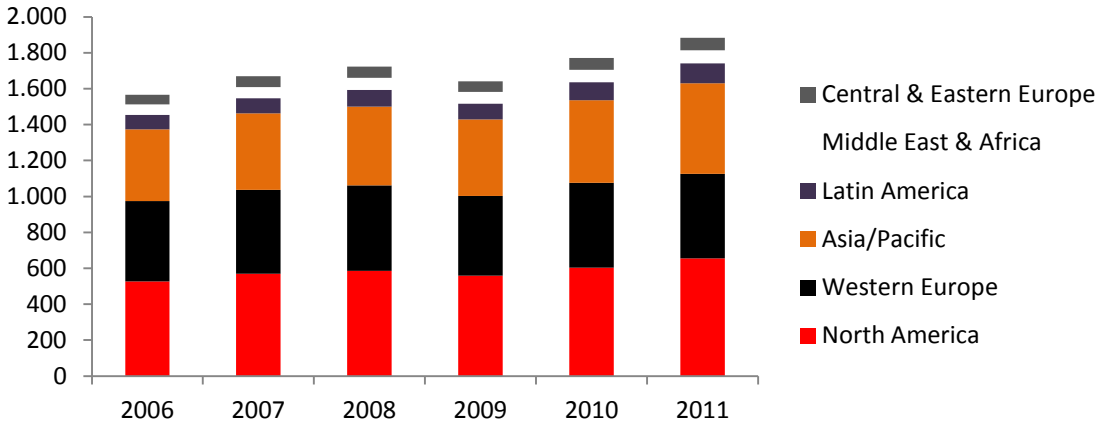
Source: IDC Reports

However, the overall worldwide IT industry recovery in 2010 was also led by the strong growth in the IT hardware equipment (12,9%), which was followed by software with 7% and IT services with just 2,2%. In 2011 the overall Information Technology spending continued to grow, but at a lower rate - 6,4% - as well as the diverse sectors which followed an identical trend.

Geographically, the major responsible for this resilience was, as it is possible to see in Figure 15 the Asia/Pacific region increasing its IT spending by 8% in 2010 and 10% in 2011 as well as the North America. Latin America, Middle East & Africa as well as the

Central & Eastern Europe also presented growing IT spending but their contribution to the worldwide spending is still small. The Western Europe region will be discussed individually below.

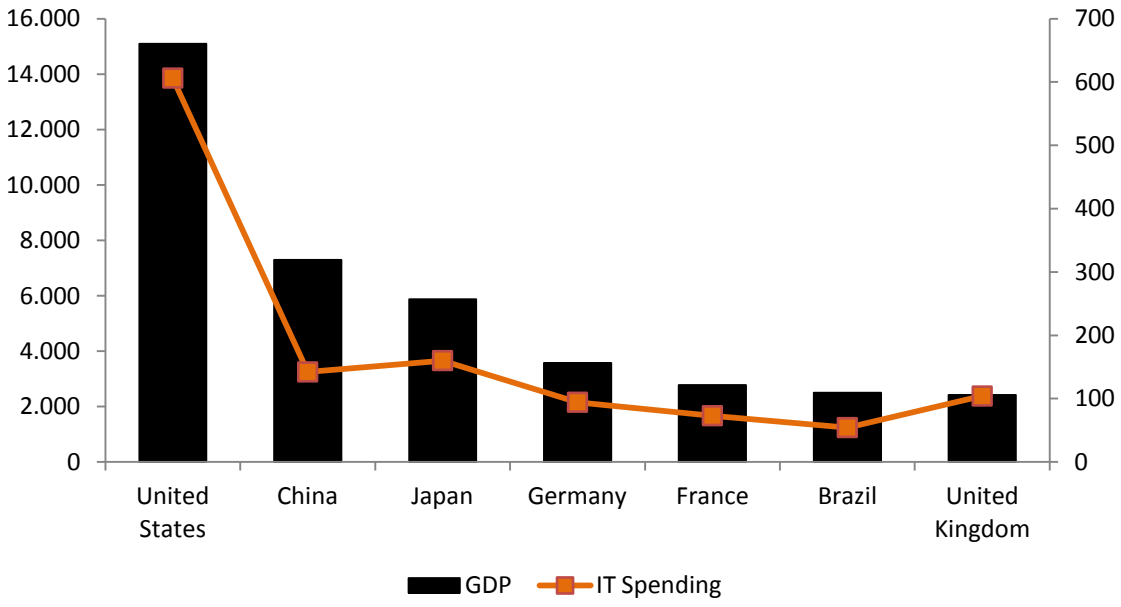
Figure 15: IT spending by geographical area (in billion $)



Source: IDC Reports

The biggest contributor for the worldwide overall IT spending is, unsurprisingly, the United States of America expending in 2011 $606,2 billion, which corresponds to almost one third of the total. The other biggest spenders are, in decreasing order of expense, Japan, China, UK, Germany, France and Brazil. Naturally, these are also the countries with the largest Gross Domestic Product (GDP).

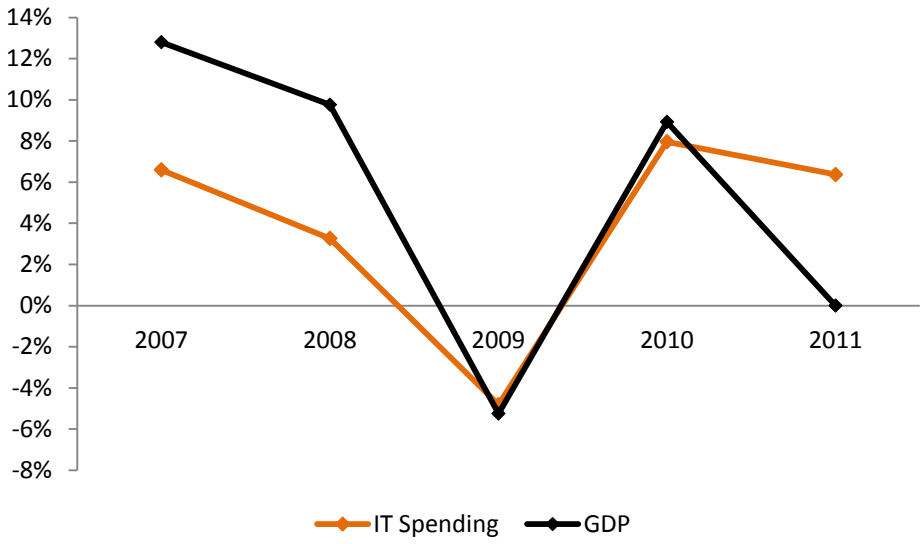
Figure 16: GDP and IT spending by country (in billion $)



Source: IDC Reports and IMF

Beyond the simple rationale that the richest countries being naturally the biggest spenders, it also highlights the importance of IT, being one of the main drivers of the global economy nowadays. Is it is possible to see in the Figure 17, the correlation between the world GDP and IT spending. These results are consistent with Kramer et al (2001) study in which it was found a significant positive correlation between the GDP and IT spending and also with productivity. This finding takes us to the notion of IT-led development, which may be the reason for the strong investments on IT as well as for the consistent growth of this industry and its reliance.

Figure 17: GDP growth vs. IT Spending growth



Source: IDC Reports and IMF

5.3. West European Market

In a vast number of West European countries, the after-effects of the global economic and financial crisis are still having an impact on the economy.

Government efforts to stimulate economic growth in the aftermath of the global economic crisis converted into a serious deterioration of the public finances in many countries. Few countries face now not only a sovereign debt crisis, caused by high government debt burdens but also pressure on European financial institutions related to large holdings of that debt by those same financial institutions. This crisis shifted the

focus to pushing through unpopular and painful austerity measures in order to reduce fiscal deficits and restore public finances in the name of current stability.

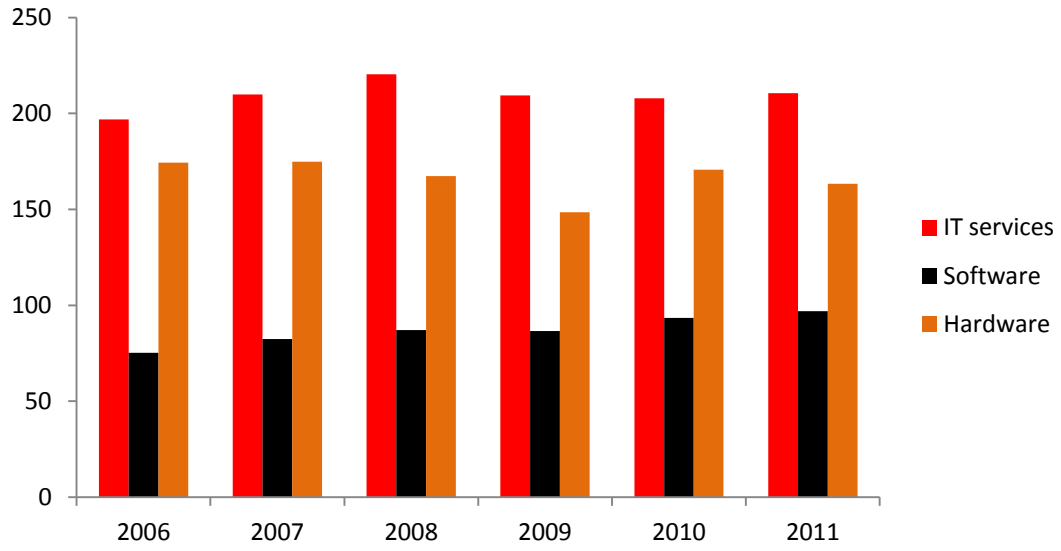
In countries such as Italy, Spain, Portugal, Greece and Ireland, due to the high levels of national debt, IT investments in the public sector are subdued and consumer spending is down.

