

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

1 Introduction

1.1 Review of the cost of capital of PTC

The present document details the findings of ANACOM on the definition of the methodology to be used for calculating the cost of capital of PT Comunicações, S.A. (PTC).

The term "cost of capital" is usually associated with the return that a particular investment must provide, defined as the rate of return required by investors, in light of the business risk.

At a corporate level, the concept of cost of capital relates to the decisions of investors with respect to the assets they invest in and the form of financing, with consideration to the maximisation of the value of the company. In a capital-intensive market, such as electronic communications, this is a particularly important issue.

In this context, ICP-ANACOM drew up principles¹ for the development of an Analytical Accounting System (AAS), arguing that the total of incurred costs, including a margin of return, should be allocated to the entirety of PTC's businesses. Therefore, the unit costs of the various services include a margin of return on capital. ICP-ANACOM also determined that PTC communicate the parameters used in calculating the rate of return on capital.

PTC has been using the methodology of Weighted Average Cost of Capital (WACC) to calculate the rate of cost of capital and, as part of this methodology, the Capital Asset Pricing Model (CAPM) to calculate the cost of equity. In each of its financial years, PTC has presented details of its method for calculating the cost of capital, which is audited by ICP-ANACOM.

¹ Notice ICP-1808/95 of 25/08/95

However, considering that: (i) the methodology for calculating the cost of capital has not been revised since its implementation, and may therefore be inappropriate given the current situation; and (ii) the determination of certain parameters (e.g. gearing, effective tax rate, cost of borrowed capital) is not independent from the management decisions of the company, ICP-ANACOM deems it essential and necessary to revise the methodology currently used.

Additionally, the process of calculating and charging the cost of capital which has been followed historically lacks predictability, insofar as it is undertaken subsequent to the financial year in question. Moreover, PTC's cost of capital has direct and material impact on the costs of the products and services subject to "ex-ante" regulation, influencing the prices of several offers subject to this regulation, and, as a result, affecting its customers. As such, ICP-ANACOM is of the position that a review is required of this process in order to reduce this lack of predictability and to provide greater regulatory certainty, in a framework of greater transparency for all stakeholders.

The "ex ante" establishment of transparent rules regarding the determination of the cost of capital contributes to a predictable environment in which agents can adapt, anticipate and manage their expectations more effectively. Additionally, establishing preventive rules reduces the need for later investigation on the possible abuse of market power by setting excessive capital costs, which investigation is normally complex, time-consuming and potentially a cause of dispute.

The obligation of cost orientation of prices, applicable in certain relevant markets to operators with significant market power (SMP), aims to establish prices at a level which enables the market to function properly, as far as possible as if it were a competitive market, also taking into account the investment made by the operator and the need to guarantee an appropriate return in view of the risks involved.

In this sense, WACC is fundamental and key to regulatory decisions. The definition of an appropriate rate of return aims to (i) compensate the opportunity cost of the investment concerned, to ensure investment incentive; (ii) ensure that there are no distortions in the markets brought through discriminatory and anti-competitive practices; (iii) eliminate potential barriers to the entry of new competitors; and (iv) protect consumers from excessive prices.

Therefore, ICP-ANACOM considers it appropriate and urgent to reassess the methodology that has been used by PTC, as regards the determination of various

parameters used in the calculation of the rate of the cost of capital, in particular the risk-free interest rate, the beta factor, the risk premium, gearing², the tax rate and the cost of borrowed capital.

In addition to an internal analysis, ICP-ANACOM contracted a consultancy study on the methodology to be used for determining the cost of capital of PTC, as the undertaking with SMP, from the company PriceWaterhouseCoopers, SROC, S.A. (PwC) with the following objectives: (i) obtaining a detailed analysis and critique of the parameters used in the calculation of the rate of cost of capital of PTC; and (ii) obtaining a presentation of alternative methodologies for calculating these parameters. The study³ resulting from this consultation, from which ICP-ANACOM has struck the elements considered confidential, was released to the market as part of the consultation process.

As a result of the analysis conducted, the objective of the present document is to define a set of methodological principles governing the calculation of the rate of the cost of capital of PTC and the subsequent determination of its value for the three-year period 2009-2011, which reflects, in a balanced way, an adequate return on the activity of the company.

1.2 Regulatory Framework

Law No 5/2004⁴ of 10 February states in paragraph 2 of Article 74 that "in imposing the obligations (in respect of cost recovery and price controls, including obligations for cost orientation of prices and obligations concerning cost accounting systems), the NRA shall: a) Take into account the investment made by the operator and allow said operator a reasonable rate of return on the capital invested, taking the risks involved into account(...)"

