Autoridade Nacional de Comunicações ("ANACOM")

Report on the cost of capital of PT Comunicações

July 26th, 2013

an independent member of BAKER TILLY INTERNATIONAL

BAKER TILLY

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GLOSSARY

CDS – Credit Default Swaps

EZ – Euro Zone

IRG – Independent Regulators' Group

NRA – National Regulator Authority

PIB – Principles of Implementation and Best Practices

PTC – Portugal Telecom Comunicações

PT SGPS – Portugal Telecom, Sociedade Gestora de Participações Sociais

SMP – Significant Market Power

WACC – Weighted Average Cost of Capital

1. EXECUTIVE SUMMARY

Portugal Telecom Comunicações (PTC) is a landline telephone operator with significant power within the Portuguese Market. As such, it is regulated by ANACOM (Autoridade Nacional das Comunicações), the National Regulator Authority for telecommunications.

The determination of an acceptable cost of capital for PTC falls under the scope of ANACOM, who must provide the operator with a figure that (i) allows the operator a fair and reasonable rate of return on its investments; and (ii) curbs the operator's ability to set prices according to its monopolistic position.

To this extent, ANACOM asked Baker Tilly to assess the methodologies followed in the prior decision of the cost of capital of PTC for the period 2009-2011 and to give its estimate of the cost of capital of PTC for the years 2012 and 2013.

Baker Tilly acknowledges the following methodologies used in ANACOM's prior decision: the use of the Weighted Average Cost of Capital as the best way to compute the cost of capital of PTC; the CAPM as the best model to compute the cost of equity; and a sum of the risk-free rate and a corresponding company debt premium as the best way to compute the cost of debt. Baker Tilly also acknowledges ANACOM's definition of the basis of return of the cost of capital.

Regarding ANACOM's prior decision, Baker Tilly recommends maintaining the current methodologies for the individual parameters of the WACC except the risk-free rate given the current macroeconomic context.

Baker Tilly estimates more than one alternative for each individual parameter, with a recommendation for each parameter and a final recommendation of the WACC. All parameters are in line with the estimates of the prior decision, apart from the risk-free rate, the asset beta and the tax rate. The difference in the risk-free rate is accounted for the change in the suggested methodology and the difference in the asset beta is explained by natural stock market swings. The difference in the tax rate can be explained by a change in the corporate income tax rate occurred after 2011.

For 2012, Baker Tilly estimates an after-tax WACC of 7,43% for PTC, which compares to an after-tax WACC of 7,56% of the 2010 decision, and a pre-tax WACC of 10,85%, which compares to a pre-tax WACC of 10,28% of the 2010 decision. For 2013, Baker Tilly estimates an after-tax WACC of 8,01% for PTC and a pre-tax WACC of 11,69%.

Baker Tilly also conducts a sensitivity analysis of the after-tax and pre-tax WACC to changes in two parameters – the risk-free rate and the asset beta.

2. INTRODUCTION

2.1. Background

Industries that require significant investments in the installation of operating fixed assets for distribution and transmission channels, such as landlines for telecommunications and pipelines for water or gas, constitute natural monopolies. The high capital requirements constitute strong barriers to entry, granting the operators who installed the networks a first mover advantage. This advantage often translates in Significant Market Power (SMP) and a need for National Regulatory Authorities (NRAs) to regulate the pricing of services provided by these operators.

NRAs, under the scope of national legislation, are entrusted with the mission of protecting consumer rights while at the same time allow operators with SMP a fair and adequate rate of return on their investments when implementing price controls and tariffs. NRAs need to take into account the operators' significant investments when considering which assets are relevant for operations, thereby setting a regulatory asset base to which costs will be imputed. NRAs also take into account the capital structure used to finance this asset base and will set a level of revenue, through price control, that provides operators with rates of return in line with their costs of capital. NRAs then set prices and tariffs in line with the operators' eligible costs (from the regulatory asset base) that lead to the desired rate of return from operations above the cost of capital set by market conditions. If the cost of capital cannot be estimated from observing market conditions, the NRAs may estimate what would be the corresponding cost of capital of an efficient capital structure used to finance the regulatory asset base and set prices and tariffs to allow operators a rate of return in line with their cost of capital.

NRAs need to take into consideration the potential distortion of economic incentives for operators, who are not only subject to various forms of risk (business, demand, and competition, for instance) but also to regulatory risk, i.e., the risk that regulatory decisions may materially affect the operators' ability to remunerate its shareholders' investment. This consideration needs to be balanced against the best interests of the consumers, protecting them from monopoly pricing (the setting of prices by operators with SMP according to the consumers' maximum willingness to pay for the services provided) and rent-extraction (the transfer of wealth from consumers to operators with SMP through monopoly pricing).

2.2. Setting the cost of capital for PT Comunicações

PT Comunicações (PTC) is the largest landline telephone operator in Portugal and owns the largest telecommunications infrastructure in the country. It is a division of PT SGPS, the largest telecommunications group in Portugal, operating landline and mobile phone services and providing cable TV and internet access. As an operator with SMP, PTC is subject to the regulation of ANACOM, the Portuguese regulator for telephone and postal communications.

At the request of ANACOM, Baker Tilly has conducted a study to estimate the cost of capital of PTC for the years 2012 and 2013. Following regulatory precedents, namely ANACOM's prior decision for PTC's cost of capital[1] (henceforth the 2010 decision), and the principles of implementation of best practices (PIBs), outlined in the 2007 report[2] of the Independent Regulators Group, the network of independent European telecom regulators, Baker Tilly presents its report with recommendations regarding the methodology and estimates of parameters of the cost of capital of PTC for the years 2012 and 2013.

2.3. Recommendation of methodology

The 2010 decision and the methodology therein used to calculate PTC's cost of capital refer to a report made by PwC in 2009 regarding PTC's cost of capital for the period 2009-2011. The method used for computing the cost of capital is the Weighted Average Cost of Capital (WACC), which takes into account investors required returns for both Equity and Debt used to finance the capital structure.

Some literature[3] argues that the WACC is, in fact, not a cost nor a required return but rather a weighted average of a required return on equity and a cost of debt; which may mislead practitioners and companies in their estimates of the true opportunity cost of different forms of capital. Baker Tilly acknowledges this argument and posits that efficient capital markets will drive down the required returns on equity to the level of risk borne by investors to their opportunity costs, i.e., the return on an investment will be equal to the marginal opportunity cost of investors, when accounting only for non-diversifiable risks. Furthermore, Baker Tilly also argues that given the seniority of claims of creditors over shareholders in the event of a default – which in essence makes a loan a less risky investment in a company – in a scenario of no financial distress, the cost of debt to a company will be very similar to the borrowers' required return on the loans.

Therefore, and drawing from PIB 1 of the IRG's 2007 report, which states that *'WACC is a widely accepted methodology to calculate the cost of capital, understood by both the finance community and the industry'*, Baker Tilly acknowledges the methodology of the PwC report and the 2010 decision in using the WACC to compute PTC's cost of capital and reaffirms its usage in the current report.

In the 2010 decision, ANACOM defined the non-current assets as the regulatory asset base, or basis of return for the cost of capital, given the direct return on the investment made by PTC in its

[1] ANACOM (2010): *Decision on the definition of the methodology to be used for calculating the cost of capital of PT Comunicações, S.A., applicable to the three-year period of 2009-2011*. [online]
[2] Independent Regulators Group (2007): *Principles of Implementation and Best Practice for WACC calculation*. [online]
[3] Fernández, P (2011): *WACC: definitions, misconceptions and errors* [online]

operational activity. This includes tangible and intangible assets as well as financial investments recognised in the Balance Sheet prior to the decision of setting the appropriate cost of capital. Baker Tilly acknowledges this methodology and offers no alternative, implicitly assuming this basis of return for the remainder of this report.

3. WACC – CONCEPTUAL FRAMEWORK

3.1. WACC definition

The WACC is a weighted average of the required return to equity by shareholders given all non-diversifiable risks and the cost of borrowed capital, i.e., debt. The formula for the WACC is:

Equation (1)

$$WACC = Ke \times (1 - Gearing) + Kd \times Gearing$$

where Ke is the opportunity cost of an investment in the equity of a company or the required return on equity, Kd is the cost of debt or the effective interest rate of the company's borrowings and Gearing is a ratio of how much debt is used to finance the capital structure, according to equation (2).

Equation (2)

$$Gearing = \frac{D}{(D + E)}$$

where D represents the total amount of debt, E the total amount of equity and D+E is the Enterprise Value of a company.

According to the Modigliani-Miller Theorem[4], the presence of debt in the capital structure increases the value of the company – the tax-deductibility nature of interest payments creates tax shields that add value to the company. Since tax shields are not a physical asset and have no meaning in terms of cash flows, their contribution to the value of a company is computed in the discount factor of future cash flows. Therefore, it is necessary to adjust the WACC to include the positive effect of a levered capital structure:

Equation (3)

$$WACC\ (after\ tax) = Ke \times (1 - Gearing) + Kd \times Gearing \times (1 - Tc)$$

where Tc is the corporate income tax rate. Note that the after tax WACC will be, for any percentage of Tc between 0 and 100, less or equal to the WACC.

[4] The M-M Theorem, first introduced in 1958, states that, in the absence of taxes, asymmetric information, bankruptcy and agency costs, a company's value will not be affected by the capital structure.

The after tax WACC will be the true measure of a company's cost of capital since it is the appropriate rate to discount future cash flows, as it takes into account shareholders' and creditors' required returns and opportunity costs and the positive effect of debt in the capital structure.

In the 2010 decision, ANACOM computes the pre-tax WACC according to Equation (4):

Equation (4)

$$WACC\ (before\ tax) = \frac{WACC\ (after\ tax)}{(1 - Tc)}$$

Baker Tilly acknowledges this method and does not propose any changes.

3.2. Estimate of WACC Parameters

3.2.1. Methodology

Having argued the relevance of WACC as an appropriate figure for the cost of capital of PTC, Baker Tilly proceeded to estimate the several parameters in equation (3). Using the 2010 decision and the PwC report as a basis, our analysis will consist in the following:

- analysis of the methodology used in the 2010 decision in the estimation of each parameter and a recommendation regarding the usage of such methodology;
- analysis of the regulatory precedent for each parameter and its relevance towards the estimation of the parameters of PTC's WACC;
- conduct estimations using the most recent and relevant data with current methodologies or, should there be a recommendation for changing a methodology, the alternative methodology proposed by Baker Tilly and the estimate yielded;
- Methodology recommended by Baker Tilly for each parameter;
- Computation of PTC's WACC.

3.2.2. Data

Data used will consist in the analysis of data of a benchmark of comparable companies. These comparable companies are Telecommunications operators in Europe and whose shares are traded in organised stock exchanges. Data will be retrieved from the Bloomberg database; the companies' respective Annual Reports; the Statistical Data Warehouse of the European Central Bank, Eurostat; and from recognised experts in Corporate Finance such as Aswath Damodaran and Pablo Fernández.

Data used for the calculation of the risk-free rate uses the average Sovereign 10-year Bond yields of two years of monthly observations – from January 2010 until December 2011 for the 2012 rate and from January 2011 until December 2012 for the 2013 rate – and the GDP of the Euro Zone countries for the years 2010, 2011 and 2012.

Data used for the calculation of beta will be the adjusted betas of the comparable companies retrieved from the Bloomberg database and Damodaran's estimate of the respective sector beta in Europe. Adjusted betas retrieved from Bloomberg are computed using 5 years of monthly observations – from January 2007 until December 2011 for the 2012 rate and from January 2008 until December 2012 for the 2013 rate. Damodaran estimates the beta of the Telecommunications Services sector (which includes the companies used in the benchmark) in Europe for both 2012 and 2013.

Data used for the calculation of the market risk premium includes the *ex-ante* figures for Portugal from Damodaran and Fernández and the *ex-post* figures for Portugal from the Bloomberg database.

Data used for the calculation of the gearing ratio will be retrieved from the companies' Annual Reports and the Bloomberg database. For the 2012 rate, the Annual Reports used will refer to the years of 2007 through 2011 (5 observations per company) and, alternatively, the information retrieved from the Bloomberg database will refer to quarterly information for the same period (20 observations per company). For the 2013 rate, data used will refer to the years of 2009 through 2012.

Data used for the calculation of the debt spread will be the comparable companies' CDS spread of 10-year Corporate Bonds in Euros, where applicable, retrieved from Bloomberg and Damodaran's estimate of the sector's debt spread. The CDS spreads retrieved from Bloomberg consist of two years of monthly observations (24 observations) – from January 2010 until December 2011 for the 2012 rate and from January 2011 until December 2012 for the 2013 rate. Damodaran estimates the sector's debt spread for both 2012 and 2013.

Data used for the calculation of the corporate tax rate will use the nominal and in force current corporate tax rates in Portugal for 2012 and 2013.

The regulatory precedents analysed are described below:

Table 1 – List of analysed regulatory decisions for European operators with SMP

Regulator	Country	Companies	Date of decision	Decision for the period
ComReg	Ireland	Eircom	22-05-2008	2008 - onwards
IBPT	Belgium	Belgian telecommunications operators	04-05-2010	2010 - 2013
AGCOM	Italy	Telecom Italia	11-11-2010	2010 - 2012
Ofcom	UK	BT Group companies	20-07-2011	2011 - 2014
ARCEP	France	France Télécom (currently Orange)	22-12-2011	2012
CMT	Spain	Spanish telecommunications operators	13-12-2012	2012

Source: Regulators' websites, Baker Tilly

The benchmark of comparable companies is as follows:

Table 2 – Benchmark of European Telecommunications operators

Company	Country
Belgacom	Belgium
BT Group	UK
Deutsche Telekom	Germany
Elisa OYJ	Finland
Hellenic Telecommunications	Greece
KPN KV	Netherlands
Magyar Telekom	Hungary
Orange (ex-France Télécom)	France
PT SGPS	Portugal
Swisscom	Switzerland
Telecom Italia	Italy
Telefónica	Spain
Telekom Austria	Austria
Telenor ASA	Norway
TeliaSonera AB	Sweden

Source: ANACOM

3.2.3. The cost of equity: Ke

The cost of equity is the parameter whose estimate is most subject to discussion as many different models have virtues and shortcomings. There are two main approaches to calculate the cost of equity: an *ex-post* approach, where historical returns for a given security are analysed, observing the realised return of an investment and assume today's investors hold the same risk-return profile thereby requiring the same return; or an *ex-ante* approach, where the estimate of the cost of equity reflects current investors' preferences and risk factors.

The *ex-post* approach assumes no changes occurred in the overall risks affecting the security or investors' preferences; given the increased integration of economies, the significant increase in financial instruments available for investment over the past decades, and the recent advances made in behavioural economics, it is hard to make the case that this approach yields appropriate results as argued by Fernández and Bilan (2007)[5]. The *ex-ante* approach relies on mathematical models which try to express investors' risk-return preferences, reflecting current expectations and market conditions; the forward-looking nature of these models subjects the *ex-ante* approach to estimation error (the possibility that a sample characteristic is not the true characteristic of the population).

Several authors like Damodaran (2006)[6], Fernández (2008)[7] and Ross, Westerfield and Jaffe (2002)[8] include in their works a variety of *ex-ante* models, although only four of them are used regularly by academics, practitioners and analysts:

A. The Capital Asset Pricing Model (CAPM);

B. The Three Factor Model;

C. The Arbitrage Pricing Theory Model (APT);

D. The Dividend Growth Model.

Either one of these models is based on three distinct components: (i) the risk-free rate, or the required return of a risk-free asset; (ii) the market risk premium, or the expected excess return of the equity market over the required return of a risk-free asset; and (iii) a coefficient of company-specific risk, or an estimate of the idiosyncratic, non-diversifiable risk of an investment in a security. A brief explanation of each model follows.

[5] Fernández, P and Bilan, A (2007): *110 Common Errors in Company Valuations* [online]
[6] Damodaran, A (2006): *Damodaran on Valuation: Security Analysis for Investment and Corporate Finance*. Hoboken, New Jersey: John Wiley & Sons, Inc.
[7] Fernández, P (2008): *Metodos de Valoracion de Empresas* [online]
[8] Ross, S, Westerfield, R and Jaffe, J (2002): *Corporate Finance*. New York, New York: McGraw-Hill

A. The Capital Asset Pricing Model (CAPM)

The CAPM was developed independently by several academics during the 1960s and aims to price individual securities or portfolios. The model states that the expected return of a security is a linear function of a risk-free rate, the security's beta (the coefficient of company-specific risk) and the expected market risk premium:

Equation (5)

$$E(Ri) = Rf + \beta i \times [E(Rm) - Rf]$$

where Rf is the risk-free rate, βi is security i's beta and $[E(Rm) - Rf]$ is the expected market risk premium.

If the argument for market efficiency presented above holds, then rational investors will only invest in the security until the marginal return is equal to the opportunity cost:

Equation (6)

$$E(Ri) = Ke_i$$

where Ke_i is the marginal opportunity cost for investing in security i.

Risk-free rate

The risk-free rate is the rate an asset will return to an investor with no deviations from the expected return. Proxies used for the risk-free asset are Governmental Treasury-Bonds with the minimum credit-risk available, as measured by credit ratings. Governmental T-Bonds are considered less risky than Corporate Bonds due to the sovereigns' ability to impose taxes on its citizens to raise revenue in order to meet its financial obligations and, at the limit, print currency to pay its creditors. A T-Bond with a AAA-rating is considered to be essentially risk-free due to its probability of default and loss given default over time[9].

[9] Moody's Investors Service (2006): *Probability of Default Ratings and Loss Given Default Assessments for Non-Financial Speculative-Grade Corporate Obligors in the United States and Canada* [online]

Beta

Beta is the measure of sensitivity of a security to the financial markets' movements, i.e., it measures how much the security and the market move together. Therefore, beta can be construed as the measure of the integration of companies' shares with the overall market, or in other words, companies' exposure to the economic cycle. It is not observable and therefore must be estimated by regressing the security's returns against the market's returns:

Equation (7)

$$Ri = \alpha_i + \beta i \times Rm + \varepsilon_i$$

where α_i measures the portion of the security's return that is not explained by the market's returns and ε_i is the residual term of the security's return.

Beta can also be estimated the following way:

Equation (8)

$$\beta i = \frac{Covar(Ri, Rm)}{\sigma^2_{Rm}}$$

where $Covar(Ri, Rm)$ measures the covariance of the security i and the market's returns and σ^2_{Rm} is the measure of the market's returns variance.

If companies' shares are not publicly listed, it may not be possible to estimate beta other than an accounting beta, as argued by Damodaran (n.d.)[10], or according to Ross et al. (2002), use an industry beta. The accounting beta is obtained by regressing companies' earnings against the market's returns but given the small number of observations – unlisted companies often do not release quarterly results – and the possibility of window-dressing in earnings releases, this method is not very reliable. Using an industry beta assumes that companies operating in the same industry share the same exposure to the economic cycle and therefore have the same risk as measured by beta, adjusted for the financial risk borne by each company's decision on the capital structure; this approach is widely used.