In contrast with others regions in the world, this crisis continued to weigh heavily on IT market developments in Western Europe in 2010 despite an improved investment environment in many countries as well as requirements for upgrades in many technology areas. EU sovereign debt crisis affects economic performance resulting in weaker IT spending.

In 2010, the Western European IT spending presented the second lowest rate among all regions worldwide with 6%, only higher than the Middle East & African rate,

Western European IT expenditure has not fully recovered to the levels achieved in the pre-crisis context of 2008 and, in 2011, Western Europe was the only region in the entire world to decline its overall IT spending, decreasing it by 0,2% mainly due to hardware segment.

Figure 18: European IT Spending by Segment (in billion $)



Source: IDC Reports and IMF

Nevertheless, European Information Technology Observatory (EITO) expects EU IT market to return to grow in 2012.

5.4. Portuguese Market

The domestic economy is going through the most severe crisis in the last one hundred years. The effect of the national public deficit combined with the exponential growth of the public and private debt led to the International Monetary Fund, European Central Bank and European Commission's intervention and to a Financial and Economic Assistance Program's design which could prevent the national economy bankruptcy.

The set of adopted and to-adopt austerity measures has precipitated the national economy to a recessive spiral which, in 2012, may reach as much as 3%.

Figure 19: IT spending by geographical area

	2010	2011	2012
1 - Expenditure and GDP (variation in volume, in %)			
Private Consumption	2,3	-3,5	-4,8
Public Consumption	1,3	-5,2	-6,2
Investments (GFCF)	-4,9	-10,6	-9,5
Exports	8,8	6,7	4,8
Imports	5,1	-4,5	-4,3
GDP	1,4	-1,9	-2,8
2 - Prices (variation rate, in %)			
Inflation rate	1,4	3,3	3,1
3 - Unemployment			
Unemployment rate	10,8	12,5	13,4

Source: IDC Reports

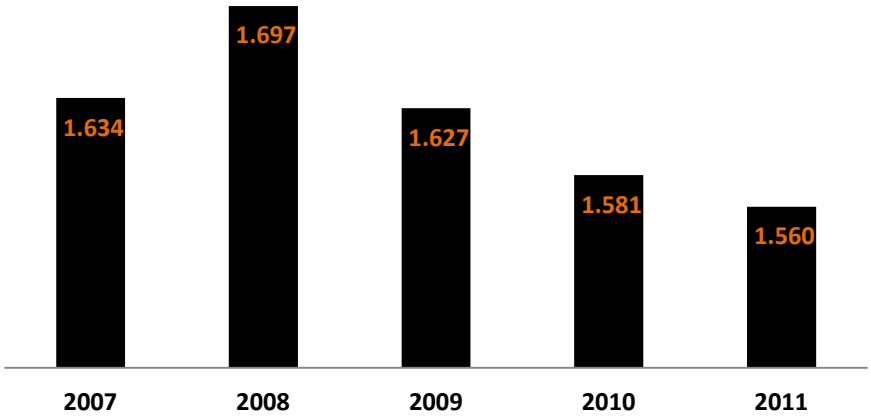
According to an International Data Corporation (IDC) study about the impact of this economic context in the Information Technology expenditure, most of the main business organizations do not express confidence in the national economy evolution and do not believe in a recovery of the economic activities in the short-run. In order to face this scenario, firms have been adopting measures which aim to improve their efficiency as well as reduce the operating costs. In the IT industry, firms focus on client's

attraction as well as retention strategies and also on an improvement of their performance.

Bearing in mind these priorities, firms will privilege technologies which allow reduction in the costs with IT as well as efficiency of the expenses with these technologies. Thus, a consolidation of the technologic infrastructure and its progressive virtualization is one of the main technologic priorities of the business organizations.

In this context, it is not surprising that the expenditure with Information Technologies have been decreasing.

Figure 20: Portugal's IT Spending (in million $)

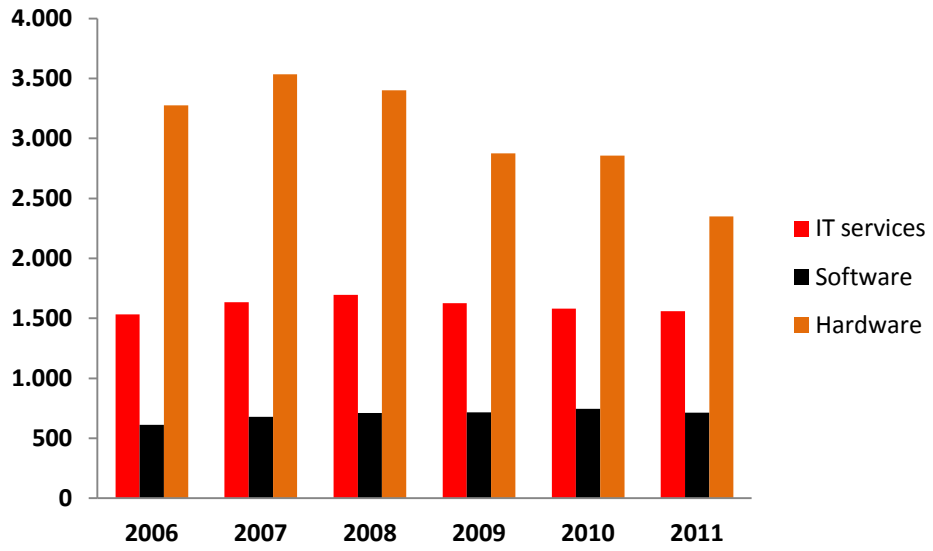


Source: IDC Reports

The Portuguese overall IT spending is decreasing since 2008, being today more than 20% lower. If in 2008 and 2010 the drop was fairly small, in 2009 and 2011 it was more than 10%. If in 2009 it was a result of the global financial crisis, in 2011 the cause was mainly related to the European sovereign debt crisis and the resulting austerity plan implementation.

The segment which suffered the most with the current economic context was Hardware which is also the segment in which, historically, firms expend larger amounts of money. Since 2008 the Hardware spending decreased more than 30%, being 2009 and 2011, as in the overall spending, the years when the segment experienced the greatest drops.

Figure 21: Portugal's IT Spending by Segment (in million $)



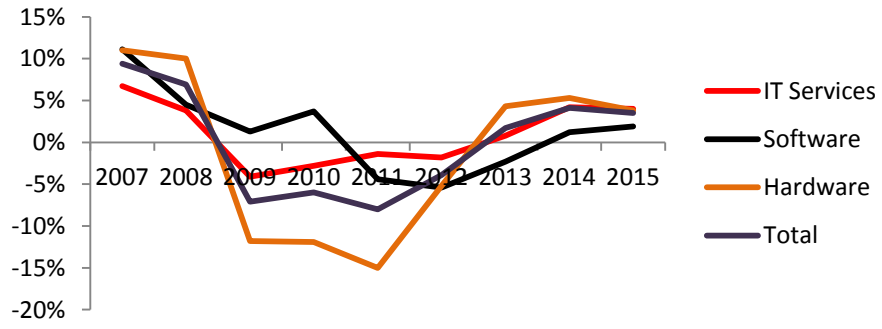
Source: IDC Reports

The recession of the economy in 3% for 2012 (analysts point the risk that the GDP drop can be even larger) added to a high probability of breaching the deficit target, is particularly worrying for Portugal's future. However IMF, predict that the Portuguese economy to return to grow in 2013 (0,2%).

Future Prospects

IT industry is conscious of this new reality. The expectations of the representatives of the national firms point that the equipments and software solutions' demand is going to weaken in the next following months. This trend will be more evident for the Hardware than to the other segments of IT.

Figure 22: Growth Perspectives of Portugal's IT Spending by Segment (in million $)



Source: IDC Reports

Despite the current negative scenario, the emergence of the new paradigm of the so-called[1] "intelligent economy" will create new growth opportunities for the Information Technology industry. Whereas in a first stage of centralized systems, information technologies support few millions of users and few thousands of applications, with the appearance of the client-server architectures and the advent of web computation, these technologies support now thousands of millions of users and the number of applications exceeded one million.

In this sense, there is a belief that some areas will continue to grow at a superior rate compared to the market. Cloud Computing Services, equipments, mobile applications, "big data" applications and "social business" are the areas in which the demand will grow at faster pace than the economy.

[1] By IDC

6. Novabase's Valuation

Bearing in mind what was discussed in the literature review chapter, the methodology chosen to value Novabase was a consolidated valuation through a WACC-based DCF methodology being the revenues calculated by business unit in order to fully comprehend its contribution to the holding company.