Meanwhile, it is stated in Commission Recommendation 98/322/EC of 8 April (paragraph 5.1 of its Annex) that: "*charges for interconnection be cost-oriented, including a*

² Gearing - quotient obtained by dividing the average value of borrowed capital (the average of the sum of medium and long term financing) by the average value of invested capital (average equity plus average borrowed capital).

³ See PwC report - "Assessment of the cost of capital analysis of Portugal Telecom Comunicações", July 2009 (PwC Report 2009) - available on the website of ICP-ANACOM.

⁴ <http://www.anacom.pt/render.jsp?contentId=159011>

reasonable return on investment" and that "the cost of capital of operators should reflect the opportunity cost of funds invested in network components and other related assets".

Furthermore, according to paragraph 5.1 of this Annex *"The cost of capital of operators should reflect the following: the (weighted) average cost of debt for the different forms of debt held by each operator; the cost of equity as measured by the returns that shareholders require in order to invest in the network given the associated risks; and the values of debt and equity. This information can then be used to determine the weighted average cost of capital (WACC) using the following formula: $CMPC = r_e * E/(D+E) + r_d * D/(D+E)$ where r_e is the cost of equity, r_d is the cost of debt, E is the total value of equity and D is the total value of interest-bearing debt."*

2 The methodology to be used for calculating WACC

This chapter presents the approach deemed appropriate by ICP-ANACOM in defining an appropriate and consistent methodology for determining PTC's cost capital, analyzing each and every one of its components.

The report drawn up by PwC contains detailed analysis that would support the conclusions of ICP-ANACOM. PwC presents several alternative methodologies for the identification of each parameter for calculating the cost of capital, using financial analysis, benchmarking between operators and regulatory precedent.

2.1 Weighted average cost of capital and Capital Asset Pricing Model

To calculate the cost of capital, the methodology currently used by PTC is based on the weighted average cost of capital (WACC), using the pre-tax variant of the WACC formula.

The formula for calculating pre-tax WACC results from the adjustment resulting from tax in the *post-tax WACC formula*:

$$CMPC_{pre-tax} = CMCP_{post-tax} \times \frac{1}{(1 - ti)}$$

The calculation of WACC depends essentially on: (i) the rate of return on equity, calculated using the Capital Asset Pricing Model (CAPM); and (ii) the rate of return on borrowed capital, as explained in the following formula:

$$\text{CMPC}_{\text{pre-tax}} = [\text{Ke} \times (1 - \text{G}) + \text{Kd} \times \text{G} \times (1 - \text{ti})] \times \frac{1}{(1 - \text{ti})}$$

Where:

Ke is the rate of cost of equity, calculated using the Capital Asset Pricing Model (CAPM) using the following formula:

$$\text{Ke} = \text{Risk free interest rate} + \beta \times \text{Risk Premium}$$

Where:

Risk-free interest rate is the rate that compensates investment in risk-free assets;

β: represents the covariance between the performance of a company's shares and that of the stock market as a whole, that is to say, it reflects the risk of the shares of the company relative to general market risk;

Risk Premium reflects the difference between the rate of return provided by the stock market and that provided by risk-free investments;

Kd is the cost of debt capital;

G is gearing, corresponding to the weight of debt capital as a proportion of total invested capital; and

ti is the rate of income tax.

The main advantage of the pre-tax methodology compared to the post-tax approach stems from the fact that the first incorporates the cost of income tax, whereby this same cost is allocated to the products and services through the cost of capital. By contrast, the use of a post-tax method tends to impute income tax via common costs.

According to PwC's report, international experience supports the use of the methodologies described above, which are shared by several operators in regulated industries in several countries (See Table 1), and are considered as common practice recommended by regulators.

Table 1 - Methodologies used for the telecommunications sector

Country	Methodology used for calculating the rate of cost of capital	Methodology used for calculating cost of equity
Austria	WACC	CAPM
Belgium	WACC	CAPM
France	WACC	CAPM
Spain	WACC	CAPM
Italy	WACC	CAPM
Ireland	WACC	CAPM
Poland	WACC	CAPM
Norway	WACC	CAPM
Sweden	WACC	CAPM
Switzerland	WACC	CAPM
United Kingdom	WACC	CAPM
Netherlands	WACC	CAPM

According to the Principles of implementation and best practices (PIBs) concerning the methodology used for calculating the cost of capital, developed within the Independent Regulators Group (*IRG*)⁵, the WACC (PIB 1) is cited as a consensus methodology for calculating the rate of cost of capital and while CAPM (PIB 4), although containing some shortcomings, is cited as the most suitable method for calculating the cost of equity.