Betas, as measures of the relative additional risk of an investment in a security poses to the broad portfolio, will only capture the systematic risk of the security. Accordingly, the beta of a security will only reflect the risks of investing in that security that cannot be diversified, i.e., the exposure to the risks a company faces. This includes the financial risk associated with the capital structure used by the company: the presence of debt in the capital structure raises the risk of financial distress which should reflect in an increased beta. This means that there are, in fact, two different betas: (i) the unlevered or asset beta, which reflects the beta of a company with no debt in the capital structure, and (ii) the levered beta, which takes into account the financial risk stemming from the presence of debt in the capital structure.

[10] Damodaran, A (n.d.): *Estimating Risk Parameters* [online]

The asset beta will be the beta estimated for a company with a capital structure financed entirely by equity while the levered beta will be the one estimated for a company with debt in its capital structure. The asset beta, by definition, will be the true systematic risk of a company as it is adjusted to compensate for financial risk. There are several interpretations of how to correctly determine the asset beta of a levered company – each author previously cited use different methods but there are two equations whose usage is recurrent across practitioners, NRAs and academics: (i) Hamada's equation, and (ii) the Harris-Pringle equation.

Hamada's equation is based on the Modigliani-Miller theorem that the presence of debt increases the overall value of the company and takes into account the tax-shield effect of debt:

Equation (9)

$$\beta l = \beta u + \beta u \times (1 - Tc) \times \frac{D}{E}$$

where βl is the levered beta of the company and βu the unlevered beta.

The Harris-Pringle equation assumes that the presence of debt in the capital structure influences a company's cost of debt and that the beta of debt will influence the levered beta, not the tax-shield effect:

Equation (10)

$$\beta l = \beta u + (\beta u - \beta d) \times \frac{D}{E}$$

where βd is the beta of debt of the company.

Since many debt instruments are not publicly traded (bank loans and revolving credit facilities, for example), the beta of the portfolio of debt instruments of a company cannot be estimated. Many practitioners work around this issue by assuming that the beta of debt is simply 0, in what is known as the Practitioners' equation:

Equation (11)

$$\beta l = \beta u + \beta u \times \frac{D}{E}$$

By not taking into account the existence of the interest tax-shield, Equation (11) is more appropriate in a scenario of uncertainty regarding the value of tax shields going forward, since it is questionable to assume with certainty what the company's future debt servicing schedule will be. Companies

engaged in an active debt management policy to maintain target leverage ratios through time are faced with uncertainty regarding the evolution of total enterprise value. This uncertainty affects the company's ability to predict a debt servicing schedule through the uncertainty of projecting the total stock of debt in the company's Balance Sheet.

Furthermore, the Hamada method requires more information to be collected, namely the effective tax rates of comparable companies. Given the similarity in the results from both methods, Baker Tilly recommends the usage of the Practitioners' method since it is based on weaker assumptions and requires less information to be collected

After unlevering the equity betas of comparable companies with the corresponding capital structures it is possible to compute the industry or asset beta through the average of the unlevered betas of comparable companies; this asset beta of an unlisted company is then levered using the company's capital structure. The resulting equity beta will be used in the CAPM to compute the levered cost of equity. If the company has no debt in the capital structure, then the asset beta is used in the CAPM to compute the unlevered cost of equity.

Market risk premium

The market risk premium can be broadly defined as the equities market excess returns over the risk-free rate. As risk averse and rational agents, investors require a premium for investing in a riskier asset such as equities or corporate Bonds over governmental Bonds. It can be estimated from an *ex-post* perspective, by observing and subtracting past returns of equity markets and governmental Bonds' yields, or from an *ex-ante* perspective, by surveying academics, practitioners and analysts about their expectations regarding the overall behaviour of financial markets. Both approaches are widely used but at the same time both have shortcomings: the *ex-post* approach assumes that (i) historical performances of equities and Bonds alike will repeat, (ii) investors' preferences and risk aversion are constant over time, and (iii) may be miscalculated due to sample bias from the negative autocorrelation of returns; the *ex-ante* approach is based on personal beliefs and subject to estimate error.

B. The Three Factor Model

The Three Factor Model, also known as the Fama-French (FF) Model for its authors Eugene Fama and Kenneth French, argues that listed companies' shares have excess returns according to several risk parameters rather than the exposure to the market, such as the relative size of companies against its peers as measured by market capitalization, and the relation of companies' valuation by market capitalization against book value which can be seen as a sign of high or low growth. It estimates the expected return of a stock as a linear function of the risk-free rate and these factors:

Equation (12)

$$E(Ri) = Rf + \beta_1 \times [E(Rm) - Rf] + \beta_2 \times SMB + \beta_3 \times HML$$

where SMB is the premium required by investors of small market-cap companies against their large market-cap peers and HML is the premium required by investors of high book value-to-market value companies (value stocks) against low book value-to-market value companies (growth stocks). Each beta is individually regressed to against the parameters it measures: β_2 is measured by regressing excess returns of small market-cap companies against large market-cap companies' returns and β_3 is measured by regressing value stocks' excess returns against growth stocks' returns.

The FF Model extends the CAPM by adding other factors than just the market premium in order to account for companies' unobservable risks.

C. The Arbitrage Pricing Theory Model (APT)

The APT is a generalization of the FF model since it considers that the expected return of a security can be modelled as a linear function of an undetermined number of factors, such as macroeconomic variables or other market indices:

Equation (13)

$$E(Ri) = Rf + \beta_{i,1} \times F_1 + \beta_{i,2} \times F_2 + \cdots + \beta_{i,n} \times F_n$$

where $\beta_{i,j}$ is the sensitivity of security i to factor j. Each beta is individually computed by regressing the securities' excess returns against the factor it measures.

The APT Model relies on the assumption that securities' returns can be modelled by several factors which may fully explain each security's idiosyncratic risk and that by fully pricing a security it becomes impossible to exploit arbitrage opportunities.

D. The Dividend Growth Model

The Dividend Growth Model, also known as the Gordon Growth Model, states that the price of a security is the present value of the stream of future cash flows for the holder of the security; therefore, the current price of a security will be the sum of all expected dividends discounted at the cost of equity:

Equation (14)

$$P_o = \sum_{t=0}^{\infty} Div_t \times \frac{(1+g)^t}{(1+Ke)^t}$$

where $\sum_{t=0}^{\infty} Div_t$ is the sum of all expected dividends, $(1+g)^t$ is a factor of expected growth and $(1+Ke)^t$ is the discount factor.

Simplifying equation (14), it is possible to derive that the current price of a security is a growing perpetuity of future dividends discounted at the cost of equity:

Equation (15)

$$P_o = \frac{Div_1}{Ke - g}$$

where Div_1 is the expected value of the next dividend:

Equation (16)

$$Div_1 = Div_0 \times (1+g)$$

From equation (15) and from the companies' guidance on dividend growth prospects it is possible to derive the discount factor:

Equation (17)

$$Ke = \frac{Div_1}{P_0} + g$$

This model is also valid for companies whose prospects for dividend growth are nil:

Equation (18)

$$Ke = \frac{Div_0}{P_0}$$

This approach for calculating the cost of equity is flawed since the estimate of future cash flows is subject to a large estimation error; it also assumes that dividend policy will remain unchanged in perpetuity.

IRG and Baker Tilly Recommendation for Calculating Ke

The IRG acknowledges the variety of methods that can be used to compute the cost of equity and each method's merits and shortcomings. However, given the widespread usage and comprehension by the finance community, regulators and the industry community, the IRG recommends the CAPM as the method to calculate the cost of equity in its PIB 4.

In accordance to previous regulatory decisions from ANACOM and its European peers, Baker Tilly agrees with this methodology and offers no alternative.

3.2.4. The cost of debt: Kd

The computation of the cost of borrowed capital, or cost of debt, is the subject of PIB 3 of the IRG's 2007 report. The PIB states that the cost of debt can be calculated either by (i) using accounting data; (ii) by the NRA calculating an efficient borrowing level (gearing) and the associated cost of debt; or (iii) by using the sum of the risk-free rate and the appropriate company specific premium (debt premium or spread over the risk-free rate as the investors' required premium to hold Bonds, Corporate as well as Sovereign, that are not considered as risk-free assets).

IRG and Baker Tilly Recommendation for Calculating Kd

PTC has obtained its borrowed capital from PT SGPS, an intra-group loan that obviously has recourse to PT SGPS consolidated Balance Sheet; PTC has no medium or long term borrowings from outside the scope of PT SGPS. In the 2010 decision, ANACOM argues that given the differences in business and capital structure risks, the debt premium of PT SGPS cannot be used as the debt premium of PTC. Baker Tilly acknowledges this argument which, according to IRG's PIB 3, leaves as the only option to compute the cost of debt of PTC the sum of the risk-free rate and a spread reflecting the business and capital structure risks of PTC.

4. COST OF EQUITY

4.1. Risk-free rate

4.1.1. Methodology of the 2010 decision

Having discussed above what constitutes a risk-free asset, it is necessary to compare the results that using the methodology of the 2010 decision would yield with the most recent data. The PwC report of 2009 argues that while the behaviour of coupons and yields of Portuguese T-Bonds (*Obrigações do Tesouro Português*) started to show some decoupling when measured against German T-Bonds (*Bund*), the overall stability of yields of Portuguese T-Bonds led PwC to conclude that it constituted a reasonable proxy for the risk-free asset. **ANACOM, in its 2010 decision, accepted this argument and chose to use as the risk-free rate the average of two-year monthly observations of the interest rate of 10-year Portuguese T-Bonds – a rate of 4,47%. This rate was later changed to 4,80% in an initial review[11] to reflect the rise in interest rates of the 10-year Portuguese T-Bonds occurred after the 2010 decision was made public (henceforth the 2011 review) and afterwards to 5,36% in a final review of the 2011 WACC[12].**

4.1.2. Regulatory precedent

The regulatory precedent for the risk-free rate, drawn from the regulatory decisions analysed, is as follows:

Table 3 – Regulatory precedent for the risk-free rate

Regulator	Methodology utilised	Value
ComReg	Spot yield of a 10Y Sovereign Irish Bond + a discretionary 0,5% spread	4,50% - 5,00%
IBPT	Methodology not avaliable	4,00%
AGCOM	Spot yield of a 10Y Sovereign Italian Bond	3,90%
Ofcom	Spot yield of a 5Y Sovereign English Bond, adjusted for inflation	4,40%
ARCEP	Spot yield of a 10Y Sovereign French Bond	3,20%
CMT	Average yield of a 10Y Sovereign Spanish Bond, 6 months of daily data	5,53%

Source: Regulators, Baker Tilly

Regulators have largely used the spot yield of the 10-year Sovereign Bonds of the respective countries.

Baker Tilly believes this approach to be flawed: average yields over a long period provide a clearer picture of the trend of the yields, whereas a single observation can be an outlier. Baker Tilly also

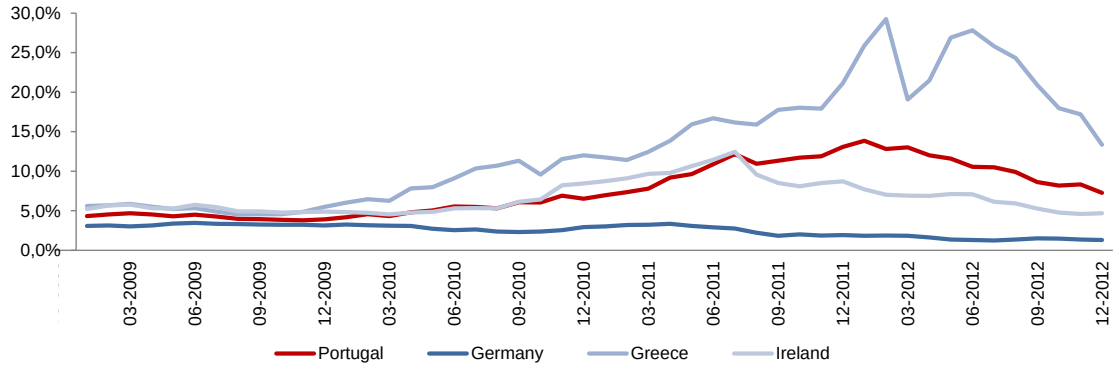
[11] ANACOM (2011): *Final decision on the Review of the calculation of the rate of the cost of capital of PT Comunicações, S.A. applicable to 2010 and 2011* [online]
[12] ANACOM (2012): *Final decision on the review of calculation of the cost-of-capital rate of PT Comunicações, S.A. for 2011*. [online]

believes that the Portuguese Sovereign 10-year yield does not accurately reflects the yield of a risk-free asset, as argued below.

4.1.3. Macroeconomic context

In light of the financial markets instability of the last few years and particularly considering the tightening of credit flows to the Euro Zone peripheral economies that has started in April 2010, triggering the European Sovereign Debt Crisis and the subsequent bailouts of Greece, Ireland and Portugal, the methodology followed in the 2010 decision may not be appropriate. Baker Tilly analysed several financial indicators to ascertain the appropriateness of using Portuguese T-Bonds as the risk-free asset.

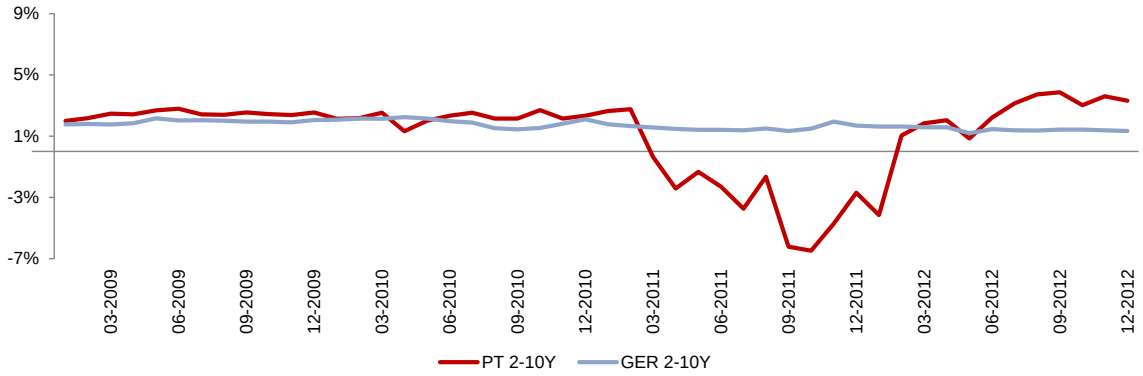
Chart 1 – Evolution of selected Euro Zone countries 10-year Sovereign yields



Source: ECB, Baker Tilly

From Chart 1, it is clear that a significant gap occurred since April 2010 and since then yields have been diverging.

Chart 2 – Spreads between Portuguese 2 and 10-year yields and German 2 and 10-year Sovereign yields

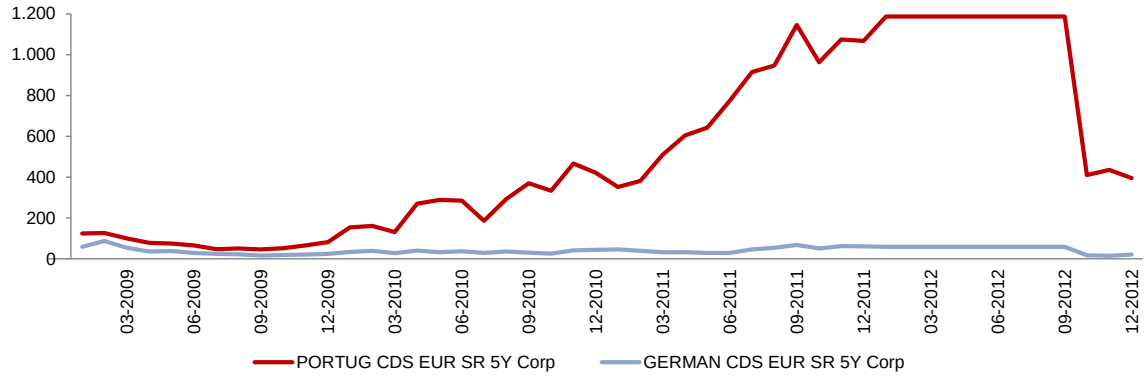


Source: Bloomberg, Baker Tilly

A more careful analysis of the spread between yields for the 2 and 10 year maturities for both Portuguese and German generic Sovereign yields shows a stable and positive spread for the German yield curve until July 2010. The negative spread in Portuguese yields from March 2011 onwards is the consequence of an inversion of the yield curve, reflecting investors' expectations of an economic downturn; this inversion may also be an indicator of the possibility of default of the Portuguese Sovereign. The spread in German yields remains fairly stable and positive throughout the period, reinforcing the assertion that the German Sovereign Bonds are less risky than Portuguese Sovereign Bonds.

We turn our analysis to the behaviour of Credit Default Swaps (CDS). Movements in CDS are a more direct indicator of investors' expectations regarding default probabilities of insured credit securities: escalating CDS prices represent an increase in the probability of default.

Chart 3 – Portuguese and German Sovereign 5-year senior CDS in EUR



Source: Bloomberg, Baker Tilly

It is clear that a decoupling of CDS has occurred since December 2009. This spread widened at a fast pace after July 2010, strengthening the hypothesis of investors' expectations of a default of Portuguese Sovereign debt.

To further establish the risk of default of Portuguese T-Bonds, we focus our analysis on another empirical indicator of risk: the annualised standard deviation of holding-period returns. The standard deviation of returns, or volatility of prices, is used by academics and practitioners as a measure of risk associated with securities traded in organised exchanges. Baker Tilly analysed several securities and stock indices to draw comparisons between the volatilities of different securities. The volatility for each security and stock index was computed as the annualised standard deviation of returns drawn from monthly observations for the period starting in January 2009 and ending in December 2012.

Table 4 – Annualised volatility of Portuguese and German Sovereign Bonds and benchmark of stock indices

Secuirty	Description	Annualised volatility
PGB 4.45 06/15/2018 Govt	Portuguese 5-year OT	25,25%
PGB 3.85 04/15/2021 Govt	Portuguese 8-year OT	22,93%
PGB 4.95 10/25/2023 Govt	Portuguese 10-year OT	24,68%
OBL 0.75 02/24/2017 #165 Govt	German 4-year Bund	2,66%
DBR 2.0 01/04/2022 Govt	German 9-year Bund	7,05%
PSI20 Index (PSI 20)	Index of largest 20 Portuguese Stocks	18,73%
SPX Index (S&P 500)	Index of 500 US Large Market Cap Stocks	17,18%
SXXP Index (STOXX Europe 600)	Index of 600 European Stocks	15,77%

Source: Bloomberg, Baker Tilly

Analysing the numbers from Table 4, it is clear that if volatility is taken as a reliable indicator of risk, then Portuguese Bonds are considerably more risky than German Bonds, since the annualised volatility of Portuguese Bonds is in the same range of stock indices' annualised volatility. Stocks are intrinsically considered riskier than Bonds and as such have naturally higher price volatility.