An equity valuation is the output of the diverse assumptions made, therefore, before starting the valuation method itself I will present the assumptions I found reasonable and suitable to this valuation.

6.1. Valuation Assumptions

6.1.2. Revenues

Given the restructuration and exit of some business segments which led to volatile results in the previous years, a revenues' forecast based on the Novabase's historical values with guide to a misevaluation.

For 2012 the forecasted Revenues used in this report are the ones present in the Guidance for that same year provided by Novabase whose estimations are in line with the first semester results. Moreover it is consensual among the analysts that Novabase is going to accomplish the results proposed in the Guidance for 2012.

From 2012 on, in order to more accurately estimate the company's results, I will calculate the Revenues of each Business Area individually:

Business Solutions: this area's revenues are going to be forecasted using the projection of IDC to the Portuguese market of IT services.

Infrastructure Management Services: the IMS's revenues growth rate will also be addressed to the Portuguese IT services market projected growth rate.

Digital TV: DTV's sales growth rate, on the other side, will be addressed to the IDC projections for the Software Market in Portugal.

Venture Capital: this business area will be the only one whose growth rate will be calculated based on historical values.

Figure 23: Forecast of Novabase's Revenues by Business Area (in thousand €)

	2010	2011	2012	2013	2014	2015	2016	2017
Business Solutions	88857	89648	93695	94445	98411	102348	107465	112839
growth			*4,5%*	*0,8%*	*4,2%*	*4,0%*	*5,0%*	*5,0%*
IMS	94910	86035	89919	90638	94445	98223	103134	108291
growth			*4,5%*	*0,8%*	*4,2%*	*4,0%*	*5,0%*	*5,0%*
Digital TV	49278	52753	55135	53866	54513	55603	57271	58989
growth			*4,5%*	*-2,3%*	*1,2%*	*2,0%*	*3,0%*	*3,0%*
Venture Capital	3286	1197	1251	2033	2104	2179	2279	2383
% of total	*1,4%*	*0,5%*	*0,8%*	*0,8%*	*0,8%*	*0,8%*	*0,8%*	*0,8%*
Total	**236331**	**229633**	**240000**	**240982**	**249474**	**258353**	**270150**	**282502**
Growth	-2,1%	-2,8%	4,5%	0,4%	3,5%	3,6%	4,6%	4,6%

6.1.3. Operational Expenses

Most of the Operational Expenses are assumed to grow at the same rate as the Novabase's Revenues, being the Employee Benefit Expense the main exception. The rationale for this calculation is that most of these expenses are variable costs and its magnitude depends almost exclusively on the company's turnover.

The Employee Benefit Expense is calculated with the following assumptions (see exhibit 9):

The cost per Employee is estimated to grow at the Inflation rate (except for the Years 2012 and 2013 when I assume the salaries to maintain due to the present economic conditions in Portugal).

According to Novabase released information, in the next two years the number of employees is expected to decrease (2 % in both years). From 2014 on, it will be assumed that the number of employees will evolve at the same rate as the revenues. In Figure 24 below it is possible to verify that the costs with personnel will decline in the next two years and thenceforward these costs are going to increase due to an increase in both the cost per employee and the number of employees.

Figure 24: Forecast of Novabase's Number of Employees

	2010	2011	2012	2013	2014	2015	2016	2017
Revenues	236331	229633	240000	240982	249474	258353	270150	282502
growth	-2,1%	-2,8%	4,5%	0,4%	3,5%	3,6%	4,6%	4,6%
# employees	2003	2109	2067	2025	2097	2172	2272	2376
growth			*-2,0%*	*-2,0%*	*3,5%*	*3,6%*	*4,6%*	*4,6%*

Costs of Sales, as well as most of the External Supplies and Services (except Rent and Insurance which are expected to be fixed costs over the time growing only at the inflation rate[2]) grow at the same rate as Novabase's Revenues (see exhibit 11).

Lastly, other gains and Losses are going to be calculated by the average over the past years (see exhibit 12).

6.1.4. EBITDA

Through the assumptions and calculations explained before, the Novabase's EBITDA is forecasted to be as follows (see exhibit 13):

Figure 25: Forecast of Novabase's EBITDA (in thousand €)

	2010	2011	2012	2013	2014	2015	2016	2017
Total Sales	236331	229633	240000	240982	249474	258353	270150	282502
Cost of sales	90125	86917	90841	91213	94427	97788	102253	106928
External supplies and services	50378	51720	53867	54070	55893	57794	60300	62921
Employee benefit expense	75607	76210	74692	73175	76947	79600	83266	87043
Other gains (losses) – net	1947	(543)	(63)	(63)	(63)	(63)	(63)	(63)
EBITDA	**22168**	**14243**	**20537**	**22461**	**22144**	**23109**	**24268**	**25547**
EBITDA Margin	*9,4%*	*6,2%*	*8,6%*	*9,3%*	*8,9%*	*8,9%*	*9,0%*	*9,0%*

After a substantial recovery of 4,5% in the Revenues in 2012, it is estimated a rough growth in 2013 (0,1%), fully recovering from then on reaching a stable growth rate of 4.6% in 2016.

[2] As in the estimation of the Employee Benefit Expenses, in 2012 and 2013, these costs are assumed to remain unchanged due to the same rationale

Restructuring of domestic business was executed rapidly and management feels that the company is ready to face next challenges. To support this idea, it was disclosed that the company has been winning some projects of some dimension and that pipeline gives confidence regarding the following years which reinforces the idea that Novabase will fully recover in near future.

Concerning the EBITDA, currently Novabase presents an EBITDA margin of 6,2% (after an abrupt drop when comparing to 2010's value), being expected that this margin will get larger in the next few years, mainly due to the major restructuration in the past years, achieving 9,0% in 2017.

6.1.5. Working Capital

The investment in Working Capital was forecasted based on the yearly variation of the Net Working Capital. In order to an accurate estimation of the Net Working Capital, the following assumptions, regarding the forecast of each variable, were made:

- Inventories as percentage of Operational Costs
- Customers as percentage of revenues
- Other Current assets as percentage of revenues
- Suppliers as percentage of Operational Costs
- Other Current Liabilities as percentage of Revenues

The percentages of both Revenues and Operational Costs were calculated by the average of the previous five years.

Figure 26: Estimation of Novabase's Net Working Capital (in thousand €)

	2010	2011	2012	2013	2014	2015	2016	2017
Inventories	10403	6909	9353	9391	9722	10068	10528	11009
Trade and other receivables	83285	92830	92250	92628	95892	99305	103839	108587
Other current assets	3834	5236	3302	3315	3432	3554	3717	3886
Total Current assets	**97522**	**104975**	**104905**	**105334**	**109046**	**112927**	**118083**	**123482**
Trade and other Payables	57101	60935	58478	58717	60786	62950	65824	68834
Other current liabilities	22807	22669	19153	19232	19909	20618	21559	22545
Total Current liabilities	**79908**	**83604**	**77631**	**77949**	**80695**	**83568**	**87383**	**91379**
Net Working Capital	**17614**	**21371**	**27274**	**27386**	**28351**	**29360**	**30700**	**32104**
Change in NWC	**-5088**	**3757**	**5903**	**112**	**965**	**1009**	**1341**	**1404**
Inventories as % of Costs of sales			*10%*	*10%*	*10%*	*10%*	*10%*	*10%*
Trade and other receivables as % of Revenues			*38%*	*38%*	*38%*	*38%*	*38%*	*38%*
Other current assets as % of Revenues			*1%*	*1%*	*1%*	*1%*	*1%*	*1%*
Trade and other Payables as % of Costs of Sales			*64%*	*64%*	*64%*	*64%*	*64%*	*64%*
Other current liabilities as % of Revenues			*8%*	*8%*	*8%*	*8%*	*8%*	*8%*

6.1.6. CAPEX and Depreciations & Amortizations

Capex (as a function of the Revenues) has been fairly stable over the past years. In the period 2007-2012, Capex has been fluctuating from 0,9 % to 1,3% of the revenues, averaging 1,19% in the previous years.

Novabase has informed that this strategy will be kept in the future.

As regards this valuation, Capex will be assumed to remain at the average 1,19% of the annual revenues showed in the recent past.

Figure 27: Novabase's Capex Estimation (in thousand €)

	2010	2011	2012	2013	2014	2015	2016	2017
Capex	3400	3000	2861	2872	2973	3079	3220	3367
Capex (% of revenues)	*1,42%*	*1,24%*	*1,19%*	*1,19%*	*1,19%*	*1,19%*	*1,19%*	*1,19%*

Novabase's Depreciations and Amortizations respect to property, plant and equipment as well as intangible assets. Historically both items have contributed with similar amounts, being Property, plant and equipment the biggest contributor averaging 56% in the previous years. Depreciations and Amortizations are expected to keep presenting the same structure over the time.

Depreciations and Amortizations' estimation are assumed to be associated with Capex. The formula used to forecast D&A for the next years is the following:

$$Assets_{1} = Assets_{0} + CAPEX - D\&A$$

The amount of Assets[3] will be calculated with the 634% average Assets Turnover ratio from 2007 to 2012.