ICP-ANACOM compared CAPM with other ways of calculating the cost of equity capital, evaluating their advantages and disadvantages, as explained in PwC's report⁶, concluding in favour of CAPM.

CAPM is the most widely used model⁷, given that it presents a clearer theoretical basis and its implementation is simpler. The theory underlying this model is that of the efficient portfolio, holding that economic agents in a market will invest in an efficient portfolio, that is to say, they will invest in a portfolio that maximizes their expected results for a determined level of risk, taking into account each agent's degree of risk tolerance/aversion.

⁵ Available at http://erg.ec.europa.eu/doc/publications/erg_07_05_pib_s_on_wacc.pdf

⁶ See PwC 2009 report, pages 10-13

⁷ Graham and Harvey (2001), *The theory and practice of corporate finance: evidence from the field*, *Journal of Financial Economics*. The survey of 400 finance directors showed that three-quarters used CAPM.

In light of the above, PTC should continue to use the WACC methodology for calculating the rate of cost of capital, using the pre-tax variant and the CAPM methodology for calculating the cost of equity.

2.2 Risk-free interest rate

The risk-free interest rate reflects the rate of return on risk-free assets. In financial and regulatory practice, treasury bonds are generally considered to a reliable indicator and good parameter for reflecting an absence of risk, as is visible in the Benchmark performed by PwC⁸, which recommends the use of this indicator to determine the risk-free interest rate. A similar position is included in the IRG's PIBs with respect to the risk-free interest rate (PIB 6⁹).

In this context, the definition of the methodology for selecting the appropriate treasury bonds, was based on three key aspects: relevant market, maturity and type of data series.

(i) **Relevant market:** Typically, the domestic market should be chosen as the relevant market. However, in the event that local bonds are not issued on a consistent basis or where they lack liquidity, both PwC and the IRG support the choice of another market.

According to the PwC report, it appears that the preference of regulators¹⁰ is centred on the use of bonds corresponding to the domestic market.

However, given the possibility that the Portuguese market may lack liquidity, the alternative use of assets of a benchmark foreign market is considered for the purposes of calculating the risk-free interest rate. In its report, PwC made a comparison along these lines, using the German *bund*, the long-term German federal government bond, as a benchmark, concluding that Portuguese bond rates have been more stable¹¹.

It noted that PTC operates exclusively in Portugal, and that Portuguese bonds therefore provide a better reflection of the specific risk of the country. Meanwhile, according to the

⁸ See PwC 2009 Report - pg. 14

⁹ The IRG considers that treasury bonds provide a reliable parameter that can be used as a good proxy for the risk-free interest rate. It is likewise stressed that certain criteria must be taken into account, with respect to the maturity, the period of the data series and the market where the company operates.

¹⁰ Arcep, Agcom, NPT, CMT, OFCOM and ERSE.

¹¹ The PwC report presents a graphical comparison between the two instruments covering the period between January 2004 and January 2009, noting that while the two instruments remained aligned in the period from January 2006 until July 2007, from July 2007 Portuguese bonds have been more stable.

issue of treasury bonds (See Table 2) over the last 9 years, it appears that there is a sufficiently liquid market in these bonds (e.g. 10 year treasury bonds) to allow their use as a proxy for the risk-free interest rate.

In this respect, ICP-ANACOM favours the choice of these bonds issued by the Portuguese State, which have been used by the PTC.

(ii) **Maturity:** Maturity should be assessed according to the returns expected by shareholders, the average period of the depreciation PTC's assets and the regulatory period.

However, taking into account that: (i) longer maturity treasury bonds (15 and 20 years) are not issued annually in a systematic way and have less liquidity (See table 2) and (ii) shorter maturity bonds (2 and 5 years) suffer higher levels of volatility (See table 3) and do not have a timeframe which is in line with the expected investment period, the 10 year treasury bond, already used by the PTC, appears to be the most appropriate for use in the model as a parameter which reflects the return on risk-free assets.