There is another indicator that may reinforce our analysis: the coupon rates of Portuguese Sovereign Bonds and Portuguese Corporate Bonds demanded by investors. Given the reduced uncertainty in cash-flows stemming from coupon payments over the repayment of the principal of a Bond in the long-term, a higher coupon for Bonds with the same maturity will reflect a perception of increased risk of those cash-flows; therefore investors require larger coupon rates. This analysis can show the perception of risk of Portuguese Sovereign Bonds when compared with Portuguese Corporate Bonds. Baker Tilly analysed the required coupon rate for selected Portuguese Corporate and Sovereign Bonds issued between 2008 and 2013.

Table 5 – Coupon rates of selected Portuguese Corporate and Sovereign Bonds issued between June 2008 and May 2013

Secuirty	Description	Issue date	Coupon rate
REFER 4.25 12/13/2021 Corp	REFER 15-year Corporate bond	Jun-2008	4,25%
METLIS 5.75 02/04/2019 Corp	Metro de Lisboa 10-year Corporate bond	Feb-2009	5,75%
CAMFER 4.17 10/16/2019 Corp	CP 10-year Corporate bond	Oct-2009	4,17%
ELEPOR 5.75 09/21/2017 Corp	EDP 5-year Corporate bond	Sep-2012	5,75%
PORTEL 5.875 04/17/2018 Corp	PT SGPS 6-year Corporate bond	Oct-2012	5,88%
RENEPL 4.125 01/31/2018 Corp	REN 5-year Corporate bond	Jan-2013	4,13%
PORTEL 4.625 05/08/2020 Corp	PT SGPS 7-year Corporate bond	May-2013	4,63%
PGB 3.85 04/15/2021 Govt	Portuguese Sovereign 15-year OT	Feb-2005	3,85%
PGB 4.45 06/15/2018 Govt	Portuguese Sovereign 10-year OT	Feb-2008	4,45%
PGB 3.6 10/15/2014 Govt	Portuguese Sovereign 5-year OT	Mar-2009	3,60%
PGB 6.4 02/15/2016 Govt	Portuguese Sovereign 5-year OT	Feb-2011	6,40%
PGB 5.65 02/15/2024 Govt	Portuguese Sovereign 11-year OT	May-2013	5,65%

Source: Bloomberg, Baker Tilly

From Table 5, it is possible to draw parallelisms between (i) the Feb-2008 Sovereign 10-year Bond and the Feb-2009 Metro de Lisboa 10-year Bond and (ii) the Feb-2013 Sovereign 5-year Bond and the Jan-2013 REN 5-year Bond.

In the first example, the coupon rate demanded from a Sovereign Bond (4,45%) was less than the one demanded from a Corporate Bond (5,75%). Both Bonds have a 10-year maturity and were issued within one year of each other.

In the second example, the coupon rate demanded from a Sovereign Bond (6,40%) was larger than the one demanded from a Corporate Bond (4,13%). Both Bonds have a 5-year maturity and were issued within one month of each other.

These two examples show that over the last five years, required coupon rates of Portuguese Sovereign Bonds have increased or surpassed the required coupon rates of some Corporate Bonds.

In conclusion, we can state that over the course of the last years, Portuguese Sovereign Bonds have become more risky, through an increase in volatility and higher probability of default. Baker Tilly therefore recommends dropping the current methodology for calculating the risk-free rate.

4.1.4. Methodology recommended by Baker Tilly

Baker Tilly hereby proposes three different alternatives to use as the risk-free rate:

A. German Sovereign 10-year yield;

B. Composite of yields of Euro Zone countries, weighted by contribution to total GDP of sample countries;

C. Composite of yields of Euro Zone countries with AAA-rating, weighted by contribution to total GDP of sample countries.

A. German Sovereign 10-year yield

The German Bund is widely regarded as the safest financial asset denominated in Euros. Although not completely free from the risk of default, the yield in German Bunds is used by academics and practitioners alike as an appropriate proxy for the risk-free rate.

Table 6 – German Sovereign 10-year yields for 2012 and 2013

Parameter	WACC 2012	WACC 2013
German Sovereign 10-year yield	2,68%	2,05%

Source: ECB, Baker Tilly

The 2012 yield was computed as the average of monthly yields between January 2010 and December 2011 (24 observations), while the 2013 yield was computed as the average of monthly yields between January 2011 and December 2012 (24 observations). According to this methodology, the risk-free rate for calculating PTC's cost of capital in 2012 is 2,68%; the risk-free rate for calculating PTC's cost of capital in 2013 is 3,96% (both Table 6).

B. Composite of Sovereign 10-year yields of Euro Zone countries

The launch of the European Financial Stability Facility in 2010 was aimed at stabilizing the debt markets by buying Bonds from financially distressed peripheral countries under a mechanism of risk-pooling between contributing countries. It is expected that the European Financial Stability Facility will issue Bonds secured by participating countries' guarantees to raise funds and it is expected that these Bonds will have low yields due to the reduced risk. Therefore, these Bonds can be construed as a risk-free asset. Baker Tilly therefore believes that this approach estimates what would be the yield of such Bonds by accounting for the differences in participating countries' risks.

Table 7 – GDP of Euro Zone countries, contribution to overall GDP of sample, average yields and weighted average yield of Composite for the 2012 WACC

Country	GDP 2010 (M€)	GDP 2011 (M€)	Weighted average	Average yield
Austria	262.613	269.695	3,1%	3,27%
Belgium	322.247	328.175	3,8%	3,85%
Cyprus	15.327	15.408	0,2%	5,19%
Finland	164.164	168.641	2,0%	3,01%
France	1.772.645	1.808.575	21,0%	3,22%
Germany	2.379.441	2.451.511	28,3%	2,68%
Greece	193.765	179.998	2,2%	12,42%
Ireland	166.421	168.802	2,0%	7,67%
Italy	1.418.376	1.423.674	16,7%	4,73%
Luxembourg	33.177	33.726	0,4%	3,05%
Malta	5.484	5.584	0,1%	4,34%
Netherlands	549.265	554.453	6,5%	2,99%
Portugal	158.544	156.079	1,8%	7,82%
Slovakia	48.352	49.912	0,6%	4,16%
Slovenia	31.376	31.564	0,4%	4,40%
Spain	947.980	951.942	11,1%	4,85%
Weighted average 2012 yield of Composite				3,89%

Source: Eurostat, ECB, Baker Tilly

Table 8 – GDP of Euro Zone countries, contribution to overall GDP of sample, average yields and weighted average yield of Composite for the 2013 WACC

Country	GDP 2011 (M€)	GDP 2012 (M€)	Weighted average	Average yield
Austria	269.695	271.987	3,2%	2,85%
Belgium	328.175	327.253	3,8%	3,62%
Cyprus	15.408	15.035	0,2%	6,39%
Finland	168.641	167.247	2,0%	2,45%
France	1.808.575	1.808.826	21,1%	2,93%
Germany	2.451.511	2.467.972	28,7%	2,05%
Greece	179.998	168.515	2,0%	19,12%
Ireland	168.802	170.385	2,0%	7,89%
Italy	1.423.674	1.389.948	16,4%	5,46%
Luxembourg	33.726	33.832	0,4%	2,37%
Malta	5.584	5.642	0,1%	4,31%
Netherlands	554.453	547.538	6,4%	2,46%
Portugal	156.079	151.008	1,8%	10,39%
Slovakia	49.912	50.923	0,6%	4,50%
Slovenia	31.564	30.827	0,4%	5,39%
Spain	951.942	938.435	11,0%	5,64%
Weighted average 2013 yield of Composite				3,96%

Source: Eurostat, ECB, Baker Tilly

Weights were assigned to each country according to its average contribution to overall GDP over the periods considered. Yields were computed as the average of monthly observations of the preceding 24 months. According to this methodology, the risk-free rate for calculating PTC's cost of capital in 2012 is 3,89% (Table 7); the risk-free rate for calculating PTC's cost of capital in 2013 is 3,96% (Table 8).

Although Estonia has officially adopted the Euro as its currency effective January 1st of 2011, there are no Estonian Sovereign debt securities that comply with the definition of long-term interest rates as computed by the ECB[13] as well as no suitable proxy indicators having been identified. Therefore, and although there are officially 17 members of the Euro Zone, Baker Tilly will only consider the 16 members of Tables 7 and 8 with debt securities compliant with the ECB definition of long-term interest rates.

[13] Retrieved from ECB' website.

C. Composite of Sovereign 10-year yields of Euro Zone countries with AAA-rating

Of the contributing countries to the EFSF, only those having a composite rating of AAA by international credit agencies are expected to be able to exercise the guarantees provided without entering in financial distress. The ECB' Eurosystem credit assessment framework for the standards of eligible assets for collateral cites the following four credit rating agencies as External Credit Assessment Institutions (ECAI): DBRS, FitchRatings, Moody's and Standard & Poor's[14]. ECB considers the credit rating of Sovereign issuers to be the first-best among ECAI credit ratings[15].

The AAA-rated Euro Zone countries are Austria (Moody's)[16], Finland (Moody's)[17], France (DBRS)[18], Germany (Moody's)[19], Luxembourg (Moody's)[20] and the Netherlands (Moody's)[21]. Working under a hypothetical scenario, Baker Tilly built a composite of these countries' Sovereign Bond yields based on their contribution to overall GDP:

Table 9 – GDP of countries of Euro Zone countries with AAA-rating, contribution to overall GDP of sample, average yield of Euro Zone AAA-countries and weighted average yield of Euro Zone AAA-Composite for the 2012 WACC

Country	GDP 2010 (M€)	GDP 2011 (M€)	Weighted average	Average yield
Austria	262.613	269.695	5,09%	3,27%
Finland	164.164	168.641	3,19%	3,01%
France	1.772.645	1.808.575	34,28%	3,22%
Germany	2.379.441	2.451.511	46,24%	2,68%
Luxembourg	33.177	33.726	0,64%	3,05%
Netherlands	549.265	554.453	10,56%	2,99%
Weighted average 2012 yield of AAA-Composite				2,94%

Source: Eurostat, ECB, Baker Tilly

[14] Retrieved from ECB's website.
[15] Official Journal of the European Union (2011): *Guideline of the European Central Bank of 20 September 2011 on monetary policy instruments and procedures of the Eurosystem (recast)*. [online]
[16] Retrieved from Moody's' website.
[17] Retrieved from Moody's' website.
[18] Retrieved from DBRS's website.
[19] Retrieved from Moody's' website.
[20] Retrieved from Moody's' website.
[21] Retrieved from Moody's' website.

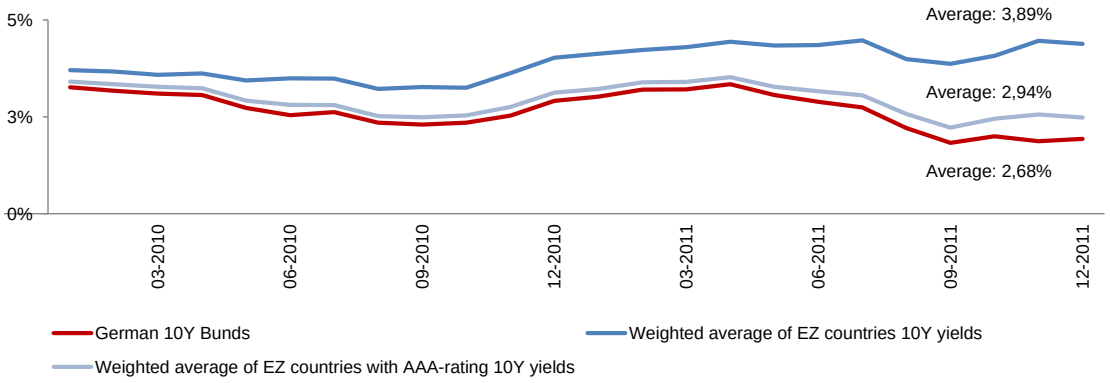
Table 10 – GDP of countries of Euro Zone countries with AAA-rating, contribution to overall GDP of sample, average yield of Euro Zone AAA-countries and weighted average yield of Euro Zone AAA-Composite for the 2013 WACC

Country	GDP 2011 (M€)	GDP 2012 (M€)	Weighted average	Average yield
Austria	269.695	271.987	5,12%	2,85%
Finland	168.641	167.247	3,17%	2,45%
France	1.808.575	1.808.826	34,18%	2,93%
Germany	2.451.511	2.467.972	46,48%	2,05%
Luxembourg	33.726	33.832	0,64%	2,37%
Netherlands	554.453	547.538	10,41%	2,46%
Weighted average 2013 yield of AAA-Composite				2,45%

Source: Eurostat, ECB, Baker Tilly

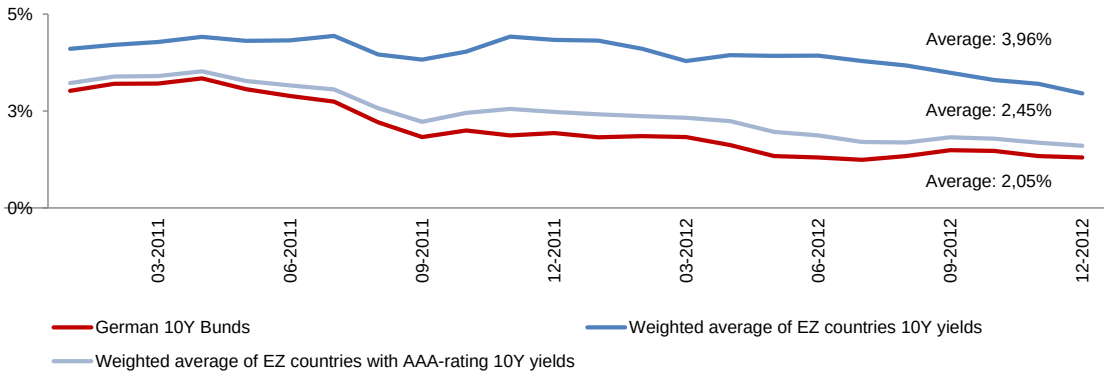
Weights were assigned to each country according to its average contribution to overall GDP over the periods considered. Yields were computed as the average of monthly observations of the preceding 24 months. According to this methodology, the risk-free rate for calculating PTC's cost of capital in 2012 is 2,94% (Table 9); the risk-free rate for calculating PTC's cost of capital in 2013 is 2,45% (Table 10).

Chart 4 – Evolution of proposed 2012 yield curves



Source: Baker Tilly

Chart 5 – Evolution of proposed 2013 yield curves



Source: Baker Tilly

Analysing both Charts 4 and 5 it is clear that yields for German Bunds, the Composite and the AAA-Composite have been stable between 2% and 4% without much volatility, demonstrating that these measures can be used as reasonable proxies for the risk-free rate. The risk-free rate according to each methodology is its average rate.

Methodology recommended by Baker Tilly

The three different methodologies suggested to compute the risk-free rate have yielded the following results:

Table 11 – Different methodologies suggested by Baker Tilly and final Methodology recommended by Baker Tilly for the risk-free rate

Methodology	WACC 2012	WACC 2013
German Sovereign 10-year yield	2,68%	2,05%
Composite of yields of Euro Zone countries	3,89%	3,96%
Composite of yields of Euro Zone countries with AAA-rating	2,94%	2,45%
Recommendation by Baker Tilly	**3,89%**	**3,96%**

Source: Baker Tilly

Baker Tilly recommends that the risk-free rate should be the yield of the Euro Zone countries Composite for both 2012 and 2013 as it incorporates the German 10-year yield and at the same times takes into account the effect of the Sovereign Debt Crisis in all the Euro Zone countries. Furthermore, the yields of Euro Zone countries with AAA-rating (including the German 10-year yield) have experienced a 'flight-to-quality' effect, with later observations being below the historical average yields (Tables I.1 through to I.3), which creates a downward bias when computing the average yield for the periods considered.

Baker Tilly recommends a risk-free rate of 3,89% for calculations of PTC's cost of capital of 2012 and 3,96% for calculations of PTC's cost of capital of 2013.

4.2. Beta

4.2.1. Methodology of the 2010 decision

The calculations of the beta for PTC in the 2010 decision are based on the beta from the benchmark of comparable companies and the regulatory precedent of NRAs for the betas of operators with SMP. **The 2010 decision further explains that the estimates of the benchmark companies' betas are done with 5 years' worth of monthly observations to increase robustness, resulting in an asset beta of 0,67 (implied from an equity beta of 0,85).** The 2010 decision refers that adjusted betas are used instead of raw betas. The paper by Fernández and Bermejo (2009)[22] argues that adjusted betas provided a better measure of correlation of individual stock returns with market returns.

4.2.2. Regulatory precedent

The regulatory precedent for the beta, drawn from the regulatory decisions analysed, is as follows:

Table 12 – Regulatory precedent for the unlevered beta

Regulator	Methodology utilised	Value
ComReg	Composite of benchmark companies	0,45 - 0,70
IBPT	Methodology not avaliable	0,50 - 0,55
AGCOM	Discretionary	0,85
Ofcom	Composite of own beta and other utility companies' betas	0,67 - 1,14
ARCEP	Beta of regulated activities, discretionary	0,80
CMT	Composites of benchmark companies	0,49 - 0,73

Source: Regulators, Baker Tilly

Regulators either use a beta drawn from a composite of benchmark companies or a discretionary beta used by regulators for regulated activities; this latter beta is usually 1 or close. The regulated activities-beta is argued to be similar to the market beta given the steady behaviour companies operating in regulated markets, due largely to the fact that many of these companies constitute natural monopolies.

Baker Tilly agrees with the calculation of a beta drawn from comparable companies.