Figure 28: Novabase's Depreciations and Amortizations Estimation (in thousand €)

	2010	2011	2012	2013	2014	2015	2016	2017
Assets	41065	40127	37884	38039	39380	40781	42643	44593
Assets Turnover	576%	572%	2861	2872	2973	3079	3220	3367
Capex	3400	3000	2861	2872	2973	3079	3220	3367
(% of revenues)	*1,42%*	*1,24%*	*1,19%*	*1,19%*	*1,19%*	*1,19%*	*1,19%*	*1,19%*
Depretiations			**5103**	**2717**	**1633**	**1678**	**1358**	**1417**
Property	3291	3543	2860	1523	915	940	761	794
(% of D&A)	*60%*	*58%*	*56%*	*56%*	*56%*	*56%*	*56%*	*56%*
Intang. Assets	2187	2582	2243	1194	718	737	597	623
% of (D&A)	*40%*	*42%*	*44%*	*44%*	*44%*	*44%*	*44%*	*44%*

6.1.7. Net Debt

Novabase presents a negative net debt of €9,85 Million in 2011,being this tendency to preserve in the future despite the missing Tax Shields.

Novabase's Investor Relations has informed that the firm will continue to present a negative net debt over the next years in order to maintain an autonomous and healthy balance sheet and so, better face the macroeconomic environment.

This strategy aims to represent a reliability and an important asset which Novabase intends to maintain in the future.

[3] For the purpose of the calculation of D&A, the Assets will be the sum of property, plant and equipment and intangible assets

6.1.8. Weighted Average Cost of Capital - WACC

For the purpose of the WACC's calculation, the following assumptions were made:

The risk-free rate used was the 10 years German Bond rate.

Country risk premium: For 2012 and 2013, period when the readjustment program for the Portuguese economy is being executed, the Portugal risk premium used in this valuation will be 10,13 % (actual Damodaran's estimation). Thenceforward, until 2017, the Portuguese economy will still feel the effects of this tough readjustment, reason why the country risk premium is assumed to be at 5%. Both the Portuguese Government and S&P forecast 2018 to be the year in which the Portuguese economy will "return to normalcy" and consequently, from then on, the country risk premium will be assumed to be at 1%.

The Equity risk premium will be 5,5% whereas the Beta used in Novabase's valuation will be the Beta provided by Damodaran for the Industry of Information Services.

WACC calculation is resumed in the following table:

Figure 29: Novabase's WACC computation

	2012-13	2014-17	Terminal Value (from 2018)
Risk-Free rate (rf)	2,50%	2,50%	2,50%
Equity Risk Premium	5,50%	5,50%	5,50%
Country Risk Premium	10,13%	5,00%	1,00%
Beta	1,07	1,07	1,07
Ke	19,22%	13,74%	9,46%
E/(D+E)	100%	100%	100%
D/(D+E)	0%	0%	0%
WACC	**19,22%**	**13,74%**	**9,46%**
Perpetuty growth rate (g)			2,00%
WACC - g			7,46%

6.2. DCF's Valuation

Through the assumptions presented before, it is possible to accurately determine the Novabase's Value.

The next table provides the FCFF estimations for Novabase:

Figure 30: Novabase's FCFF calculation (in thousand €)

	2011	2012	2013	2014	2015	2016	2017
EBITDA	14243	20537	22461	22144	23109	24268	25547
EBIT	8118	15433	19744	20511	21431	22910	24129
EBIT(1-T)	5967	11343	14512	15075	15752	16839	17735
+ D&A	6125	5103	2717	1633	1678	1358	1417
- Capex	3000	2861	2872	2973	3079	3220	3367
- NWC changes	3757	5903	112	965	1009	1341	1404
FCFF		**7683**	**14245**	**12770**	**13341**	**13636**	**14381**

Once estimated the FCFF, it is possible to calculate the Enterprise value, discounting the FCFF at the WACC rate. The Novabase's Discount Cash Flow Valuations is resumed in the table above:

Figure 31: Novabase's Discount Cash Flow Method (in thousand €)

	2012	2013	2014	2015	2016	2017
FCFF	7683	14245	12770	13341	13636	14381
Discount factor $(1/(1+WACC)^n)$	0,839	0,704	0,619	0,544	0,478	0,420
Discounted Cash Flow	6444,53	10021,79	7898,86	7255,68	6520,58	6046,41
PV FCFF	44187,85					
Terminal Value	196768,1					
PV Terminal Value	82727,54					
Enterprise Value	**126915**					
- Net Debt	-9850					
- Minorities	9811					
Equity Value	**126954**					
Share price	**€4,04**					

The Novabase's Enterprise Value is €126,92 Million, whereas the Equity Value is slightly bigger - €126,96 Million. This small variation between these two values is due to Novabase's negative Net Debt.

The Target Price for Novabase share is €4,04. Given the 97,2% upside on the stock (compared to the current quote of € 2.05 – August 19th 2012), I rate it as ***Buy***.

6.3. Sensitivity Analysis

The sensitivity analysis is important in order to better understand how the target price is affected by different assumptions in the main value drivers.

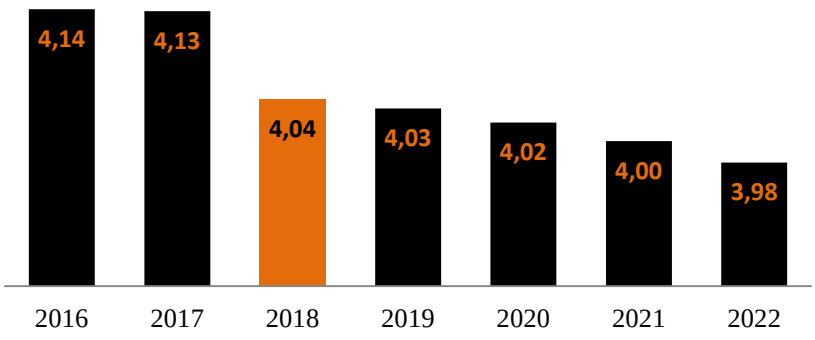
In that sense, I found appropriate to produce a sensitivity analysis for both WACC and perpetuity growth rate which I consider to be the key DCF assumptions.

Figure 32: Novabase's Sensitivity Analysis

		Perpetuity growth rate (g)				
		1,0%	1,5%	2,0%	2,5%	3,0%
WACC	3,455%	9,33 €	11,41 €	14,91 €	22,08 €	45,00 €
	5,455%	5,77 €	6,35 €	7,09 €	8,09 €	9,49 €
	7,455%	4,42 €	4,69 €	5,01 €	5,39 €	5,86 €
	9,455%	3,71 €	3,87 €	**4,04 €**	4,25 €	4,48 €
	11,455%	3,27 €	3,37 €	3,49 €	3,61 €	3,75 €
	13,455%	2,97 €	3,04 €	3,12 €	3,21 €	3,31 €
	15,455%	2,75 €	2,81 €	2,87 €	2,93 €	3,00 €

Further, due to the fact that I found very difficult to forecast the year when the Portuguese Economy will definitely recover from the current downturn, I performed an isolated Sensitivity Analysis to understand how the target price is affected by these variable.

Figure 33: Novabase's share price sensitivity to the Portuguese Economy full recovery date



7. Relative Valuation – Multiples

In order to better understand the actual Novabase's financial condition, I will be further use relative valuation of the firm making use of a group of companies as its comparable peers.

In this industry there are several companies which, despite competing in the same market, have completely different types of business as well as diverse dimensions when it concerns the revenues and assets, turning difficult an accurate definition of the peer group in this industry.

However, based on the last two years growth as well as the markets where the firms operate, it was possible to construct the peer group.

Figure 34: Novabase's Relative Valuation Method (in thousand €)

	Market Cap. (€ million)	EV/EBITDA	PER	Price-to-book
Indra	2074,44	6,04	8,86	1,17
Atos Orgin	3661,78	5,67	23,33	1,71
Cap Gemini	4802,96	5,14	11,79	1,16
Alten	749,17	5,92	12,33	1,81
Tietoenator	975	5,15	16,57	1,72
PEER average	2452,67	5,576	14,576	1,514
Novabase value		20537	11567	109062,3
Enterprise Value		**114512,4**		
Net debt		-9850		
Minorities		9811		
Equity Value		**114551,4**	**168598,6**	**165120,4**
Price		**€ 3,65**	**€ 5,37**	**€ 5,26**

Source: Bloomberg

For each multiple, I used forecasted data for the year 2012 and computed the peer's average ratio. In the three multiples used, the Enterprise Value Multiple – EV/EBITDA – was the one which achieved the lower price per share (-10% compared to the price achieved with DCF method). Looking at he PER and Price-to-book, it was achieved an higher price than the one found in Discounted Cash Flow method – with differences of 33% and 30 % respectively.

8. Valuation Comparison with Millennium BCP

At this point, after having estimated Novabase's share price, through the development of my own equity valuation model, I will compare it with a valuation from Millennium BCP, trying to understand what are the differences underlying the models that validate different share prices. The benchmark report dated May 9th 2012, whose price target is 4.00 €, which is just 1% below the 4,04 € target price achieved in my model.