[22] Fernández, P and Bermejo, V (2009): *β=1 does a better job than calculated betas* [online]

4.2.3. Methodology recommended by Baker Tilly

Baker Tilly agrees with the approach of the 2010 decision and suggests analysing an additional factor to have a broader base of data in the calculations of PTC's beta:

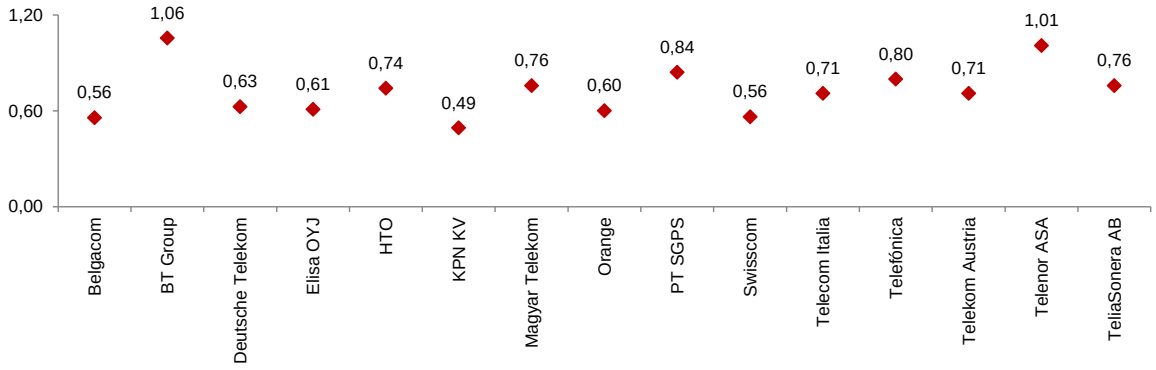
A. Beta of benchmark companies;

B. Damodaran: estimates of sector betas.

A. Beta of benchmark companies

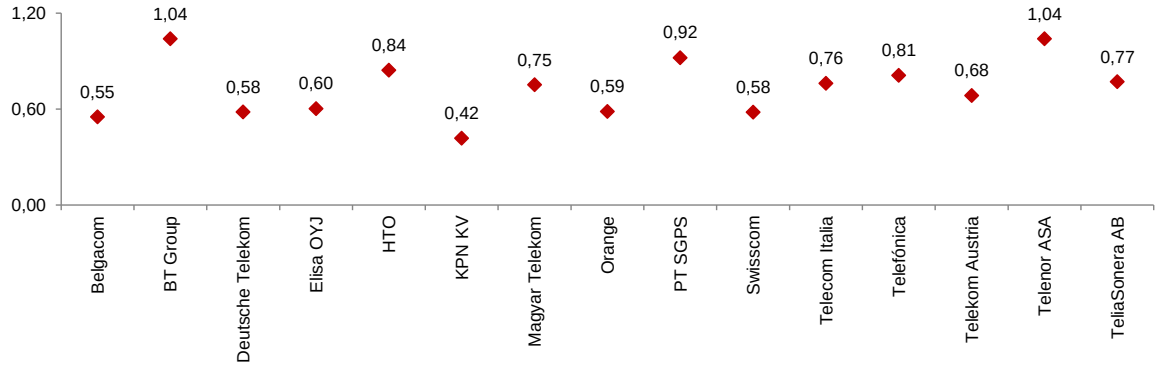
The following chart presents the adjusted betas from Bloomberg for the benchmark companies. It is important to mention that these betas are estimated by regressing companies' returns against relative indices and as such capture the financial risk from leverage, as discussed earlier; therefore these betas are the levered betas of the benchmark companies. As argued above, adjusted betas are better at estimating future returns than raw betas; therefore, Baker Tilly will use adjusted betas in its analysis.

Chart 6 – Adjusted levered 2012 betas of benchmark companies



Source: Bloomberg, Baker Tilly

Chart 7 – Adjusted levered 2013 betas of benchmark companies



Source: Bloomberg, Baker Tilly

2012 betas were estimated with monthly data from January 2007 until December 2011; 2013 betas were estimated with monthly data from January 2008 until December 2012.

Having established that using adjusted betas is an appropriate approach to find the benchmark beta, it is necessary to adjust for the capital structure of the companies. As argued above in section “Beta” under the subchapter “3.2.3. The cost of equity: Ke”, the Practitioners’ equation provides similar results to the Hamada equation. As it requires less information to be collected and thus is less subject to estimate errors and other types of error, Baker Tilly will use the Practitioners’ equation to unlever the adjusted betas. The gearing ratios used will be the ones stemming from the companies’ Annual Reports – please check subchapter “5.1.3. Methodology Recommended by Baker Tilly” for Baker Tilly’s recommendation of which information set to use when computing the gearing ratio.

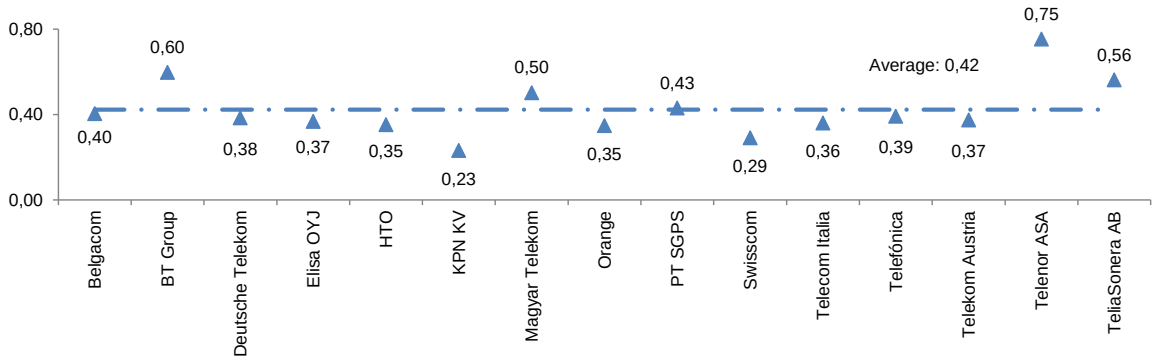
Table 13 – Average gearing ratios for 2012 and 2013 of benchmark companies for unlevering the adjusted levered betas, data from Annual Reports

Company	WACC 2012	WACC 2013
Belgacom	27,5%	27,0%
BT Group	43,4%	43,6%
Deutsche Telekom	38,5%	39,6%
Elisa OYJ	39,6%	41,4%
Hellenic Telecommunications	52,4%	52,7%
KPN KV	53,0%	56,0%
Magyar Telekom	33,6%	33,4%
Orange (ex-France Télécom)	42,2%	42,7%
PT SGPS	48,8%	50,4%
Swisscom	48,4%	46,8%
Telecom Italia	49,2%	49,7%
Telefónica	51,0%	51,1%
Telekom Austria	47,2%	49,0%
Telenor ASA	25,3%	25,4%
TeliaSonera AB	25,9%	29,1%
Average gearing ratio of benchmark	41,7%	42,5%

Source: Annual Reports of comparable companies, Baker Tilly

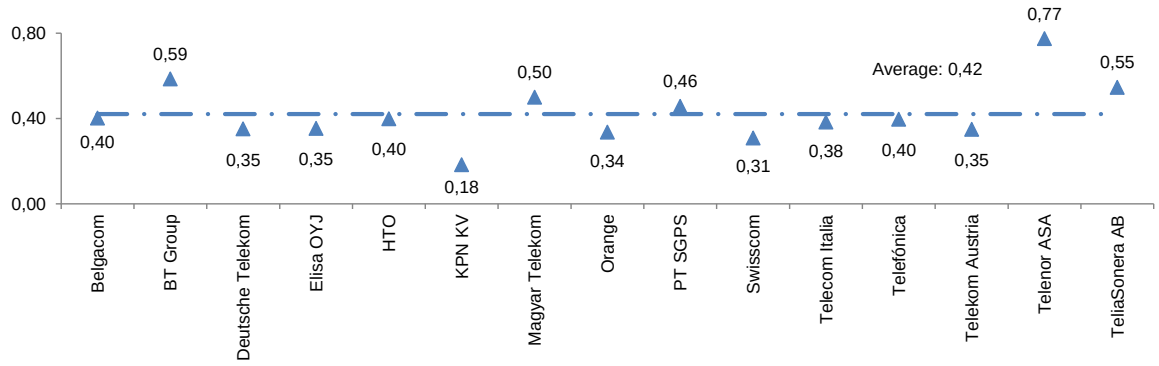
The following Charts present the asset betas calculated for 2012 and 2013, computed after unlevering the respective adjusted levered beta with the ratios found in Table 13 and with equation (11).

Chart 8 – 2012 asset betas of benchmark companies using data from Annual Reports



Source: Baker Tilly

Chart 9 – 2013 asset betas of benchmark companies using data from Annual Reports



Source: Bloomberg, Baker Tilly

Analysing both Charts 8 and 9, a simple average can be used as the beta of the benchmark of comparable companies as there are no clear outliers present in the sample. According to this methodology, the unlevered beta for calculating PTC's cost of equity in 2012 is 0,42, the average of comparable companies' unlevered adjusted betas in 2012 (Chart 8); the unlevered beta for calculating PTC's cost of equity in 2013 is 0,42, the average of comparable companies' unlevered adjusted betas in 2013 (Chart 9).

These estimates are smaller than the estimated beta of the benchmark of 0,69 in the 2010 decision. Ross et al. (2002) argue that the industry beta – here assumed to be appropriately represented as the beta of the benchmark – can change over time and although these changes can be economically significant (a large enough variation in beta may significantly affect the cost of equity and the valuation of businesses and companies) they may not be statistically significant.

B. Damodaran: Estimates of sector betas

Other valuable sources of input are the estimates of recognised academics and practitioners; to this extent, Baker Tilly analysed Damodaran's estimates of asset betas for European telecommunications operators which are as follows:

Table 14 – Estimates of the 2012 and 2013 asset betas of European telecommunications operators by Damodaran

Parameter	WACC 2012	WACC 2013
Average unlevered beta of European telecoms	0,84	0,83

Source: Damodaran, Baker Tilly

According to this methodology, the unlevered beta for calculating PTC's cost of equity in 2012 is 0,84, the average of European Telecoms' unlevered adjusted betas in 2012; the unlevered beta for calculating PTC's cost of equity in 2013 is 0,83, the average of European Telecoms' unlevered adjusted betas in 2013 (both Table 14).

Methodology recommended by Baker Tilly

As mentioned in the section "Beta" under the subchapter "3.2.3. The cost of equity: Ke", it is necessary to compute the asset beta of PTC, which will then levered according to the target capital structure to compute the equity beta. This equity beta will ultimately be the one used to compute the cost of equity for PTC.

The two different methodologies suggested to compute the asset beta have yielded the following results:

Table 15 – Different methodologies suggested by Baker Tilly and final Methodology recommended by Baker Tilly for the asset beta

Methodology	WACC 2012	WACC 2013
Average unlevered adjusted beta of comparable companies	0,42	0,42
Average unlevered beta of European telecoms - Damodaran	0,81	0,82
Recommendation by Baker Tilly	**0,42**	**0,42**

Source: Baker Tilly

Baker Tilly recommends that the asset beta should be the average unlevered adjusted beta of comparable companies for both 2012 and 2013 as it portraits more accurately the market conditions of a company operating in the sector, whereas the sample used by Damodaran includes companies that are arguably not really comparable to PTC.

Baker Tilly recommends an asset beta of 0,42 for calculations of PTC's cost of capital of 2012 and 0,42 for calculations of PTC's cost of capital of 2013.

The recommendation of an asset beta and an average gearing ratio from the benchmark of comparable companies allows for the calculation of a recommended equity beta:

Table 16 – Calculation of the equity beta for PTC, according to the asset beta and gearing ratio recommended by Baker Tilly

Parameter	WACC 2012	WACC 2013
Recommended asset beta for PTC	0,42	0,42
Recommended gearing ratio for PTC	41,74%	42,52%
Equity beta for PTC with gearing ratio from benchmark	0,73	0,73

Source: Baker Tilly

Baker Tilly recommends an equity beta of 0,73 for calculations of PTC's cost of capital of 2012 and 0,73 for calculations of PTC's cost of capital of 2013.

4.3. Market risk premium

4.3.1. Methodology of the 2010 decision

In the 2010 decision, **ANACOM decides to incorporate both the *ex-post* and *ex-ante* approaches from various sources, resulting in a weighted average of several estimates of the market risk premium, arriving at a final estimate of 5,86% as the market risk premium.**

4.3.2. Regulatory precedent

The regulatory precedent for the market risk premium, drawn from the regulatory decisions analysed, is as follows:

Table 17 – Regulatory precedent for the market risk premium

Regulator	Methodology utilised	Value
ComReg	Dimson-Marsh-Staunton (DMS) and regulatory precedent	4,80% - 6,00%
IBPT	Methodology not avaliable	5,25%
AGCOM	Dimson-Marsh-Staunton (DMS)	4,50%
Ofcom	Dimson-Marsh-Staunton (DMS)	5,00%
ARCEP	Historical value used by the regulator	5,00%
CMT	Ibbotson, Dimson-Marsh-Staunton (DMS), HOLT and Fernández	5,80%

Source: Regulators, Baker Tilly

Regulators converge on the usage of the DMS estimates of market risk premia for the respective countries.

Baker Tilly does not agree this methodology, since the cost of capital rate should reflect the current market conditions of companies in exogenous parameters – namely the risk-free rate, debt spread and corporate tax rate –and endogenous ones – beta and gearing. The market risk premium should be an expectation of rational investors, according to their beliefs and experience. Therefore, the market risk premium should be *ex-ante* rather than *ex-post*.

4.3.3. Methodology recommended by Baker Tilly

Based on arguments presented in the section 'The cost of equity: Ke' in chapter 3.2. Estimate of WACC Parameters, Baker Tilly suggests changing the current methodology and to consider the following parameters:

A. Damodaran: *ex-ante* estimates of the market risk premium;

B. Fernández: *ex-ante* estimates of the market risk premium from surveys;

C. Bloomberg: *ex-post* Portuguese market risk premium.

A. Damodaran: Ex-ante estimates of the market risk premium

Damodaran regularly estimates the market risk premium of nearly all countries in the world.

Table 18 – Damodaran's estimates of the Portuguese *ex-ante* market risk premium

Parameter	WACC 2012	WACC 2013
Portuguese market risk premium	10,13%	10,68%

Source: Damodaran, Baker Tilly

According to this methodology, the Portuguese market risk premium for calculating PTC's cost of equity in 2012 is 10,13%; the Portuguese market risk premium for calculating PTC's cost of equity in 2013 is 10,68% (both Table 18).

B. Fernández: Ex-ante estimates of the market risk premium

Fernández regularly conducts surveys among academics, practitioners and analysts from different countries. Most respondents cite as their sources the market risk premium of Damodaran, DMS, Ibbotson and other.

Table 19 – Fernández et al. estimates of the Portuguese *ex-ante* market risk premium

Parameter	WACC 2012	WACC 2013
Portuguese market risk premium	6,50%	7,20%

Source: Fernández et al., Baker Tilly

According to this methodology, the Portuguese market risk premium for calculating PTC's cost of equity in 2012 is 6,50%; the Portuguese market risk premium for calculating PTC's cost of equity in 2013 is 7,20% (both Table 19).

C. Bloomberg: Ex-post Portuguese market risk premium

The Bloomberg database provides calculations for several economic and financial parameters. Baker Tilly retrieved the calculations of the Portuguese *ex-post* market risk premium of the preceding year. Therefore, the 2012 market risk premium is the 2011 observed market risk premium, whereas the 2013 market risk premium is the 2012 observed market risk premium.

Table 20 – Bloomberg estimates of the Portuguese *ex-post* market risk premium

Parameter	WACC 2012	WACC 2013
Portuguese market risk premium	1,66%	9,98%

Source: Bloomberg, Baker Tilly

According to this methodology, the Portuguese market risk premium for calculating PTC's cost of equity in 2012 is 1,66%; the Portuguese market risk premium for calculating PTC's cost of equity in 2013 is 9,98% (both Table 20).

The market risk premium computed by Bloomberg takes into account the country risk premium, i.e., incorporates information from both the risk-free rate of the country and the country premium (computed as the difference between the expected market return and the risk-free rate). Therefore, the Portuguese market risk premium computed by Bloomberg will be a function of the risk-free rate (Portuguese 10-year Sovereign yield) and the expected overall market return.

Since Bloomberg uses the Portuguese Sovereign yield for the country's risk-free rate, and given its significant variation during the years 2011 and 2012, the Portuguese market risk premium had to adjust considerably in order to maintain a stable expected market return. These adjustments account for the significant differences in the Portuguese market risk premium computed by Bloomberg.

Methodology recommended by Baker Tilly

The three different methodologies suggested to compute the market risk premium have yielded the following results:

Table 21 – Different methodologies suggested by Baker Tilly and final Methodology recommended by Baker Tilly for the market risk premium

Methodology	WACC 2012	WACC 2013
Portuguese market risk premium - Damodaran	10,13%	10,68%
Portuguese market risk premium - Fernández	6,50%	7,20%
Portuguese market risk premium - Bloomberg	1,66%	9,98%
Recommendation by Baker Tilly	**8,31%**	**8,94%**

Source: Baker Tilly

Baker Tilly recommends that the market risk premium should be the simple average of the *ex-ante* market risk premium for Portuguese companies found in the literature of Damodaran and Fernández.

Fernández computes the market risk premium through a survey of Portuguese academics, practitioners and analysts. The largest portion of respondents are analysts, who use a historical premium of 6,50% for both 2012 and 2013, well below of the premium used by the remaining respondents. Analysts reflect the increase in country risk on the risk-free rate rather than in the equity risk premium by using the Portuguese Sovereign yield as the risk-free rate and the historical market risk premium. Given Baker Tilly' recommendation of abandoning the Portuguese Sovereign yield as the risk-free rate in order to reflect the increase in the country risk in the market risk premium, Damodaran's calculations should be the reference for the market risk premium.

Baker Tilly also acknowledges that the parameters estimated for the calculation of the cost of capital must be grounded in both sound theory and practical use. Given the wide array of market risk premia used by Portuguese academics, analysts and practitioners, Baker Tilly argues that an average between Damodaran's and Fernández's estimates better capture what is the general consensus for the Portuguese market risk premium.

Baker Tilly recommends a market risk premium of 8,31% for calculations of PTC's cost of capital of 2012 and 8,94% for calculations of PTC's cost of capital of 2013.

5. COST OF DEBT

5.1. Gearing

5.1.1. Methodology of the 2010 decision

In the 2010 decision, **ANACOM uses as a base for computing the adequate gearing of PTC as the average of the regulatory precedent and the gearing of comparable companies, calculating the appropriate level of gearing of PTC to be 36,20%.**

5.1.2. Regulatory precedent

The regulatory precedent for the gearing ratio, drawn from the regulatory decisions analysed, is as follows:

Table 22 – Regulatory precedent for the gearing ratio

Regulator	Methodology utilised	Value
ComReg	Discretionary ratio	30,00% - 50,00%
IBPT	Methodology not avaliable	25,00% - 40,00%
AGCOM	Composite of benchmark companies	N.A.
Ofcom	Historical own ratio, discretionary	50,00%
ARCEP	Ratio of regulated activities, discretionary	40,00%
CMT	Composite of benchmark companies	47,37%

Source: Regulators, Baker Tilly

Regulators appear to converge on the calculation of a gearing ratio drawn from comparable companies.

Baker Tilly agrees with the calculation of a gearing ratio drawn from comparable companies.

5.1.3. Methodology recommended by Baker Tilly

Baker Tilly agrees with the methodology of the 2010 decision and suggests a different approach to observe the gearing of the benchmark of comparable companies:

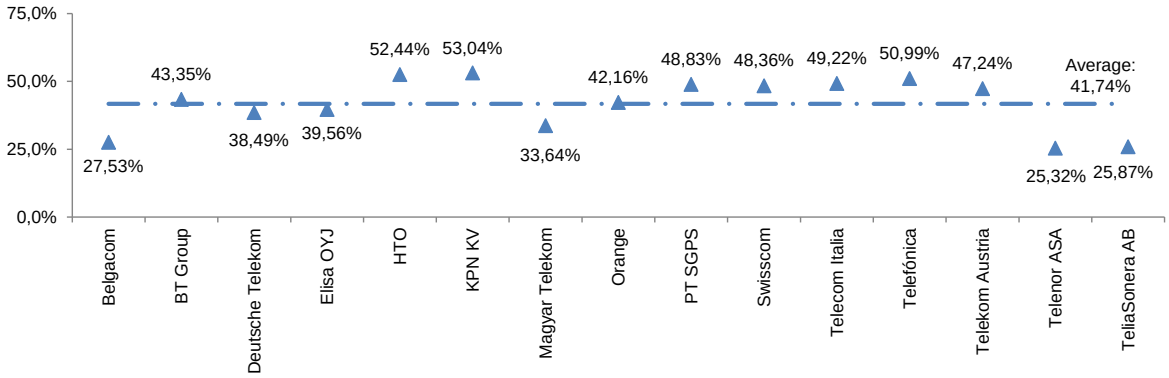
A. Gearing of the benchmark of comparable companies using data from the Annual Reports;

B. Gearing of the benchmark of comparable companies using data from Bloomberg.

A. Gearing of benchmark of comparable companies using data from the Annual Reports

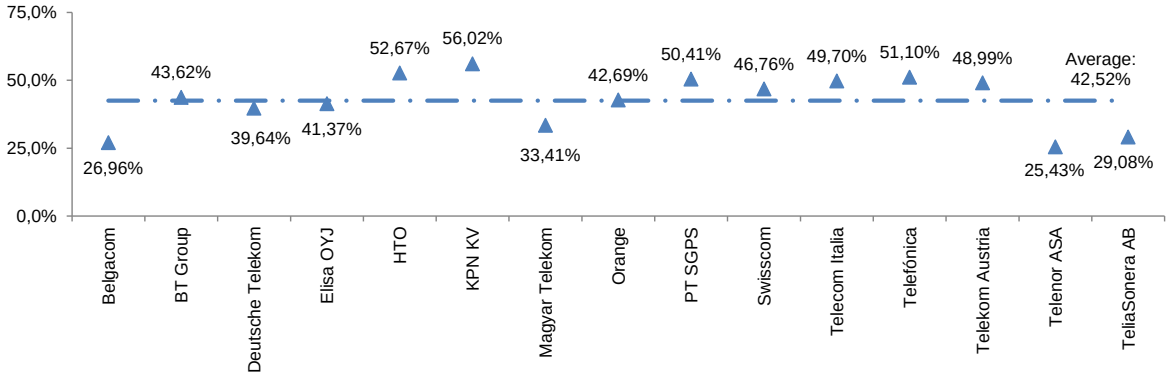
From Table I.6 of the Annex it is possible to summarise the gearing of the benchmark using the Annual Reports.

Chart 10 – 2012 gearing ratios of benchmark



Source: Annual Reports of comparable companies, Baker Tilly

Chart 11 – 2013 gearing ratios of benchmark



Source: Annual Reports of comparable companies, Baker Tilly

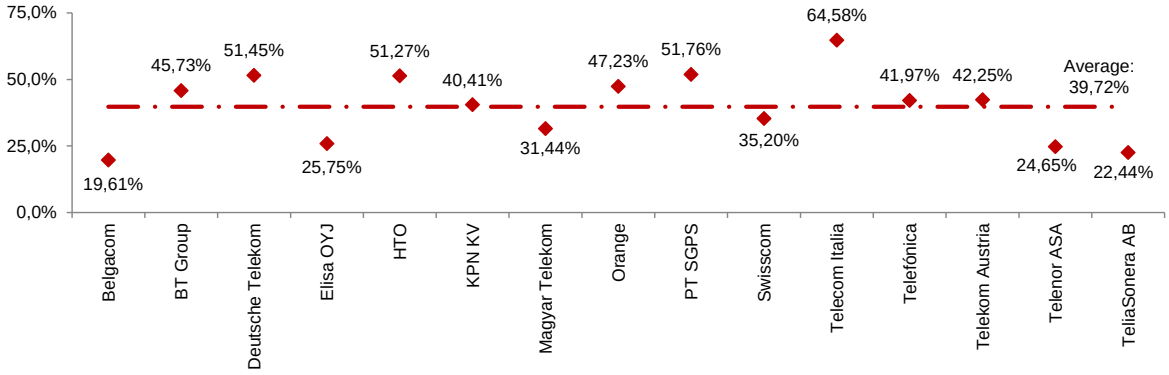
The gearing ratios were computed using the precedent 5 Annual Reports (5 observations). For the 2012 gearing ratios, the Annual Reports used were the years 2007 through 2011; for the 2013 gearing ratio, the Annual Reports used were the years 2008 through 2012.

According to this methodology, the gearing ratio for calculating PTC's equity beta in 2012 is 41,7%, the average of comparable companies' gearing ratios in 2012 (Chart 10); the gearing ratio for calculating PTC's equity beta in 2013 is 42,5%, the average of comparable companies' gearing ratios in 2013 (Chart 11).

B. Gearing of benchmark of comparable companies using data from Bloomberg

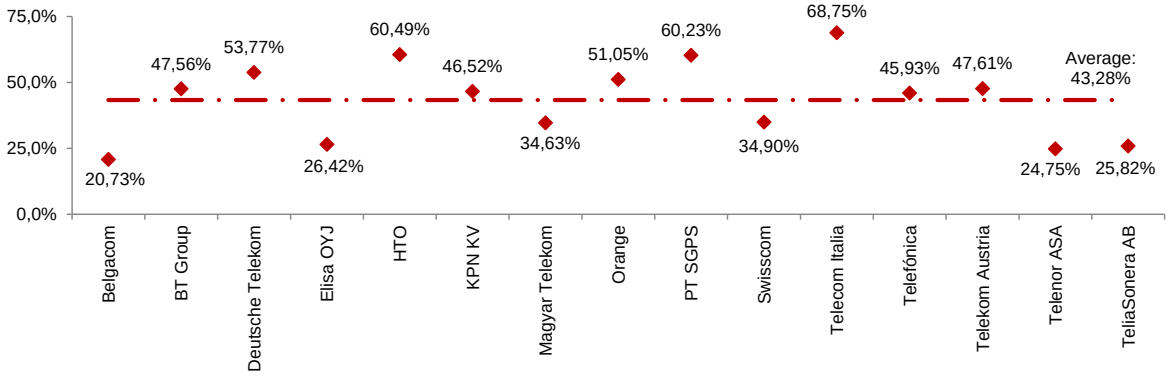
From Tables I.7 through to I.12 of the Annex it is possible to summarise the gearing of the benchmark using the Annual Reports.

Chart 12 – 2012 gearing ratios of benchmark



Source: Bloomberg, Baker Tilly

Chart 13 – 2013 gearing ratios of benchmark



Source: Bloomberg, Baker Tilly

The gearing ratios were computed using quarterly ratios of the preceding 5 years (20 observations). For the 2012 gearing ratios, the ratios used were from the 1st quarter of 2007 through the 4th quarter of 2011; for the 2013 gearing ratio, the ratios used were from the 1st quarter of 2008 through the 4th quarter of 2012.

According to this methodology, the gearing ratio for calculating PTC's equity beta in 2012 is 39,7%, the average of comparable companies' gearing ratios in 2012 (Chart 12); the gearing ratio for calculating PTC's equity beta in 2013 is 43,3%, the average of comparable companies' gearing ratios in 2013 (Chart 13).

Methodology recommended by Baker Tilly

The two different data sets suggested to compute the gearing ratio have led to the following results:

Table 23 – Different methodologies suggested by Baker Tilly and final Methodology recommended by Baker Tilly for the level of gearing

Methodology	WACC 2012	WACC 2013
Average ratio of benchmark companies - Annual Reports	41,74%	42,52%
Average ratio of benchmark companies - Bloomberg	39,72%	43,28%
Recommendation by Baker Tilly	**41,74%**	**42,52%**

Source: Baker Tilly

Baker Tilly's recommends that the gearing ratio should be the average ratio drawn from the Annual Reports of comparable companies as it uses audited information.

Baker Tilly recommends a gearing ratio of 41,7% for calculations of PTC's cost of capital of 2012 and 42,5% for calculations of PTC's cost of capital of 2013.

5.2. Spread

5.2.1. Methodology of the 2010 decision

In the 2010 decision, **ANACOM calculated the spread – or debt premium – of PTC as the average of the implied debt premium from the Credit Default Swaps (CDS) of the benchmark and the debt premium from the Bloomberg Fair Value Curve of Telecom operators rated BBB (the credit rating of debt issued by PT SGPS at the time) computing PTC's applicable spread over the risk-free rate to be 1,23%.**

5.2.2. Regulatory precedent

The regulatory precedent for the debt spread, drawn from the regulatory decisions analysed, is as follows:

Table 24 – Regulatory precedent for the debt spread

Regulator	Methodology utilised	Value
ComReg	Implied spread from gearing ratio, discretionary	1,20% - 1,90%
IBPT	Methodology not avaliable	1,50% - 1,75%
AGCOM	Spread of own Corporate Bonds to risk-free rate	1,71%
Ofcom	Spread of own Corporate Bonds to risk-free rate	2,00% - 2,50%
ARCEP	iBoxx Non-Financial Companies BBB	1,60%
CMT	Spread of own Corporate Bonds to risk-free rate and IRS + CDS	-1,99% - 0,60%

Source: Regulators, Baker Tilly

Regulators appear to converge on the calculation of the debt spread from the companies' own Corporate Bonds to the risk-free rate. Baker Tilly does not agree with this methodology as the debt issued by the parent company is usually guaranteed by the Group's assets. Furthermore, Telecommunication Groups have a wide scope of operations, both in activities and in geography. Baker Tilly does not believe it is possible to compare the debt spread of debt issued by a diversified Group to the debt spread of a company that operates in a single market and with a single activity, such as PT SGPS and PT Comunicações.

5.2.3. Methodology recommended by Baker Tilly

Baker Tilly acknowledges the methodology of the 2010 decision. Due to the recent downgrades of PT SGPS' debt rating[23], Baker Tilly suggests replacing the debt premium from the Bloomberg Fair Value Curve of Telecoms operators rated BBB with a new parameter for analysis:

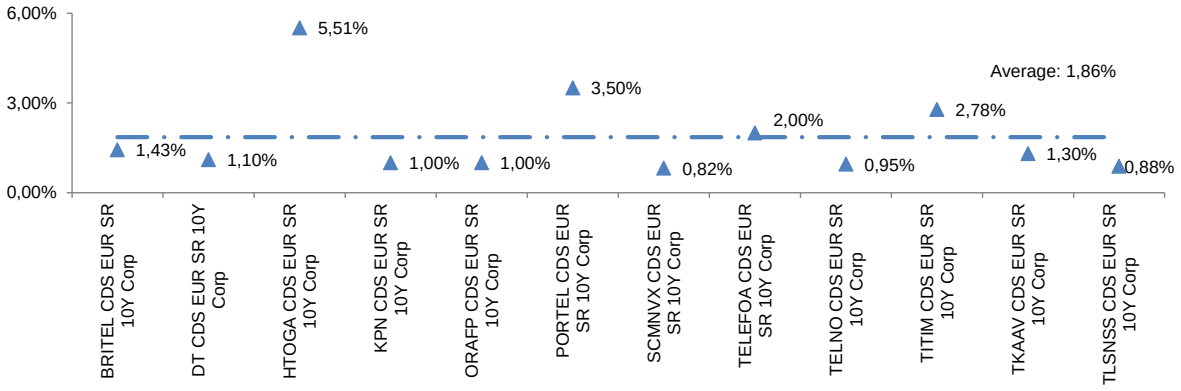
A. Debt premium from the CDS of the benchmark;

B. Damodaran: estimate of debt premium for the telecommunications sector.

A. Debt premium of benchmark from CDS

As argued in section 4.1.2., Credit Default Swaps are widely used by practitioners as a reliable indicator of default spread over the CDS of a risk-free asset. In the 2010 decision, it was argued that the spread from CDS can only be used if the CDS analysed had the same maturity and were expressed in the same currency; furthermore, they also need to have the same maturity and currency of the risk-free rate considered. Baker Tilly acknowledges these arguments and analysed the 10-year CDS in Euros of benchmark companies and their spread over the 10-year CDS in Euros of the German Sovereign. Information on charts 14 and 15 can be found on Tables I.14 through to I.17 in the Annex.

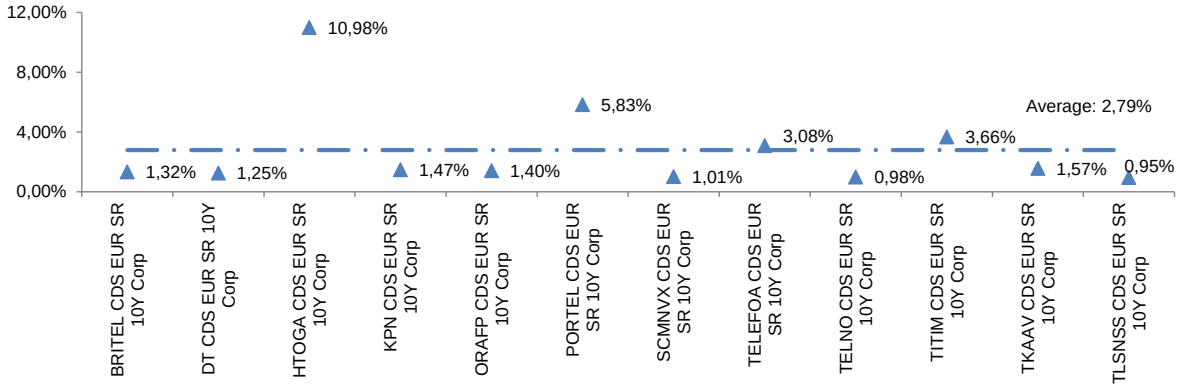
Chart 14 – 2012 spread of benchmark companies using CDS



Source: Bloomberg, Baker Tilly

[23] Retrieved from PT SGPS' website.

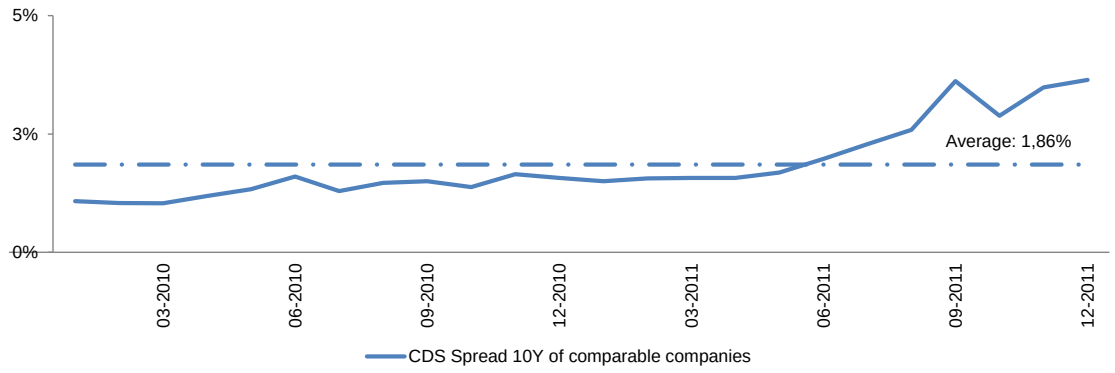
Chart 15 – 2013 spread of benchmark companies using CDS



Source: Bloomberg, Baker Tilly

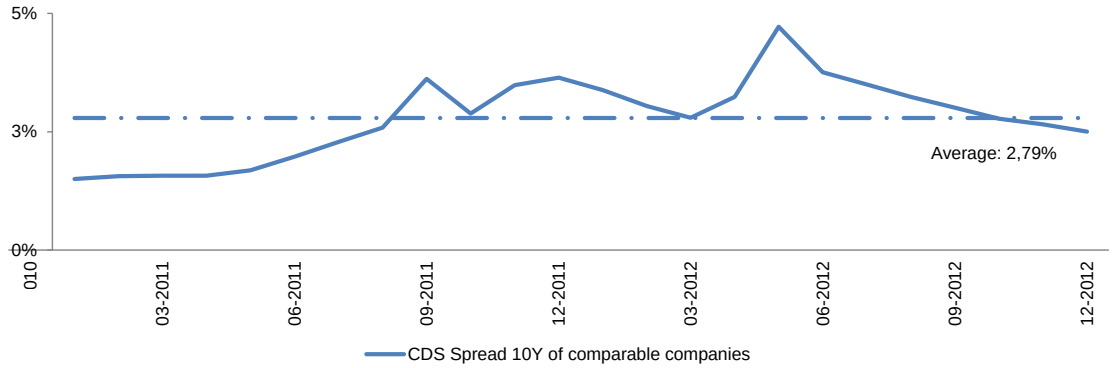
Spreads were computed using monthly observations of the prior two years. Spreads for 2012 are the average of the CDS spread from January 2009 to December 2011 (24 observations); spreads for 2013 are the average of the CDS spread from January 2010 to December 2012. An important remark is that only 12 out of 15 comparable companies have CDS of 10-year Corporate Bonds denominated in Euros. The three companies that do not have CDS of 10-year Corporate Bonds denominated in Euros are Belgacom, Elisa OYJ and Magyar Telekom.

Chart 16 – Evolution of proposed 2012 CDS debt spread



Source: Baker Tilly

Chart 17 – Evolution of proposed 2013 CDS debt spread



Source: Baker Tilly

Analysing both Charts 16 and 17 it is clear that although the CDS spreads present some volatility, which is expected given the turmoil of credit markets over the last few year, they do not present a parabolic behaviour and have been actually decreasing from the highs of May 2012.

According to this methodology, the debt spread for calculating PTC's cost of debt in 2012 is 1,86%, the average of comparable companies' CDS spreads in 2012 (Charts 14 and 16); the debt spread for calculating PTC's cost of debt in 2013 is 2,79%, the average of comparable companies' CDS spreads in 2013 (Charts 15 and 17).

B. Damodaran: estimate of sector debt premium

As mentioned above, Damodaran's estimates of industry and sector parameters are a valuable source of information.