When looking to the Turnover estimations, it stands out that despites the one estimated for 2012 is the same, from then on, the annual growth rate used by Millennium BCP is larger. The difference is explained with the fact that I used the forecasts for the Portuguese Industry to compute these values whereas BCP uses a selected EU27 GDP as the explanatory variable in their regression analysis to compute the revenues.

Figure 35: Msc Thesis' Revenues estimation vs. Millennium BCP's

Revenues	2012	2013	2014	2015	2016
Msc Thesis	240	241	249	258	270
growth	*4.5%*	*0,4%*	*3,5%*	*3,6%*	*4,6%*
BCP	240	249,6	259,6	278,3	297,6
growth	*4,5%*	*4,0%*	*4,0%*	*7,2%*	*6,9%*

However, Millennium BCP forecasts smaller EBITDA in the next years when comparing with the ones found in my Discounted Cash Flow Model. It happens as a result of a lower EBITDA Margin used by this Investment bank.

Figure 36: Msc Thesis' EBITDA estimation vs. Millennium BCP's

	2012	2013	2014	2015	2016
Msc Thesis EBITDA	21	22	22	23	24
Msc Thesis Margin	*8,6%*	*9,3%*	*8,9%*	*8,9%*	*9,0%*
BCP EBITDA	16,5	18,1	19,6	21,7	23,9
BCP Margin	*6,9%*	*7,3%*	*7,6%*	*7,8%*	*8,0%*

It is also important to take a look at the discount rates used by Millennium BCP. The first thing that stands out is that BCP estimates the year of Novabase's steady state to be

in 2020 whereas I estimate it to be in 2018. The country risk premiums used as well as the Betas are very similar, being that the major difference is again the time horizons.

Figure 37: Msc Thesis' WACC computation vs. Millennium BCP's

	Msc Thesis			Millennium BCP		
	2012-13	**2014-17**	**Terminal Value**	**2012-15**	**2016-21**	**Terminal Value**
Rf	2,5%	2,5%	2,5%	2,5%	2,5%	2,5%
Beta	1,07	1,07	1,07	1,20	1,20	1,20
Market risk premium	5,5%	5,5%	5,5%	5,0%	5,0%	5,0%
Country risk premium	10,1%	5,0%	1,0%	11,5%	6,0%	0,5%
Ke	19,2%	13,7%	9,5%	22,3%	15,7%	9,1%
Wacc	19,2%	13,7%	9,5%	22,3%	15,7%	9,1%

The computation of the target share price is resumed in the following table resumes both discount models:

Figure 38: Msc Thesis' Share Price Calculation vs. Millennium BCP's

	2012	**2013**	**2014**	**2015**	**2016**
Msc Thesis					
Revenues	240	241	249	258	270
EBITDA	21	22	22	23	24
FCFF	8	14	13	13	14
Discounted FCFF	6,4	10,0	7,9	7,3	6,5
PV Terminal Value*					82,7
Share Price					4,04
Millennium BCP					
Revenues	240	249,6	259,6	278,3	297,6
EBITDA	16,5	18,1	19,6	21,7	23,9
FCFF	5	11,6	12,1	10,9	13,7
Discounted FCFF	5	9,5	8,1	5,9	6,5
PV Terminal Value**					64,4
Share Price					4,00

* Calculated in 2018
** Calculated in 2020

9. Conclusion

Using the WACC method to value Novabase's businesses, I reached a price target for the company's share of **€4,04**. This translates into a **buy** recommendation since there is an upside of 97%. The Relative Valuation approach reached different target prices (PER – €5,37; EV/EBITDA – €3,65; Price-to-book – €5,26). Due to very different target prices achieved added to the fact that Novabase's peers have very different types of business as well as diverse dimensions, I did not took it into consideration to my recommendation.

It is important to refer that this DCF valuation was, in part, based on IDC's projections for the Portuguese Information Technology Industry. From the total Sales of € 240 million in 2012, the Business Solutions and Infrastructures Managed Services contribute with 39% and 37%, respectively, Digital TV is worth 23%, while the biomass business contributes with the remaining 1%.

The EBITDA margin is estimated to grow in the future years due to Novabase's structural change in the past few years.

Finally, it is important to mention that this target price value - € 4,04 - is subject to changes depending on the economic evolution and recovery during the next years, which have a high level of uncertainty. In the case of the appearance of relevant issues for the economy and the industry that would have impact on Novabase's results, a revision of the valuation should be done.

10. Appendixes

Exhibit 1: Business Solutions' organizational chart

Exhibit 2: Infrastructures & Managed Services' organizational chart

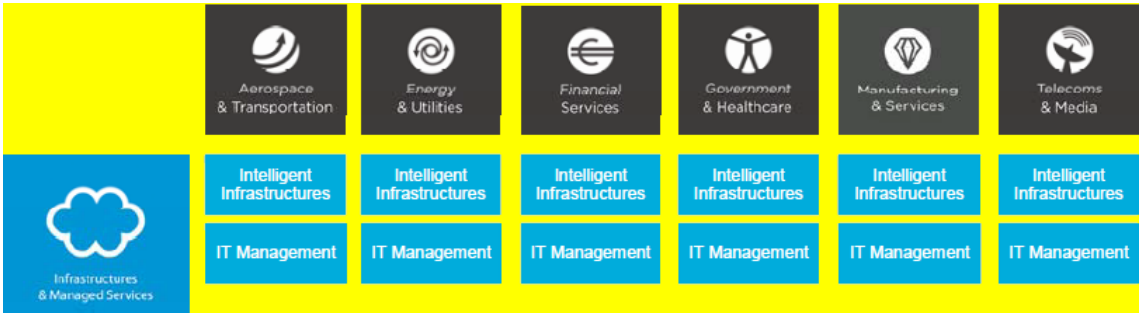


Exhibit 3: Digital TV's organizational chart

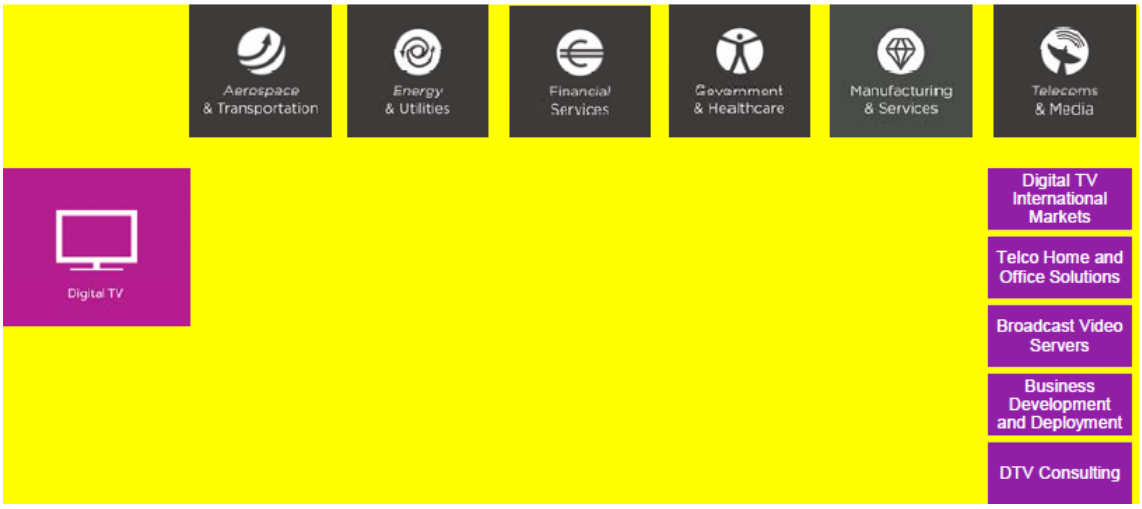


Exhibit 4: Novabase's organizational chart

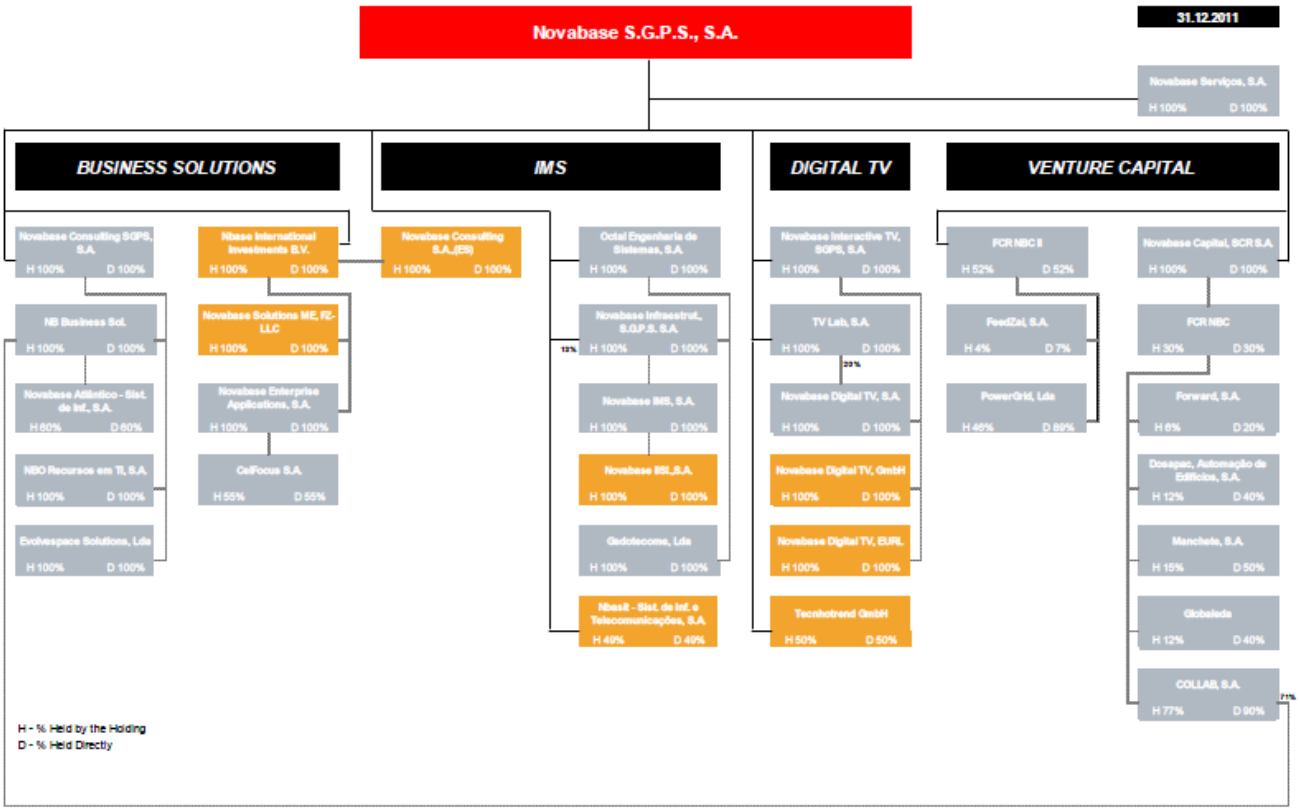


Exhibit 5: Turnover by geography in 2012

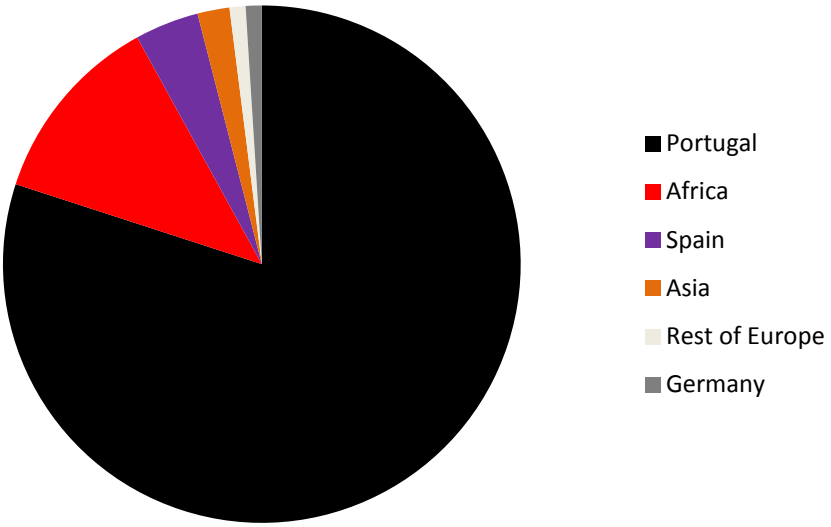


Exhibit 6: Evolution of the Turnover by geography (in million €)

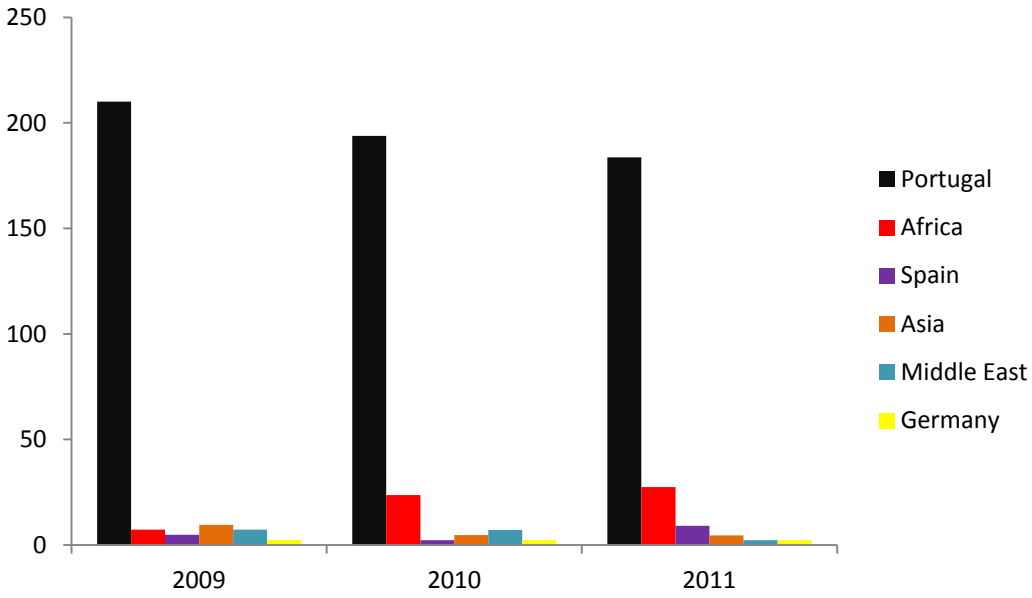


Exhibit 7: Evolution of the EBITDA by Business Area (in million €)

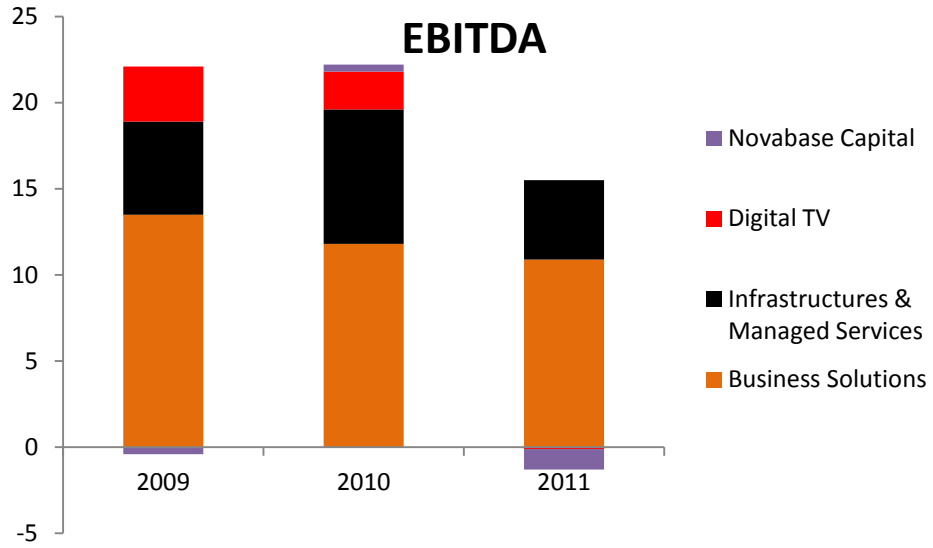


Exhibit 8: Evolution of the Turnover by Business Area (in million €)

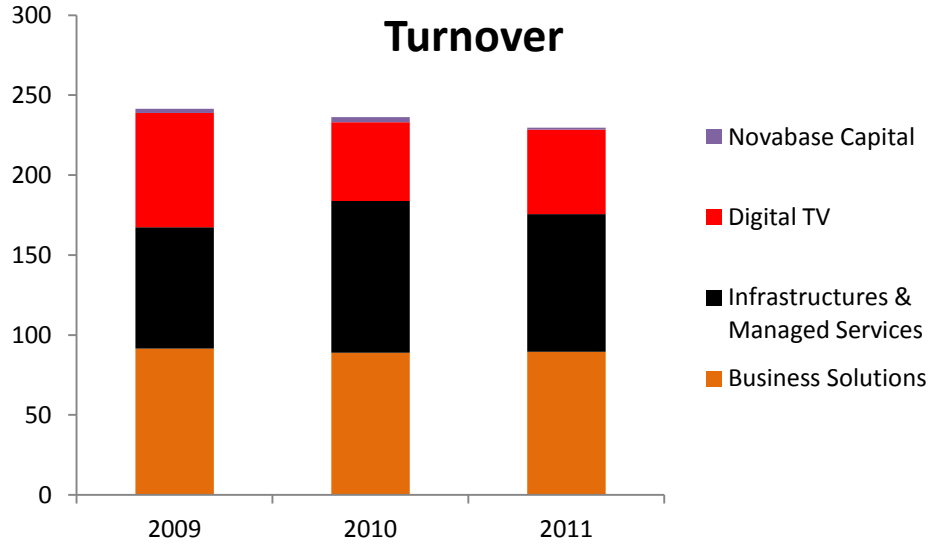


Exhibit 9: Forecast of Novabase's Employee Benefit Expense (in thousand €)