Table 25 – Estimates of the 2012 and 2013 debt spread of European telecommunications operators by Damodaran

Parameter	WACC 2012	WACC 2013
Average debt spread of European telecoms	1,30%	1,24%

Source: Damodaran, Baker Tilly

According to this methodology, the debt spread for calculating PTC's cost of debt in 2012 is 1,30%, the average European Telecoms' debt spread in 2012; the debt spread for calculating PTC's cost of debt in 2013 is 1,24%, the average European Telecoms' debt spread in 2013 (both Table 25).

Methodology recommended by Baker Tilly

The two different methodologies suggested to compute the spread for the cost of debt have led to the following results:

Table 26 – Different methodologies suggested by Baker Tilly and final Methodology recommended by Baker Tilly for the debt spread

Methodology	WACC 2012	WACC 2013
Average debt premium of benchmark from CDS	1,86%	2,79%
Average debt premium of European telecoms - Damodaran	1,30%	1,24%
Recommendation by Baker Tilly	**1,86%**	**2,79%**

Source: Baker Tilly

Baker Tilly recommends that the debt premium should be the CDS spread from the comparable companies as it accurately reflects the market conditions and the ability of companies operating in the sector to secure financing.

Baker Tilly recommends a debt premium of 1,86% for calculations of PTC's cost of capital of 2012 and 2,79% for calculations of PTC's cost of capital of 2013.

6. TAX RATE

6.1. Methodology of the 2010 decision

In the 2010 decision and taking into account the high volatility of past effective tax rates, ANACOM decided to set the nominal corporate income tax rate as the effective tax rate of PTC; which is in line with PIB 9 of the IRG 2007 report.

After the publication of the 2010 decision and in light of the implementation of austerity measures which included tax increases for companies and individuals, in the final review ANACOM revised the effective tax rate of PTC to 29% to reflect the applicable increases in the nominal corporate income tax rate, namely a surcharge of 2,5 percentage points to companies with pre-tax income above 2.500.000 Euros.

More recently, and after additional changes, the Portuguese Corporate Income Tax Code includes a 25% nominal tax rate for companies and a municipal surcharge of 1,5 percentage points, bringing the total aggregate rate to 26,5%, for taxable income up to 1.500.000 Euros.

In 2012 there was an additional state surcharge of 3 percentage points, bringing the total aggregate tax rate to 29,5%, for taxable income between 1.500.000 Euros and 10.000.000 Euros; while for taxable income above 10.000.000 Euros the state surcharge is 5 percentage points, bringing the total aggregate tax rate to 31,5%.

In 2013 there will be a state surcharge of 3 percentage points, bringing the total aggregate tax rate to 29,5%, for taxable income between 1.500.000 Euros and 7.500.000 Euros; while for taxable income above 7.500.000 Euros the state surcharge is 5 percentage points, bringing the total aggregate tax rate to 31,5%.

6.2. Regulatory precedent

The regulatory precedent for the tax rate, drawn from the regulatory decisions analysed, is as follows:

Table 27 – Regulatory precedent for the tax rate

Regulator	Methodology utilised	Value
ComReg	Corporate income tax rate in force	12,50%
IBPT	Methodology not avaliable	17,00% - 24,00%
AGCOM	Corporate income tax rate in force	N.A.
Ofcom	Presumable corporate income tax at the end of the regulatory period	24,00%
ARCEP	Corporate income tax rate in force	36,10%
CMT	Corporate income tax rate in force	30,00%

Source: Regulators, Baker Tilly

Regulators largely agree that the corporate income tax rate used should be the current tax rate in force.

Baker Tilly agrees with this methodology.

6.3. Methodology recommended by Baker Tilly

Further changes to the Portuguese Corporate Income Tax Code after ANACOM's revision have reorganised the income brackets and created a special surcharge. As such, a company earning over 10 million Euros of pre-tax profit in 2012 and 7.500.000 million Euros in 2013 would have a tax rate of 31,5%.

The structure of the Corporate Income Tax in 2012 is as follows:

Equation (19)

$$ETR = \begin{cases} 0\% \times EBT, EBT \leq 0; \\ 26{,}5\% \left[CIT: 25\% + Municipal\ surcharge: 1{,}5\%\right] \times EBT, EBT \leq 1\,500\,000\ €; \\ 29{,}5\% \left[CIT: 25\% + Municipal\ surcharge: 1{,}5\% + State\ surcharge: 3\%\right] \times EBT, \\ 1\,500\,000\ € \leq EBT \leq 10\,000\,000\ €; \\ 31{,}5\% \left[CIT: 25\% + Municipal\ surcharge: 1{,}5\% + State\ surcharge: 5\%\right] \times EBT, \\ EBT \geq 10\,000\,000€ \end{cases}$$

The structure of the Corporate Income Tax in 2013 is as follows:

Equation (20)

$$ETR = \begin{cases} 0\% \times EBT, EBT \leq 0; \\ 26{,}5\% \left[CIT: 25\% + Municipal\ surcharge: 1{,}5\%\right] \times EBT, EBT \leq 1\,500\,000\ €; \\ 29{,}5\% \left[CIT: 25\% + Municipal\ surcharge: 1{,}5\% + State\ surcharge: 3\%\right] \times EBT, \\ 1\,500\,000\ € \leq EBT \leq 7\,500\,000\ €; \\ 31{,}5\% \left[CIT: 25\% + Municipal\ surcharge: 1{,}5\% + State\ surcharge: 5\%\right] \times EBT, \\ EBT \geq 7\,500\,000€ \end{cases}$$

Table 28 – Methodology recommended by Baker Tilly for the tax rate

Methodology	2012	2013
Nominal corporate income tax rate	31,50%	31,50%
Recommendation by Baker Tilly	**31,50%**	**31,50%**

Source: Regulators, Baker Tilly

Baker Tilly recommends that the tax rate should be the nominal corporate income tax rate in force for each year.

Baker Tilly recommends a tax rate of 31,50% for both calculations of PTC's cost of capital of 2012 and 2013.

7. FINAL WACC CALCULATIONS

7.1. Estimate of the Weighted Average Cost of Capital

After estimating all parameters and issued a recommendation for each, Baker Tilly computed a final WACC of PTC for both 2012 and 2013:

Table 29 – The cost of capital rates from the 2010 decision and the final review and proposed 2012 and 2013 WACC of PT Comunicações

Parameter	2010 decision	Final review	WACC 2012	WACC 2013
Risk-free rate	4,47%	5,36%	3,89%	3,96%
Asset Beta	0,69	0,69	0,42	0,42
Equity Beta	0,85	0,85	0,73	0,73
Market risk premium	5,86%	5,86%	8,31%	8,94%
Gearing	36,20%	36,20%	41,7%	42,5%
Spread	1,23%	1,23%	1,86%	2,79%
Tax rate	26,50%	29,00%	31,50%	31,50%
Cost of equity (Ke)	9,47%	10,34%	9,93%	10,52%
Cost of debt (Kd)	5,70%	6,59%	5,75%	6,75%
WACC (after-tax)	**7,56%**	**8,29%**	**7,43%**	**8,01%**
WACC (pre-tax)	**10,28%**	**11,68%**	**10,85%**	**11,69%**

Source: ANACOM, Baker Tilly

Baker Tilly estimates that the 2012 after-tax WACC of PTC to be 7,43% and the 2012 pre-tax WACC to be 10,85%; the 2013 after-tax WACC of PTC is estimated to be 8,01% and the 2013 pre-tax WACC is estimated to be 11,69%.

The smaller after-tax 2012 WACC rate when compared to the after-tax WACC of the 2010 decision can be attributed to a smaller tax rate used in the 2010 decision while the smaller after-tax 2012 WACC rate when compared to the after-tax WACC of the final review can be attributed to a smaller risk-free rat used in the final review.

7.2. Sensitivity analysis

The estimates by Baker Tilly for each parameter have not led to significantly different results from the estimates of the 2010 decision, apart from the estimated asset beta (0,42 by Baker Tilly for 2012 and 2013 vs. 0,69 in the 2010 decision) and the risk-free rate (3,89% by Baker Tilly for 2012 and 3,96% for 2013 vs. 4,47% in the 2010 decision and 5,36% in the final review).

To assess the impact of the new estimates, Baker Tilly made a sensitivity analysis to the after-tax WACC by changing the asset beta and the risk-free rate across the respective estimates and including the estimates of the 2010 decision.

Table 30 – Sensitivity analysis of the 2012 after-tax WACC of PT Comunicações

Sensitivity analysis of 2012 after-tax WACC		Asset Beta	
		0,42	0,69
Risk-free rate	3,89%	7,43%	9,65%
	4,47%	7,93%	10,15%
	5,36%	8,70%	10,92%

Source: Baker Tilly

Table 31 – Sensitivity analysis of the 2012 pre-tax WACC of PT Comunicações

Sensitivity analysis of 2012 pre-tax WACC		Asset Beta	
		0,42	0,69
Risk-free rate	3,89%	10,85%	14,08%
	4,47%	11,58%	14,82%
	5,36%	12,71%	15,94%

Source: Baker Tilly

The sensitivity analyses in Tables 30 and 31 show what the 2012 after-tax WACC and the 2012 pre-tax WACC would be respectively should the risk-free rate and asset beta from the 2010 decision and the final review be used.

Table 32 – Sensitivity analysis of the 2013 after-tax WACC of PT Comunicações

Sensitivity analysis of 2013 after-tax WACC		Asset Beta	
		0,42	0,69
Risk-free rate	3,89%	8,01%	10,41%
	4,47%	8,45%	10,85%
	5,36%	9,22%	11,62%

Source: Baker Tilly

Table 33 – Sensitivity analysis of the 2013 pre-tax WACC of PT Comunicações

Sensitivity analysis of 2013 pre-tax WACC		Asset Beta	
		0,42	0,69
Risk-free rate	3,89%	11,69%	15,20%
	4,47%	12,34%	15,84%
	5,36%	13,47%	16,97%

Source: Baker Tilly

The sensitivity analyses in Tables 32 and 33 show what the 2013 after-tax WACC and the 2013 pre-tax WACC would be respectively should the risk-free rate and asset beta from the 2010 decision and the final review be used.

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ANNEX

Table I. 1 – Sovereign 10-year Yields of Euro Zone countries

Month	Austria	Belgium	Cyprus	Finland	France
Jan-10	3,75%	3,75%	4,60%	3,49%	3,52%
Feb-10	3,66%	3,73%	4,60%	3,38%	3,50%
Mar-10	3,53%	3,63%	4,60%	3,26%	3,44%
Apr-10	3,46%	3,54%	4,60%	3,36%	3,40%
May-10	3,21%	3,31%	4,60%	3,03%	3,08%
Jun-10	3,20%	3,47%	4,60%	2,92%	3,07%
Jul-10	3,07%	3,29%	4,60%	2,85%	2,99%
Aug-10	2,77%	3,03%	4,60%	2,62%	2,68%
Sep-10	2,80%	3,12%	4,60%	2,58%	2,68%
Oct-10	2,82%	3,21%	4,60%	2,63%	2,72%
Nov-10	3,01%	3,48%	4,60%	2,82%	3,00%
Dec-10	3,43%	3,99%	4,60%	3,19%	3,34%
Jan-11	3,54%	4,14%	4,60%	3,27%	3,44%
Feb-11	3,68%	4,21%	4,60%	3,41%	3,60%
Mar-11	3,68%	4,21%	4,60%	3,45%	3,61%
Apr-11	3,76%	4,29%	4,60%	3,57%	3,69%
May-11	3,53%	4,21%	4,60%	3,32%	3,49%
Jun-11	3,43%	4,14%	5,78%	3,29%	3,43%
Jul-11	3,35%	4,22%	6,25%	3,16%	3,40%
Aug-11	2,84%	4,11%	6,42%	2,68%	2,98%
Sep-11	2,64%	3,88%	7,00%	2,35%	2,64%
Oct-11	2,92%	4,20%	7,00%	2,51%	2,99%
Nov-11	3,36%	4,84%	7,00%	2,54%	3,41%
Dec-11	3,10%	4,35%	7,00%	2,52%	3,16%
Jan-12	3,27%	4,11%	7,00%	2,28%	3,18%
Feb-12	3,00%	3,70%	7,00%	2,34%	3,02%
Mar-12	2,87%	3,53%	7,00%	2,31%	2,95%
Apr-12	2,83%	3,52%	7,00%	2,15%	2,99%
May-12	2,49%	3,30%	7,00%	1,82%	2,75%
Jun-12	2,29%	3,17%	7,00%	1,76%	2,57%
Jul-12	2,07%	2,69%	7,00%	1,55%	2,28%
Aug-12	1,97%	2,54%	7,00%	1,55%	2,12%
Sep-12	2,04%	2,61%	7,00%	1,82%	2,24%
Oct-12	2,02%	2,44%	7,00%	1,78%	2,19%
Nov-12	1,85%	2,29%	7,00%	1,67%	2,14%
Dec-12	1,77%	2,10%	7,00%	1,60%	2,01%

Source: ECB, Baker Tilly

Table I. 2 – Sovereign 10-year Yields of Euro Zone countries

Month	Germany	Greece	Ireland	Italy	Luxembourg
Jan-10	3,26%	6,02%	4,83%	4,08%	3,76%
Feb-10	3,17%	6,46%	4,73%	4,05%	3,69%
Mar-10	3,10%	6,24%	4,53%	3,95%	3,60%
Apr-10	3,06%	7,83%	4,76%	4,00%	3,51%
May-10	2,73%	7,97%	4,86%	3,99%	3,17%
Jun-10	2,54%	9,10%	5,31%	4,10%	3,01%
Jul-10	2,62%	10,34%	5,32%	4,03%	2,98%
Aug-10	2,35%	10,70%	5,30%	3,80%	2,65%
Sep-10	2,30%	11,34%	6,14%	3,86%	2,67%
Oct-10	2,35%	9,57%	6,42%	3,80%	2,73%
Nov-10	2,53%	11,52%	8,22%	4,18%	2,94%
Dec-10	2,91%	12,01%	8,45%	4,60%	3,32%
Jan-11	3,02%	11,73%	8,75%	4,73%	3,30%
Feb-11	3,20%	11,40%	9,10%	4,74%	3,45%
Mar-11	3,21%	12,44%	9,67%	4,88%	3,47%
Apr-11	3,34%	13,86%	9,79%	4,84%	3,58%
May-11	3,06%	15,94%	10,64%	4,76%	3,29%
Jun-11	2,89%	16,69%	11,43%	4,82%	3,15%
Jul-11	2,74%	16,15%	12,45%	5,46%	3,03%
Aug-11	2,21%	15,90%	9,57%	5,27%	2,59%
Sep-11	1,83%	17,78%	8,51%	5,75%	2,27%
Oct-11	2,00%	18,04%	8,10%	5,97%	2,37%
Nov-11	1,87%	17,92%	8,51%	7,06%	2,31%
Dec-11	1,93%	21,14%	8,70%	6,81%	2,27%
Jan-12	1,82%	25,91%	7,71%	6,54%	2,07%
Feb-12	1,85%	29,24%	7,02%	5,55%	2,03%
Mar-12	1,83%	19,07%	6,90%	5,05%	2,22%
Apr-12	1,62%	21,48%	6,88%	5,68%	2,22%
May-12	1,34%	26,90%	7,12%	5,78%	1,92%
Jun-12	1,30%	27,82%	7,09%	5,90%	1,82%
Jul-12	1,24%	25,82%	6,12%	6,00%	1,70%
Aug-12	1,34%	24,34%	5,91%	5,82%	1,66%
Sep-12	1,49%	20,91%	5,28%	5,25%	1,65%
Oct-12	1,47%	17,96%	4,77%	4,95%	1,62%
Nov-12	1,34%	17,20%	4,59%	4,85%	1,52%
Dec-12	1,30%	13,33%	4,67%	4,54%	1,43%

Source: ECB, Baker Tilly

Table I. 3 – Sovereign 10-year Yields of Euro Zone countries

Month	Malta	Netherlands	Portugal	Slovakia	Slovenia	Spain
Jan-10	4,50%	3,47%	4,17%	4,11%	4,00%	3,99%
Feb-10	4,49%	3,36%	4,56%	4,08%	3,84%	3,98%
Mar-10	4,33%	3,37%	4,31%	4,01%	3,94%	3,83%
Apr-10	4,18%	3,32%	4,78%	3,93%	3,94%	3,90%
May-10	4,14%	3,02%	5,02%	3,82%	3,82%	4,08%
Jun-10	4,13%	2,90%	5,54%	3,73%	3,83%	4,56%
Jul-10	4,13%	2,85%	5,49%	3,93%	3,87%	4,43%
Aug-10	4,01%	2,56%	5,31%	3,73%	3,67%	4,04%
Sep-10	3,90%	2,52%	6,08%	3,59%	3,64%	4,09%
Oct-10	3,90%	2,58%	6,05%	3,67%	3,56%	4,04%
Nov-10	4,12%	2,79%	6,91%	3,80%	3,77%	4,69%
Dec-10	4,42%	3,16%	6,53%	4,06%	4,11%	5,38%
Jan-11	4,51%	3,23%	6,95%	4,16%	4,29%	5,38%
Feb-11	4,60%	3,41%	7,34%	4,24%	4,26%	5,26%
Mar-11	4,68%	3,42%	7,80%	4,32%	4,30%	5,25%
Apr-11	4,73%	3,65%	9,19%	4,33%	4,53%	5,33%
May-11	4,63%	3,40%	9,63%	4,33%	4,43%	5,32%
Jun-11	4,63%	3,28%	10,87%	4,39%	4,58%	5,48%
Jul-11	4,59%	3,17%	12,15%	4,55%	4,89%	5,83%
Aug-11	4,32%	2,68%	10,93%	4,55%	4,99%	5,25%
Sep-11	4,14%	2,34%	11,34%	4,25%	4,86%	5,20%
Oct-11	4,26%	2,46%	11,72%	4,33%	5,16%	5,26%
Nov-11	4,35%	2,45%	11,89%	4,71%	6,46%	6,20%
Dec-11	4,43%	2,38%	13,08%	5,21%	6,90%	5,53%
Jan-12	4,30%	2,20%	13,85%	5,22%	6,74%	5,41%
Feb-12	4,17%	2,24%	12,81%	4,98%	5,73%	5,11%
Mar-12	4,31%	2,25%	13,01%	4,91%	5,08%	5,17%
Apr-12	4,26%	2,29%	12,01%	4,81%	5,27%	5,79%
May-12	4,19%	1,96%	11,59%	4,80%	5,28%	6,13%
Jun-12	4,27%	1,93%	10,56%	4,80%	5,63%	6,59%
Jul-12	4,15%	1,75%	10,49%	4,41%	6,34%	6,79%
Aug-12	4,04%	1,76%	9,89%	4,24%	6,81%	6,58%
Sep-12	4,00%	1,84%	8,62%	4,20%	6,32%	5,91%
Oct-12	3,99%	1,77%	8,17%	4,20%	5,74%	5,64%
Nov-12	3,95%	1,65%	8,32%	4,14%	5,43%	5,69%
Dec-12	3,88%	1,56%	7,25%	3,92%	5,33%	5,34%