	2011	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Revenues	229633	240000	240982	249474	258353	270150	282502
growth	*-2,8%*	*4,5%*	*0,4%*	*3,5%*	*3,6%*	*4,6%*	*4,6%*
# employees	2109	2067	2025	2097	2171	2271	2374
growth	5,3%	-2,0%	-2,0%	3,5%	3,6%	4,6%	4,6%
		2067	2025	2097	2171	2271	2374
Employee benefit/employee							
Board member renumeration	2,26	2,26	2,26	2,26	2,26	2,26	2,26
Salaries and wages	27,93	27,93	27,93	27,93	27,93	27,93	27,93
Social security charges	4,94	4,94	4,94	4,94	4,94	4,94	4,94
Stock options granted	0,16	0,16	0,16	0,16	0,16	0,16	0,16
Other personal expenses	0,84	0,84	0,84	0,84	0,84	0,84	0,84
Employee benefit (With inflaction)							
Board member renumeration	4775	4680	4585	4821	4987	5217	5454
Salaries and wages	58909	57736	56563	59479	61529	64363	67282
Social security charges	10420	10212	10005	10521	10883	11385	11901
Stock options granted	331	324	318	334	346	362	378
Other personal expenses	1775	1740	1704	1792	1854	1939	2027
TOTAL	76210	74692	73175	76947	79600	83266	87043

Exhibit 10: Novabase's Employees by Business Area (in thousand €)

	BS	**IMS**	**DTV**	**VC**	**Shared**	**Total**	**Cost per person**
2011	1335	345	283	47	99	2109	36,136
2010	1263	291	306	43	100	2003	37,747
2009	1157	262	308	35	99	1861	37,884
2008	1116	217	245	25	100	1703	40,355

Exhibit 11: Forecast of Novabase's External Supplies and Services (in thousand €)

	2010	2011	2012 (E)	2013 (E)	2014 (E)	2015 (E)	2016 (E)	2017 (E)
Total Sales	**236331**	**229633**	**240000**	**240982**	**249474**	**258353**	**270150**	**282502**
growth	***-2%***	***-3%***	***5%***	***0%***	***4%***	***4%***	***5%***	***5%***
Subcontracts	23310	25445	26594	26703	27644	28627	29935	31303
growth	*16%*	*9%*	*5%*	*0%*	*4%*	*4%*	*5%*	*5%*
Supplies and Services								
Commissions and consultancy fees	9554	7765	8116	8149	8436	8736	9135	9553
growth	*-2%*	*-19%*	*5%*	*0%*	*4%*	*4%*	*5%*	*5%*
Transportation, travel and accommodation expenses	6834	6600	6898	6926	7170	7425	7765	8120
growth	*18%*	*-3%*	*5%*	*0%*	*4%*	*4%*	*5%*	*5%*
Rents	2776	3742	3742	3742	3800	3855	3912	3969
growth	*-3%*	*35%*						
Specialized Services	1862	2972	3106	3119	3229	3344	3496	3656
growth	*9%*	*60%*	*5%*	*0%*	*4%*	*4%*	*5%*	*5%*
Freight	1002	447	467	469	486	503	526	550
growth	*-15%*	*-55%*	*5%*	*0%*	*4%*	*4%*	*5%*	*5%*
Advertising and promotion	1715	1289	1347	1353	1400	1450	1516	1586
growth	*68%*	*-25%*	*5%*	*0%*	*4%*	*4%*	*5%*	*5%*
Water, electricity and fuel	973	1048	1095	1100	1139	1179	1233	1289
growth	*15%*	*8%*	*5%*	*0%*	*4%*	*4%*	*5%*	*5%*
Communications	824	904	945	949	982	1017	1064	1112
growth	*27%*	*10%*	*5%*	*0%*	*4%*	*4%*	*5%*	*5%*
Insurance	447	425	425	425	432	438	444	451
growth	*21%*	*-5%*						
Utensilis, office supplies and technical documentantion	221	217	227	228	236	244	255	267
growth	*47%*	*-2%*	*5%*	*0%*	*4%*	*4%*	*5%*	*5%*
Other supplies and services	860	866	905	909	941	974	1019	1065
growth	*-1%*	*1%*	*5%*	*0%*	*4%*	*4%*	*5%*	*5%*
External Supplies and Services	**50378**	**51720**	**53867**	**54070**	**55893**	**57794**	**60300**	**62921**

Exhibit 12: Forecast of Novabase's Other Gains or Losses (in thousand €)

	2011	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Gains on financial investments disposal	0	0	0	0	0	0	0
Impairment and impairment reversal of trade and other receivables	1017	-998	-267	-267	-267	-267	-267
Impairment and impairment reversal of inventories	-116	282	-262	-262	-262	-262	-262
Warranties provision	410	-21	-18	-18	-18	-18	-18
Legal claims provision	15	244	81	81	81	81	81
Provision for other risks and charges	187	209	-29	-29	-29	-29	-29
Operating subsidies	569	122	410	410	410	410	410
Other operating income and expense	-135	-381	22	22	22	22	22
Other gains (losses) – net	**1947**	**-543**	**-63**	**-63**	**-63**	**-63**	**-63**

Exhibit 13: Forecast of Novabase's EBITDA (in thousand €)

	2011	2012	2013	2014	2015	2016	2017
Total Sales	**229633**	**240000**	**240982**	**249474**	**258353**	**270150**	**282502**
Cost of Sales *	**86917**	**90841**	**91213**	**94427**	**97788**	**102253**	**106928**
Subcontracts	**25445**	**26594**	**26703**	**27644**	**28627**	**29935**	**31303**
Supplies and Services							
Commissions and consultancy fees	7765	8116	8149	8436	8736	9135	9553
Transportation, travel and accommodation expenses	6600	6898	6926	7170	7425	7765	8120
Rents	3742	3742	3742	3800	3855	3912	3969
Specialized Services	2972	3106	3119	3229	3344	3496	3656
Freight	447	467	469	486	503	526	550
Advertising and promotion	1289	1347	1353	1400	1450	1516	1586
Water, electricity and fuel	1048	1095	1100	1139	1179	1233	1289
Communications	904	945	949	982	1017	1064	1112
Insurance	425	425	425	432	438	444	451
Utensilis, office supplies and technical documentantion	217	227	228	236	244	255	267
Other supplies and services	866	905	909	941	974	1019	1065
External Supplies and services	**51720**	**53867**	**54070**	**55893**	**57794**	**60300**	**62921**
Board member renumeration	4775	4680	4585	4821	4987	5217	5454
Salaries and wages	58909	57736	56563	59479	61529	64363	67282
Social security charges	10420	10212	10005	10521	10883	11385	11901
Stock options granted	331	324	318	334	346	362	378
Other personal expenses	1775	1740	1704	1792	1854	1939	2027
Employee benefit expense	**76210**	**74692**	**73175**	**76947**	**79600**	**83266**	**87043**
Gains on financial investments disposal	0	0	0	0	0	0	0
Impairment & impairment reversal of trade & other receivables	-998	-267	-267	-267	-267	-267	-267
Impairment and reversal of inventories	282	-262	-262	-262	-262	-262	-262
Warranties provision	-21	-18	-18	-18	-18	-18	-18
Legal claims provision	244	81	81	81	81	81	81
Provision for other risks and charges	209	-29	-29	-29	-29	-29	-29
Operating subsidies	122	410	410	410	410	410	410
Other operating income and expense	-381	22	22	22	22	22	22
Other gains (losses) - net	**-543**	**-63**	**-63**	**-63**	**-63**	**-63**	**-63**
EBITDA	**14243**	**20537**	**22461**	**22144**	**23109**	**24268**	**25547**

Exhibit 14: Forecast of Novabase's Balance Sheet – Assets (in thousand €)

	2010	2011	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Property, plant and equipment	9836	9000	7743	7829	8581	9366	10410	11502
Intangible assets	31229	31127	30141	30209	30798	31414	32233	33090
Investments in associates	1676	1786	1786	1786	1786	1786	1786	1786
Available-for-sale financial assets	21	0	0	0	0	0	0	0
Deferred income tax assets	10396	12387	12387	12387	12387	12387	12387	12387
Other non-current assets	69	0	0	0	0	0	0	0
Total Non-Current Assets	**53227**	**54300**	**52057**	**52212**	**53552**	**54954**	**56816**	**58766**
Inventories	10403	6909	9353	9391	9722	10068	10528	11009
Trade and other receivables	83285	92830	92250	92628	95892	99305	103839	108587
Accrued income	14035	16414	16414	16414	16414	16414	16414	16414
Income tax receivable	3378	3211	3211	3211	3211	3211	3211	3211
Derivative financial instruments	197	245	245	245	245	245	245	245
Other current assets	3834	5236	3302	3315	3432	3554	3717	3886
Cash and cash equivalents	28088	27157	39586	52164	60413	69117	78166	87458
Total Current Assets	**143220**	**152002**	**164361**	**177368**	**189329**	**201915**	**216119**	**230810**
Assets for discontinued operations	49	0	0	0	0	0	0	0
Total Assets	**196496**	**206302**	**216418**	**229581**	**242882**	**256869**	**272935**	**289576**