Source: ECB, Baker Tilly

Table I. 4 – Monthly hypothetical yields of Euro Zone countries composite and Euro Zone AAA-countries for 2012 WACC

Month	Euro Zone countries composite - 2012	Euro Zone AAA-countries composite - 2012
Jan-10	3,71%	3,41%
Feb-10	3,67%	3,34%
Mar-10	3,58%	3,28%
Apr-10	3,62%	3,24%
May-10	3,44%	2,92%
Jun-10	3,49%	2,81%
Jul-10	3,49%	2,80%
Aug-10	3,22%	2,52%
Sep-10	3,27%	2,49%
Oct-10	3,25%	2,54%
Nov-10	3,63%	2,75%
Dec-10	4,03%	3,12%
Jan-11	4,12%	3,22%
Feb-11	4,23%	3,39%
Mar-11	4,30%	3,40%
Apr-11	4,44%	3,52%
May-11	4,34%	3,28%
Jun-11	4,35%	3,16%
Jul-11	4,47%	3,06%
Aug-11	3,99%	2,57%
Sep-11	3,87%	2,22%
Oct-11	4,07%	2,45%
Nov-11	4,46%	2,56%
Dec-11	4,38%	2,48%

Source: Baker Tilly

Table I. 5 – Monthly hypothetical yields of Euro Zone countries composite and Euro Zone AAA-countries for 2013 WACC

Month	Euro Zone countries composite - 2013	Euro Zone AAA-countries composite - 2013
Jan-11	4,10%	3,22%
Feb-11	4,21%	3,39%
Mar-11	4,28%	3,40%
Apr-11	4,41%	3,52%
May-11	4,31%	3,28%
Jun-11	4,32%	3,16%
Jul-11	4,44%	3,06%
Aug-11	3,96%	2,57%
Sep-11	3,83%	2,22%
Oct-11	4,03%	2,45%
Nov-11	4,42%	2,56%
Dec-11	4,33%	2,48%
Jan-12	4,32%	2,41%
Feb-12	4,10%	2,37%
Mar-12	3,79%	2,33%
Apr-12	3,94%	2,24%
May-12	3,92%	1,96%
Jun-12	3,93%	1,87%
Jul-12	3,79%	1,70%
Aug-12	3,68%	1,69%
Sep-12	3,49%	1,82%
Oct-12	3,30%	1,79%
Nov-12	3,20%	1,68%
Dec-12	2,96%	1,60%

Source: Baker Tilly

Table I. 6 – Gearing of comparable companies, data from Annual Reports

Company	2007	2008	2009	2010	2011	2012
Belgacom	26,81%	32,40%	29,01%	25,72%	23,72%	23,97%
BT Group	39,00%	47,51%	44,60%	41,87%	43,79%	40,33%
Deutsche Telekom	35,56%	37,84%	40,06%	39,55%	39,43%	41,33%
Elisa OYJ	34,72%	41,60%	38,15%	40,98%	42,37%	43,73%
Hellenic Telecommunications	47,25%	52,93%	52,53%	55,57%	53,92%	48,42%
KPN KV	47,40%	50,35%	53,80%	55,14%	58,51%	62,31%
Magyar Telekom	33,47%	34,26%	34,30%	32,63%	33,53%	32,36%
Orange	41,62%	43,66%	41,16%	41,03%	43,35%	44,24%
PT SGPS	47,38%	48,82%	47,48%	47,50%	52,99%	55,24%
Swisscom	52,01%	51,86%	46,15%	46,37%	45,40%	44,00%
Telecom Italia	49,48%	49,60%	50,70%	46,31%	50,01%	51,89%
Telefónica	50,94%	53,24%	52,52%	47,08%	51,16%	51,52%
Telekom Austria	44,76%	43,11%	47,89%	47,43%	53,02%	53,48%
Telenor	30,05%	30,44%	24,13%	20,60%	21,39%	30,60%
TeliaSonera	20,11%	24,90%	26,64%	26,12%	31,57%	36,19%

Source: Annual Reports of comparable companies, Baker Tilly

Table I. 7 – Gearing of comparable companies, data from Bloomberg

Company	2007Q1	2007Q2	2007Q3	2007Q4
Belgacom	15,00%	15,20%	15,30%	14,90%
BT Group	25,50%	27,80%	31,30%	31,00%
Deutsche Telekom	46,40%	43,40%	41,80%	39,60%
Elisa OYJ	15,70%	18,50%	27,50%	30,20%
Hellenic Telecommunications	28,90%	26,60%	24,10%	30,90%
KPN	28,10%	29,20%	30,60%	34,50%
Magyar Telekom	21,70%	26,00%	22,40%	28,80%
Orange (ex-France Télécom)	45,80%	45,80%	39,10%	39,10%
PT SGPS	30,80%	32,80%	34,30%	40,90%
Swisscom	22,30%	38,40%	35,30%	35,00%
Telecom Italia	52,30%	53,00%	51,20%	51,60%
Telefónica	41,80%	41,90%	36,50%	34,00%
Telekom Austria	27,10%	29,70%	31,10%	32,70%
Telenor ASA	21,00%	21,60%	21,30%	17,80%
TeliaSonera AB	12,80%	16,70%	13,80%	13,80%

Source: Bloomberg, Baker Tilly

Table I. 8 – Gearing of comparable companies, data from Bloomberg

Company	2008Q1	2008Q2	2008Q3	2008Q4
Belgacom	17,70%	17,80%	19,00%	22,40%
BT Group	40,10%	42,10%	50,30%	59,02%
Deutsche Telekom	47,90%	50,60%	49,80%	49,80%
Elisa OYJ	29,90%	30,60%	34,10%	30,50%
Hellenic Telecommunications	41,00%	43,60%	49,50%	50,90%
KPN	36,60%	37,10%	41,80%	40,40%
Magyar Telekom	24,60%	32,80%	28,40%	41,60%
Orange (ex-France Télécom)	46,60%	46,60%	43,70%	43,70%
PT SGPS	47,10%	50,50%	51,40%	55,70%
Swisscom	40,90%	40,80%	41,70%	40,10%
Telecom Italia	62,20%	63,40%	67,90%	65,90%
Telefónica	37,50%	40,10%	40,10%	42,30%
Telekom Austria	40,30%	39,90%	40,90%	46,20%
Telenor ASA	22,10%	23,60%	28,80%	42,20%
TeliaSonera AB	18,50%	22,20%	25,00%	27,40%

Source: Bloomberg, Baker Tilly

Table I. 9 – Gearing of comparable companies, data from Bloomberg

Company	2009Q1	2009Q2	2009Q3	2009Q4
Belgacom	23,90%	24,40%	21,64%	21,06%
BT Group	68,57%	61,00%	55,77%	54,32%
Deutsche Telekom	56,50%	60,90%	56,72%	53,29%
Elisa OYJ	25,30%	23,20%	34,10%	26,20%
Hellenic Telecommunications	52,30%	53,00%	51,99%	51,81%
KPN	44,00%	45,10%	42,69%	40,94%
Magyar Telekom	37,40%	38,60%	32,63%	32,91%
Orange (ex-France Télécom)	49,30%	49,30%	44,40%	44,40%
PT SGPS	57,90%	55,40%	54,33%	48,57%
Swisscom	41,10%	38,50%	35,20%	33,28%
Telecom Italia	69,70%	70,40%	65,29%	67,63%
Telefónica	43,30%	41,60%	38,42%	38,96%
Telekom Austria	46,00%	46,40%	43,84%	48,16%
Telenor ASA	45,20%	39,30%	29,25%	22,67%
TeliaSonera AB	28,10%	27,50%	24,48%	23,58%

Source: Bloomberg, Baker Tilly

Table I. 10 – Gearing of comparable companies, data from Bloomberg

Company	2010Q1	2010Q2	2010Q3	2010Q4
Belgacom	18,82%	20,09%	18,45%	21,32%
BT Group	55,88%	54,45%	54,10%	43,40%
Deutsche Telekom	53,73%	55,54%	53,35%	54,78%
Elisa OYJ	26,10%	22,00%	23,00%	24,70%
Hellenic Telecommunications	54,65%	63,88%	67,36%	63,82%
KPN	41,59%	45,16%	43,11%	42,20%
Magyar Telekom	15,69%	33,45%	28,63%	39,63%
Orange (ex-France Télécom)	52,86%	52,86%	46,70%	46,70%
PT SGPS	51,23%	52,47%	44,47%	49,54%
Swisscom	33,20%	35,09%	32,35%	31,46%
Telecom Italia	67,19%	70,63%	67,93%	68,87%
Telefónica	41,98%	46,90%	42,34%	44,41%
Telekom Austria	42,45%	45,25%	42,83%	43,59%
Telenor ASA	22,65%	23,29%	18,56%	18,21%
TeliaSonera AB	21,95%	22,61%	20,30%	21,47%

Source: Bloomberg, Baker Tilly

Table I. 11 – Gearing of comparable companies, data from Bloomberg

Company	2011Q1	2011Q2	2011Q3	2011Q4
Belgacom	20,42%	21,37%	23,10%	20,40%
BT Group	39,40%	37,60%	42,70%	40,20%
Deutsche Telekom	50,47%	52,02%	56,60%	55,80%
Elisa OYJ	27,70%	18,40%	24,70%	22,50%
Hellenic Telecommunications	55,34%	61,37%	76,80%	77,60%
KPN	40,68%	46,62%	48,10%	49,70%
Magyar Telekom	33,66%	35,60%	34,90%	39,30%
Orange (ex-France Télécom)	48,66%	48,66%	55,20%	55,20%
PT SGPS	62,02%	66,88%	71,60%	77,30%
Swisscom	30,87%	33,22%	32,90%	32,40%
Telecom Italia	65,44%	67,55%	71,00%	72,40%
Telefónica	42,80%	43,76%	48,20%	52,50%
Telekom Austria	45,76%	49,78%	53,90%	49,10%
Telenor ASA	18,95%	20,19%	18,50%	17,90%
TeliaSonera AB	23,38%	27,26%	29,60%	28,30%

Source: Bloomberg, Baker Tilly

Table I. 12 – Gearing of comparable companies, data from Bloomberg

Company	2012Q1	2012Q2	2012Q3	2012Q4
Belgacom	19,20%	21,90%	19,90%	21,80%
BT Group	37,30%	40,10%	37,70%	37,10%
Deutsche Telekom	54,20%	56,40%	52,40%	54,60%
Elisa OYJ	27,60%	24,50%	25,10%	28,20%
Hellenic Telecommunications	75,80%	83,20%	74,10%	61,80%
KPN	53,30%	56,10%	63,00%	72,30%
Magyar Telekom	31,80%	43,50%	40,90%	46,60%
Orange (ex-France Télécom)	58,90%	58,90%	64,20%	64,20%
PT SGPS	75,30%	77,70%	76,50%	78,60%
Swisscom	31,80%	31,70%	31,40%	30,10%
Telecom Italia	70,00%	73,20%	73,10%	75,30%
Telefónica	55,10%	59,50%	59,50%	59,30%
Telekom Austria	50,30%	55,90%	61,20%	60,40%
Telenor ASA	18,70%	23,10%	19,50%	22,40%
TeliaSonera AB	32,20%	31,00%	29,20%	32,40%

Source: Bloomberg, Baker Tilly

Table I. 13 – Adjusted levered and unlevered 2012 and 2013 betas of comparable companies

Company	Adjusted beta 2012 (2007-2011)		2013 (2008-2012)	
	Levered	Unlevered	Levered	Unlevered
Belgacom	0,56	0,40	0,55	0,40
BT Group	1,06	0,60	1,04	0,59
Deutsche Telekom	0,63	0,38	0,58	0,35
Elisa OYJ	0,61	0,37	0,60	0,35
Hellenic Telecommunications	0,74	0,35	0,84	0,40
KPN	0,49	0,23	0,42	0,18
Magyar Telekom	0,76	0,50	0,75	0,50
Orange (ex-France Télécom)	0,60	0,35	0,59	0,34
PT SGPS	0,84	0,43	0,92	0,46
Swisscom	0,56	0,29	0,58	0,31
Telecom Italia	0,71	0,36	0,76	0,38
Telefónica	0,80	0,39	0,81	0,40
Telekom Austria	0,71	0,37	0,68	0,35
Telenor ASA	1,01	0,75	1,04	0,77
TeliaSonera AB	0,76	0,56	0,77	0,55
Average unlevered adjusted beta		0,42		0,42

Source: Bloomberg, Baker Tilly

Table I. 14 – CDS spread of comparable companies

Month	BRITEL CDS EUR SR 10Y Corp	DT CDS EUR SR 10Y Corp	HTOGA CDS EUR SR 10Y Corp
Jan-10	1,44%	0,92%	1,70%
Feb-10	1,58%	0,85%	1,30%
Mar-10	1,63%	0,83%	1,21%
Apr-10	1,53%	0,89%	1,80%
May-10	1,44%	0,89%	2,80%
Jun-10	1,70%	1,05%	4,34%
Jul-10	1,43%	0,87%	2,99%
Aug-10	1,67%	0,99%	3,51%
Sep-10	1,54%	0,92%	3,54%
Oct-10	1,35%	0,97%	3,13%
Nov-10	1,37%	1,06%	4,11%
Dec-10	1,21%	1,02%	4,46%
Jan-11	1,16%	1,05%	3,84%
Feb-11	1,19%	1,06%	4,31%
Mar-11	1,28%	0,98%	4,12%
Apr-11	1,26%	1,01%	3,94%
May-11	1,27%	1,13%	3,98%
Jun-11	1,28%	1,18%	5,31%
Jul-11	1,26%	1,17%	7,33%
Aug-11	1,43%	1,46%	8,35%
Sep-11	1,70%	1,65%	14,61%
Oct-11	1,68%	1,45%	10,70%
Nov-11	1,42%	1,51%	14,68%
Dec-11	1,42%	1,50%	16,17%
Jan-12	1,35%	1,43%	14,27%
Feb-12	1,23%	1,33%	13,22%
Mar-12	1,06%	1,10%	10,75%
Apr-12	1,17%	1,18%	13,90%
May-12	1,37%	1,31%	27,25%
Jun-12	1,34%	1,27%	16,73%
Jul-12	1,24%	1,13%	16,46%
Aug-12	1,27%	1,13%	12,85%
Sep-12	1,27%	1,24%	12,99%
Oct-12	1,33%	1,23%	10,49%
Nov-12	1,31%	1,26%	9,12%
Dec-12	1,29%	1,27%	8,21%

Source: Bloomberg, Baker Tilly

Table I. 15 – CDS spread of comparable companies

Month	KPN CDS EUR SR 10Y Corp	ORAFP CDS EUR SR 10Y Corp	PORTEL CDS EUR SR 10Y Corp
Jan-10	0,76%	0,65%	1,34%
Feb-10	0,77%	0,67%	1,29%
Mar-10	0,70%	0,64%	1,38%
Apr-10	0,82%	0,71%	1,83%
May-10	0,81%	0,67%	1,94%
Jun-10	0,79%	0,83%	2,18%
Jul-10	0,69%	0,73%	1,74%
Aug-10	0,85%	0,85%	1,95%
Sep-10	0,80%	0,83%	2,59%
Oct-10	0,84%	0,80%	2,23%
Nov-10	0,91%	0,90%	2,72%
Dec-10	0,83%	0,83%	2,41%
Jan-11	0,89%	0,92%	2,49%
Feb-11	0,88%	0,93%	2,57%
Mar-11	0,90%	0,97%	3,01%
Apr-11	0,93%	0,96%	3,06%
May-11	1,05%	1,02%	3,42%
Jun-11	1,13%	1,10%	4,73%
Jul-11	1,22%	1,19%	5,63%
Aug-11	1,48%	1,42%	5,66%
Sep-11	1,66%	1,66%	8,14%
Oct-11	1,42%	1,44%	6,42%
Nov-11	1,36%	1,65%	7,35%
Dec-11	1,42%	1,63%	7,97%
Jan-12	1,51%	1,44%	8,75%
Feb-12	1,53%	1,36%	6,98%
Mar-12	1,46%	1,27%	7,16%
Apr-12	1,83%	1,61%	7,07%
May-12	1,77%	1,85%	8,76%
Jun-12	1,67%	1,76%	7,35%
Jul-12	1,47%	1,50%	6,72%
Aug-12	1,67%	1,50%	6,66%
Sep-12	1,70%	1,52%	5,39%
Oct-12	1,90%	1,61%	4,85%
Nov-12	2,17%	1,62%	5,05%
Dec-12	2,31%	1,60%	4,69%

Source: Bloomberg, Baker Tilly

Table I. 16 – CDS spread of comparable companies

Month	SCMNVX CDS EUR SR 10Y Corp	TELEFOA CDS EUR SR 10Y Corp	TELNO CDS EUR SR 10Y Corp
Jan-10	0,78%	1,15%	0,97%
Feb-10	0,80%	1,03%	0,86%
Mar-10	0,81%	0,97%	0,80%
Apr-10	0,83%	1,36%	0,82%
May-10	0,88%	1,51%	0,84%
Jun-10	0,86%	1,77%	0,89%
Jul-10	0,71%	1,74%	0,70%
Aug-10	0,74%	1,80%	0,78%
Sep-10	0,67%	1,68%	0,82%
Oct-10	0,67%	1,43%	0,86%
Nov-10	0,71%	2,16%	0,89%
Dec-10	0,72%	1,92%	0,82%
Jan-11	0,70%	1,69%	0,86%
Feb-11	0,72%	1,70%	0,94%
Mar-11	0,72%	1,71%	0,96%
Apr-11	0,71%	1,68%	1,03%
May-11	0,72%	1,91%	1,07%
Jun-11	0,74%	2,04%	1,07%
Jul-11	0,74%	2,29%	1,03%
Aug-11	0,87%	2,81%	1,19%
Sep-11	1,11%	3,60%	1,27%
Oct-11	1,07%	2,54%	1,13%
Nov-11	1,15%	3,79%	1,16%
Dec-11	1,15%	3,69%	1,13%
Jan-12	1,15%	2,91%	0,94%
Feb-12	1,15%	2,74%	1,01%
Mar-12	1,15%	3,22%	0,86%
Apr-12	1,15%	3,71%	0,94%
May-12	1,15%	4,81%	1,05%
Jun-12	1,15%	5,18%	0,94%
Jul-12	1,15%	4,52%	0,85%
Aug-12	1,15%	4,62%	0,86%
Sep-12	1,15%	3,64%	0,87%
Oct-12	1,15%	3,36%	0,85%
Nov-12	1,15%	3,14%	0,81%
Dec-12	1,15%	2,70%	0,78%

Source: Bloomberg, Baker Tilly

Table I. 17 – CDS spread of comparable companies

Month	TITIM CDS EUR SR 10Y Corp	TKAAV CDS EUR SR 10Y Corp	TLSNSS CDS EUR SR 10Y Corp
Jan-10	1,50%	1,12%	0,62%
Feb-10	1,64%	1,09%	0,66%
Mar-10	1,76%	1,00%	0,70%
Apr-10	1,83%	1,19%	0,70%
May-10	2,37%	1,16%	0,69%
Jun-10	2,86%	1,20%	0,73%
Jul-10	2,25%	1,05%	0,67%
Aug-10	2,59%	1,17%	0,74%
Sep-10	2,62%	1,21%	0,82%
Oct-10	2,27%	1,20%	0,79%
Nov-10	2,98%	1,18%	0,81%
Dec-10	2,74%	1,14%	0,77%
Jan-11	2,53%	1,05%	0,86%
Feb-11	2,44%	1,10%	0,92%
Mar-11	2,21%	1,10%	0,95%
Apr-11	2,16%	1,11%	1,02%
May-11	2,37%	1,17%	1,11%
Jun-11	2,78%	1,27%	1,07%
Jul-11	3,22%	1,38%	1,00%
Aug-11	3,62%	1,68%	1,08%
Sep-11	4,85%	2,05%	1,12%
Oct-11	3,73%	1,96%	1,05%
Nov-11	4,77%	1,90%	1,11%
Dec-11	4,68%	1,86%	1,09%
Jan-12	4,09%	1,79%	0,94%
Feb-12	3,51%	1,58%	0,88%
Mar-12	3,36%	1,33%	0,79%
Apr-12	3,89%	1,57%	0,83%
May-12	4,56%	1,77%	0,95%
Jun-12	5,26%	1,53%	0,91%
Jul-12	4,71%	1,38%	0,85%
Aug-12	4,81%	1,49%	0,84%
Sep-12	3,77%	1,73%	0,85%
Oct-12	3,81%	1,86%	0,86%
Nov-12	3,50%	1,94%	0,81%
Dec-12	3,24%	1,96%	0,85%

Source: Bloomberg, Baker Tilly

Table I. 18 – 2012 information of Telecommunication Services European companies, data by Damodaran

Company	Beta	Spread
Easy Connect AS (OTCNO:EASY)	-0,19	N.A.
Tricor Plc (AIM:TRIC)	0,09	4,00%
Daisy Group plc (AIM:DAY)	0,00	N.A.
Accumuli plc (AIM:ACM)	0,18	1,50%
Telefónica Czech Republic as (SEP:BAATELEC)	0,23	0,50%
Alternative Networks Plc (AIM:AN.)	0,27	1,00%
Keyyo (ENXTPA:ALKEY)	0,29	1,00%
Telio Telecom AS (OB:TELIO)	0,31	1,00%
Swisscom AG (SWX:SCMN)	0,35	0,50%
Royal KPN N.V. (ENXTAM:KPN)	0,48	0,50%
Telecom Plus plc (LSE:TEP)	0,50	1,00%
Budget Telecom S.A. (ENXTPA:ALBUD)	0,50	1,50%
Bredband2 i Skandinavien AB (OM:BRE2)	0,57	2,00%
VoiceServe, Inc. (OTCBB:VSRV)	0,57	4,00%
Ecotel Communication Ag (XTRA:E4C)	0,65	2,00%
Belgacom SA (ENXTBR:BELG)	0,69	0,50%
DGC One AB (OM:DGC)	0,69	1,00%
Burkhalter Holding AG (SWX:BRKN)	0,71	1,00%
Magyar Telekom Telecommunications Public Limited Company (BUSE:MTELEKOM)	0,72	1,00%
Versatel AG (DB:VTW)	0,74	1,50%
Cable & Wireless Communications Plc (LSE:CWC)	0,76	1,50%
TDC A/S (CPSE:TDC)	0,76	0,50%
3U Holding AG (XTRA:UUU)	0,77	1,00%
Phonera AB (OM:PHON)	0,81	1,00%
Deutsche Telekom AG (DB:DTE)	0,82	1,00%
Mox Telecom AG (XTRA:MOT)	0,89	1,00%
AllTele Allmänna Svenska Telefonaktiebolaget (OM:ATEL)	0,92	1,50%
Telekom Austria AG (WBAG:TKA)	0,93	1,00%
Iliad SA (ENXTPA:ILD)	0,93	1,00%
Redstone plc (AIM:RED)	0,94	4,00%
Portugal Telecom SGPS SA (ENXTLS:PTC)	0,95	1,00%
Elisa Oyj (HLSE:ELI1V)	0,95	1,00%

Source: Damodaran, Baker Tilly

Table I. 19 – 2012 information of Telecommunication Services European companies, data by Damodaran

Company	Beta	Spread
France Telecom (ENXTPA:FTE)	0,96	1,00%
TeliaSonera AB (OM:TLSN)	0,97	0,50%
Retelit SpA (BIT:LIT)	0,99	1,50%
Telenet Group Holding NV (ENXTBR:TNET)	1,02	1,00%
Adept (GB) Limited (AIM:ADT)	1,04	1,50%
KCOM Group PLC. (LSE:KCOM)	1,09	1,00%
Colt Group S.A. (LSE:COLT)	1,11	1,00%
Telecom Italia SpA (BIT:TIT)	1,13	1,00%
Inmarsat Plc (LSE:ISAT)	1,13	1,00%
Avanti Communications Group PLC (AIM:AVN)	1,23	1,50%
Telefonica, S.A. (CATS:TEF)	1,23	1,00%
Tele2 AB (OM:TEL2 B)	1,28	1,00%
Newsphone Hellas SA (ATSE:NEWS)	1,31	1,50%
Afone S.A. (ENXTPA:AFO)	1,38	1,50%
conVISUAL AG (XTRA:C1V)	1,39	2,00%
BT Group plc (LSE:BT.A)	1,39	1,00%
Vivendi (ENXTPA:VIV)	1,40	1,00%
Jazztel plc (CATS:JAZ)	1,42	1,00%
Telenor ASA (OB:TEL)	1,67	1,00%
QSC AG (XTRA:QSC)	1,69	1,00%
Hellenic Telecommunications Organization SA (ATSE:HTO)	1,74	1,50%
Tiscali SpA (BIT:TIS)	2,35	2,00%
Header Compression Sweden Holding AB (OM:HCH)	0,00	N.A.
Challenger Mobile AB (OM:CHAL B)	0,00	N.A.
NORDTELEKOM Telecommunications Service Provider Public Limited Company (BUSE:NORDTELEKOM)	0,00	N.A.
Viatel Holding (Bermuda) Ltd. (OTCPK:VIAH.F)	5,28	N.A.
TalkTalk Telecom Group PLC (LSE:TALK)	0,00	N.A.
Cable & Wireless Worldwide plc (LSE:CW.)	0,00	N.A.
Let's Gowex SA (CATS:GOW)	0,00	N.A.
Tri-Star Resources plc (AIM:TSTR)	0,00	N.A.
Eurona Telecom Wireless, S.A. (CATS:EWT)	0,00	N.A.

Source: Damodaran, Baker Tilly

Table I. 20 – 2013 information of Telecommunication Services European companies, data by Damodaran

Company	Beta	Spread
TalkTalk Telecom Group PLC (LSE:TALK)	0,28	1,00%
Colt Group S.A. (LSE:COLT)	1,00	1,00%
Ziggo N.V. (ENXTAM:ZIGGO)	n.a.	N.A.
Inmarsat Plc (LSE:ISAT)	1,35	1,00%
QSC AG (XTRA:QSC)	1,70	1,00%
Daisy Group plc (AIM:DAY)	0,36	1,00%
Hellenic Company for Telecommunications and Telematic Applications S.A. (ATSE:FORTH)	2,04	3,00%
Tiscali SpA (BIT:TIS)	1,80	1,50%
hellas online S.A. (ATSE:HOL)	0,52	0,50%
AllTele AllmŠnna Svenska Telefonaktiebolaget (OM:ATEL)	0,72	1,50%
DGC One AB (OM:DGC)	0,72	1,00%
Retelit SpA (BIT:LIT)	0,97	2,00%
Bredband2 i Skandinavien AB (OM:BRE2)	0,77	1,50%
Keyyo (ENXTPA:ALKEY)	0,19	N.A.
Avanti Communications Group PLC (AIM:AVN)	1,18	1,50%
Eurona Telecom Wireless, S.A. (CATS:EWT)	0,47	N.A.
Iliad SA (ENXTPA:ILD)	0,57	1,00%
Mox Telecom AG (XTRA:MOT)	0,89	1,00%
Budget Telecom S.A. (ENXTPA:ALBUD)	0,50	1,50%
Challenger Mobile AB (OM:CHAL B)	1,30	N.A.
NORDTELEKOM Telecommunications Service Provider Public Limited Company (BUSE:NORDTELEKOM)	n.a.	N.A.
Telef—nica, S.A. (CATS:TEF)	1,45	1,00%
Deutsche Telekom AG (DB:DTE)	0,73	1,00%
France TŽlŽcom SA (ENXTPA:FTE)	1,05	1,00%
Telecom Italia S.p.A. (BIT:TIT)	1,33	1,00%
Vivendi (ENXTPA:VIV)	1,29	1,00%
BT Group plc (LSE:BT.A)	1,04	1,00%
Telenor ASA (OB:TEL)	1,32	1,00%
Koninklijke KPN N.V. (ENXTAM:KPN)	0,44	1,00%
TeliaSonera Aktiebolag (publ) (OM:TLSN)	0,95	0,50%
Swisscom AG (SWX:SCMN)	0,37	0,50%
Portugal Telecom, SGPS S.A. (ENXTLS:PTC)	0,90	1,00%
Hellenic Telecommunications Organization SA (ATSE:HTO)	2,39	2,50%
Telekom Austria AG (WBAG:TKA)	0,91	1,00%
TDC A/S (CPSE:TDC)	0,72	0,50%
Magyar Telekom Telecommunications Public Limited Company (BUSE:MTELEKOM)	0,69	1,00%
Telef—nica Czech Republic AS (SEP:TELEC)	0,17	0,50%
Elisa Oyj (HLSE:ELI1V)	0,85	1,00%
Jazztel plc (CATS:JAZ)	1,42	1,00%

Source: Damodaran, Baker Tilly

Table I. 21 – 2013 information of Telecommunication Services European companies, data by Damodaran

Company	Beta	Spread
KCOM Group PLC (LSE:KCOM)	1,20	1,00%
Burkhalter Holding AG (SWX:BRKN)	0,70	1,00%
GO p.l.c. (MTSE:GO)	-0,13	N.A.
ecotel communication ag (XTRA:E4C)	0,51	1,00%
Let's Gowex SA (CATS:GOW)	0,62	1,00%
Afone S.A. (ENXTPA:AFO)	0,93	1,50%
Redstone plc (AIM:RED)	0,44	1,00%
3U Holding AG (XTRA:UUU)	0,67	1,00%
Telio Holding ASA (OB:TELIO)	0,40	1,00%
Phonera Aktiebolag (publ.) (OM:PHON)	0,65	1,00%
Bahnhof AB (publ) (OM:BAHN B)	0,38	1,00%
AdEPT Telecom plc (AIM:ADT)	0,81	1,50%
Alternative Networks Plc (AIM:AN.)	0,31	1,00%
conVISUAL AG (XTRA:C1V)	0,63	2,00%
Cable & Wireless Communications Plc (LSE:CWC)	0,92	1,00%
Business Telecom TavkozlŽsi Nyilvanosan Mukodo Reszvenytarsasag (BUSE:BTEL)	n.a.	N.A.
Newsphone Hellas SA (ATSE:NEWS)	0,85	2,00%
Acropolis Telecom SociŽtŽ Anonyme (ENXTPA:ALACR)	0,66	N.A.
Telenet Group Holding NV (ENXTBR:TNET)	0,96	1,00%
Primetel Plc (CSE:PTL)	-0,67	N.A.
Aiton Caldwell SA (WSE:AIT)	n.a.	N.A.
Hawe SA (WSE:HWE)	1,14	1,50%
Digate S.A. (WSE:DGT)	1,31	4,00%
Verbicom SA (WSE:VRB)	0,92	2,00%
Korbank S.A. (WSE:KOR)	n.a.	N.A.
Easycall PL S.A. (WSE:ECL)	n.a.	N.A.
Marsoft SA (WSE:MAR)	1,21	2,50%
Open-Net S.A. (WSE:OPE)	n.a.	N.A.
Yureco S.A. (WSE:YCO)	n.a.	N.A.
Belgacom SA (ENXTBR:BELG)	0,58	0,50%
Telekomunikacja Polska Spolka Akcyjna (WSE:TPS)	0,32	1,00%
Netia Spolka Akcyjna (WSE:NET)	0,81	1,00%
Turk Telekomunikasyon AS (IBSE:TTKOM)	0,54	1,00%
Telestrada SA (WSE:TLS)	0,58	1,00%
Og fjarskipti ehf (ICSE:VOICE)	n.a.	N.A.
MNI Spolka Akcyjna (WSE:MNI)	0,99	1,00%
Tele-Polska Holding SA (WSE:TPH)	0,48	2,00%
MediaTel Spolka Akcyjna (WSE:MTL)	0,56	2,00%
Unima 2000 Systemy Teleinformatyczne Sp—lka Akcyjna (WSE:U2K)	0,58	1,00%

Source: Damodaran, Baker Tilly

Table I. 22 – Yields of generic 2 and 10 year Portuguese and German Sovereign Bonds

Month	GSPT2YR Index	GSPT10YR Index	GDBR2 Index	GDBR10 Index
Jan-09	2,60%	4,59%	1,53%	3,30%
Feb-09	2,40%	4,58%	1,31%	3,11%
Mar-09	2,09%	4,55%	1,24%	2,99%
Apr-09	1,91%	4,33%	1,34%	3,18%
May-09	1,73%	4,41%	1,42%	3,59%
Jun-09	1,61%	4,40%	1,37%	3,39%
Jul-09	1,51%	3,93%	1,26%	3,30%
Aug-09	1,51%	3,89%	1,24%	3,26%
Sep-09	1,31%	3,85%	1,27%	3,22%
Oct-09	1,36%	3,79%	1,29%	3,23%
Nov-09	1,38%	3,75%	1,26%	3,16%
Dec-09	1,53%	4,07%	1,33%	3,39%
Jan-10	2,28%	4,41%	1,12%	3,20%
Feb-10	2,04%	4,22%	0,96%	3,10%
Mar-10	1,69%	4,22%	0,96%	3,09%
Apr-10	3,82%	5,14%	0,77%	3,02%
May-10	2,68%	4,68%	0,51%	2,66%
Jun-10	3,37%	5,70%	0,60%	2,58%
Jul-10	2,66%	5,19%	0,78%	2,67%
Aug-10	3,29%	5,45%	0,59%	2,12%
Sep-10	4,16%	6,30%	0,83%	2,28%
Oct-10	3,25%	5,95%	0,99%	2,52%
Nov-10	4,82%	6,97%	0,86%	2,67%
Dec-10	4,26%	6,60%	0,86%	2,96%

Source: Bloomberg, Baker Tilly

Table I. 23 – Yields of generic 2 and 10 year Portuguese and German Sovereign Bonds

Month	GSPT2YR Index	GSPT10YR Index	GDBR2 Index	GDBR10 Index
Jan-11	4,41%	7,05%	1,37%	3,16%
Feb-11	4,75%	7,51%	1,52%	3,17%
Mar-11	8,78%	8,41%	1,79%	3,35%
Apr-11	12,06%	9,64%	1,77%	3,24%
May-11	10,94%	9,61%	1,61%	3,02%
Jun-11	13,19%	10,90%	1,61%	3,03%
Jul-11	14,59%	10,85%	1,16%	2,54%
Aug-11	12,03%	10,38%	0,72%	2,22%
Sep-11	17,15%	10,93%	0,55%	1,89%
Oct-11	18,27%	11,79%	0,54%	2,03%
Nov-11	18,76%	14,05%	0,34%	2,28%
Dec-11	16,06%	13,36%	0,14%	1,83%
Jan-12	20,55%	16,40%	0,16%	1,79%
Feb-12	12,70%	13,75%	0,19%	1,82%
Mar-12	9,68%	11,53%	0,21%	1,79%
Apr-12	8,58%	10,63%	0,08%	1,66%
May-12	11,18%	12,03%	0,00%	1,20%
Jun-12	7,96%	10,16%	0,12%	1,58%
Jul-12	8,05%	11,20%	-0,09%	1,29%
Aug-12	5,59%	9,31%	-0,04%	1,33%
Sep-12	5,14%	9,00%	0,02%	1,44%
Oct-12	5,17%	8,19%	0,04%	1,46%
Nov-12	4,03%	7,64%	0,01%	1,39%
Dec-12	3,70%	7,01%	-0,02%	1,32%

Source: Bloomberg, Baker Tilly

Table I. 24 – Portuguese and German Sovereign Senior 10-year Euro CDS

Month	PORTUG CDS EUR SR 5Y Corp	GERMAN CDS EUR SR 5Y Corp
Jan-09	124	58
Feb-09	127	87
Mar-09	100	54
Apr-09	78	36
May-09	75	38
Jun-09	65	29
Jul-09	47	24
Aug-09	51	22
Sep-09	46	17
Oct-09	52	19
Nov-09	66	21
Dec-09	82	24
Jan-10	154	34
Feb-10	161	39
Mar-10	132	28
Apr-10	271	40
May-10	288	33
Jun-10	285	37
Jul-10	186	29
Aug-10	293	35
Sep-10	370	31
Oct-10	333	26
Nov-10	466	42
Dec-10	422	44

Source: Bloomberg, Baker Tilly

Table I. 25 – Portuguese and German Sovereign Senior 10-year Euro CDS

Month	PORTUG CDS EUR SR 5Y Corp	GERMAN CDS EUR SR 5Y Corp
Jan-11	352	46
Feb-11	382	39
Mar-11	510	32
Apr-11	604	32
May-11	642	28
Jun-11	774	29
Jul-11	914	46
Aug-11	947	54
Sep-11	1.146	68
Oct-11	963	50
Nov-11	1.074	62
Dec-11	1.067	61
Jan-12	1.187	59
Feb-12	1.187	59
Mar-12	1.187	59
Apr-12	1.187	59
May-12	1.187	59
Jun-12	1.187	59
Jul-12	1.187	59
Aug-12	1.187	59
Sep-12	1.187	59
Oct-12	410	17
Nov-12	436	15
Dec-12	396	20

Source: Bloomberg, Baker Tilly