Exhibit 15: Forecast of Novabase's Balance Sheet – Equity and Liabilities (in thousand €)

	2010	2011	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Share capital	15701	15701	15701	15701	15701	15701	15701	15701
Treasury shares	-603	-490	-490	-490	-490	-490	-490	-490
Share premium	43560	43560	43560	43560	43560	43560	43560	43560
Reserves and retained earnings	21063	31206	38724	48341	58327	68758	79906	91644
Profit for the year	13053	2651	11567	14795	15363	16047	17150	18058
Total Equity Attrib. to Owners of the Parent	**92774**	**92628**	**109062**	**121907**	**132461**	**143576**	**155826**	**168472**
Non-controlling interests	5724	9811	9811	9811	9811	9811	9811	9811
Total Equity	**98498**	**102439**	**118873**	**131718**	**142272**	**153387**	**165637**	**178283**
Borrowings	7879	12028	12028	12028	12028	12028	12028	12028
Provisions	1633	1721	1721	1721	1721	1721	1721	1721
Deferred income tax liabilities	909	100	100	100	100	100	100	100
Other non-current liabilities	927	308	308	308	308	308	308	308
Total Non-Current Liabilities	**11348**	**14157**	**14157**	**14157**	**14157**	**14157**	**14157**	**14157**
Borrowings	5333	5279	5279	5279	5279	5279	5279	5279
Trade and other payables	57101	60935	58478	58717	60786	62950	65824	68834
Income tax payable	311	17	17	17	17	17	17	17
Derivative financial instruments	353	461	461	461	461	461	461	461
Def.income and other current liabilities	22807	22669	19153	19232	19909	20618	21559	22545
Total Current Liabilities	**85905**	**89361**	**83387**	**83705**	**86452**	**89324**	**93140**	**97135**
Liabilities for discontinued operations	745	345	0	0	0	0	0	0
Total Liabilities	**97998**	**103863**	**97544**	**97862**	**100609**	**103481**	**107297**	**111292**
Total Equity and Liabilities	**196496**	**206302**	**216418**	**229580**	**242881**	**256868**	**272935**	**289576**

Exhibit 16: Forecast of Novabase's Income Statement (in thousand €)

	2010	2011	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Total Sales	**236331**	**229633**	**240000**	**240982**	**249474**	**258353**	**270150**	**282502**
growth	*-2%*	*-3%*	*5%*	*0%*	*4%*	*4%*	*5%*	*5%*
Cost of Sales *	**90125**	**86917**	**90841**	**91213**	**94427**	**97788**	**102253**	**106928**
Subcontracts	23310	25445	26594	26703	27644	28627	29935	31303
Supplies and Services								
Commissions and consultancy fees	9554	7765	8116	8149	8436	8736	9135	9553
Transportation, travel and accommodation expenses	6834	6600	6898	6926	7170	7425	7765	8120
Rents	2776	3742	3742	3742	3800	3855	3912	3969
Specialized Services	1862	2972	3106	3119	3229	3344	3496	3656
Freight	1002	447	467	469	486	503	526	550
Advertising and promotion	1715	1289	1347	1353	1400	1450	1516	1586
Water, electricity and fuel	973	1048	1095	1100	1139	1179	1233	1289
Communications	824	904	945	949	982	1017	1064	1112
Insurance	447	425	425	425	432	438	444	451
Utensilis, office supplies and technical documentantion	221	217	227	228	236	244	255	267
Other supplies and services	860	866	905	909	941	974	1019	1065
External Supplies and services	**50378**	**51720**	**53867**	**54070**	**55893**	**57794**	**60300**	**62921**
Board member renumeration	8057	4775	4680	4585	4821	4987	5217	5454
Salaries and wages	55613	58909	57736	56563	59479	61529	64363	67282
Social security charges	9330	10420	10212	10005	10521	10883	11385	11901
Stock options granted	697	331	324	318	334	346	362	378
Other personal expenses	1910	1775	1740	1704	1792	1854	1939	2027
Employee benefit expense	**75607**	**76210**	**74692**	**73175**	**76947**	**79600**	**83266**	**87043**
Gains on financial investments disposal	0	0	0	0	0	0	0	0
Impairment and impairment reversal of trade and other receivables	1017	-998	-267	-267	-267	-267	-267	-267
Impairment and impairment reversal of inventories	-116	282	-262	-262	-262	-262	-262	-262
Warranties provision	410	-21	-18	-18	-18	-18	-18	-18
Legal claims provision	15	244	81	81	81	81	81	81
Provision for other risks and charges	187	209	-29	-29	-29	-29	-29	-29
Operating subsidies	569	122	410	410	410	410	410	410
Other operating income and expense	-135	-381	22	22	22	22	22	22
Other gains (losses) - net	**1947**	**-543**	**-63**	**-63**	**-63**	**-63**	**-63**	**-63**
EBITDA	**22168**	**14243**	**20537**	**22461**	**22144**	**23109**	**24268**	**25547**
Property, plant and	*3291*	*3543*	*2860*	*1523*	*915*	*940*	*761*	*794*

equipment								
Buildings and other constructions	523	402	324	173	104	107	86	90
Basic equipment	1475	1659	1339	713	429	440	356	372
Transport equipment	1097	1287	1039	553	332	342	276	289
Tools and utensils	7	16	13	7	4	4	3	4
Furniture, fittings and equipment	188	178	144	77	46	47	38	40
Other tangible assets	1	1	1	0	0	0	0	0
Intangible assets	*2187*	*2582*	*2243*	*1194*	*718*	*737*	*597*	*623*
Internally genereated intangible assets	266	414	360	192	115	118	96	100
Industrial property an other rights	1921	2168	1884	1003	603	619	501	523
Depreciation and amortization	-5478	-6125	-5103	-2717	-1633	-1678	-1358	-1417
Restrucutring costs	0	-3496	0	0	0	0	0	0
Operating Profit	**16690**	**4622**	**15433**	**19744**	**20511**	**21431**	**22910**	**24129**
Interest received	197	562	577	584	593	602	611	620
Positive exchange differences	4975	3198	3198	3198	3198	3198	3198	3198
Other financial gains	84	10	10	10	10	10	10	10
Finance income	**5256**	**3770**	**3785**	**3792**	**3801**	**3810**	**3819**	**3828**
Interest expenses - Borrowings	212	478	491	497	505	512	520	527
Interest expenses - Finance lease liabilities	533	555	570	577	586	595	603	612
Interest expenses - Other interest	154	61	63	63	64	65	66	67
Bank guarantees charges	116	131	131	131	131	131	131	131
Bannk services	152	169	169	169	169	169	169	169
Negative exchance differences	4189	3231	3231	3231	3231	3231	3231	3231
Other financial costs	15	1	1	1	1	1	1	1
Finance costs	**-5371**	**-4626**	**-4655**	**-4670**	**-4687**	**-4704**	**-4721**	**-4739**
Fundo Capital Risco NB Capital	-249	-571	0	0	0	0	0	0
Novabase Atlântico, SI, S.A.	-6	-74	0	0	0	0	0	0
TechnoTrend GmbH			0	0	0	0	0	0
Share of profit (loss) of associates	**-255**	**-645**	**-576**	**-576**	**-576**	**-576**	**-576**	**-576**
Profit before tax	**16320**	**3121**	**13987**	**18291**	**19048**	**19961**	**21431**	**22642**
Income tax expense at nominal rate (25%)	4080	780	3497	4573	4762	4990	5358	5661
Tax benefit on the net creation of employment for young and long term unemployed people	-522	-467	-410	-410	-410	-410	-410	-410
Provisions and amortisations not	155	207	385	385	385	385	385	385

considered for tax purposes								
Recognition of tax on the events of previous years	12	11	12	12	12	12	12	12
Non taxable gains arising from financial holdings disposals								
Associates' results reported net of tax	64	161	111	111	111	111	111	111
Autonomous taxation	2228	342	809	809	809	809	809	809
Losses in companies where no deferred tax is recognised	-221	-277	44	44	44	44	44	44
Expenses not deductible for tax purposes	124	-21	52	52	52	52	52	52
Differential tax rate on companies located abroad	-7	30	12	12	12	12	12	12
Research & Development tax benefit	-3886	-385	-2661	-2661	-2661	-2661	-2661	-2661
Municipal surcharge and State surcharge	297	94	267	267	267	267	267	267
Impairment of Special Payment on Account, tax losses and withholding taxes	325	420	323	323	323	323	323	323
Provision for legal disputes								
Other	-21	-11	-19	-19	-19	-19	-19	-19
Income tax expense	**-2628**	**-884**	**-2420**	**-3496**	**-3685**	**-3913**	**-4281**	**-4584**
Profit for the Year - continuing operations	**13692**	**2237**	**11567**	**14795**	**15363**	**16047**	**17150**	**18058**
Profit from discontinued operations		703						
Profit for the Year	**13692**	**2940**	**11567**	**14795**	**15363**	**16047**	**17150**	**18058**
Dividend Payout Ratio		0,32	0,35	0,35	0,35	0,35	0,35	0,35
Dividends			4048	5178	5377	5617	6003	6320

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