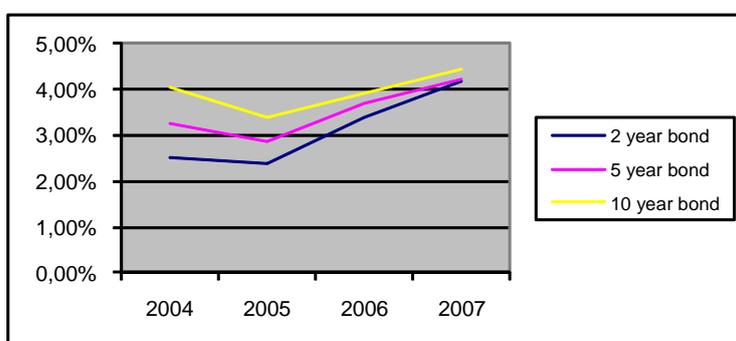
Table 2 - Treasury bond transactions

EUR millions	1998	1999	2000	2001	2002	2003	2004	2005	2006
Treasury bonds ⁽¹⁾	8 518	9 079	7 674	8 644	12 998	7 571	6 700	16 742	13 911
< 5 years	287	0	0	0	0	5 071	4 200	1 800	0
5 years	2 861	3 537	2 527	3 386	5 817	0	0	3 000	3 000
10 years	3 015	5 000	5 147	5 258	5 036	2 500	2 500	5 856	5 800
15 years	2 355	542	0	0	2 145	0	0	6 086	0
30 years	0	0	0	0	0	0	0	0	5 111

⁽¹⁾ Nominal bond value according to original maturity. Includes Euro-bonds in 1998

Source: Banco Espírito Santo

Table 3 - 2 year, 5 year and 10 year treasury bond rates

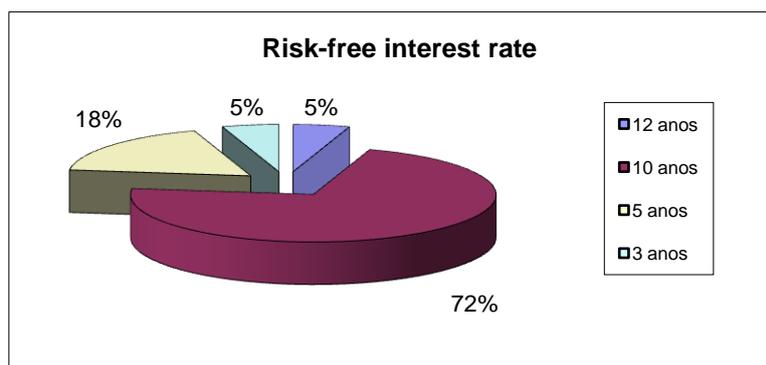


Source: Bank of Portugal

In the study prepared by PwC, preference is also given to the use of 10 year treasury bonds¹².

The IRG¹³ also presents a study citing the preference of various regulatory bodies with respect to the maturity of the bonds, noting that the preferred maturity corresponds to 10-year bonds (72%) (See Table 4).

Table 4 - Risk-free interest rate



Source: IRG "Regulatory Accounting in Practice 2008"

(iii) **Series:** One last aspect which should be taken into account is the type of data series which should be used, i.e. whether it should be based on historical observations or on current observations (observations of the day), and also the frequency of observations to be considered (monthly or quarterly).

For regulatory purposes - and bearing in mind that volatility should be minimised and that the rates observed on a particular day may contain distortions, which would be smoothed out in a historical series - the series to be used should be historical, covering a relatively long time period, for which purpose a period of two years is deemed as appropriate. In this regard, PTC has used a series of one year.

As regards the frequency of observation, it is noted that the use of a monthly series has advantages over a quarterly series, allowing: (i) greater detail of the sample compiled, and (ii) reducing errors in the calculation of the series average. In this context, ICP-ANACOM considers that the use of a series based on monthly observations to be appropriate, which has also been used by PTC.

¹² See PwC Report - pg. 20

¹³ This study refers to data compiled by the IRG with respect to the CMPC in 26 countries that are part of the IRG and is covered in the report "Regulatory Accounting in Practice 2008"

Consequently, the risk-free interest rate should be calculated by using 10 year treasury bonds issued by the Portuguese State. To calculate the rate of cost of capital to apply in the three-year period of 2009-2011, the series used should be that comprising monthly observations, with reference to the last two years, obtaining the value of **4.47%** (data from the Bank of Portugal for the period between January 2007 and December 2008).

2.3 Beta

As mentioned above, the determination of the systematic risk of risk assets quoted on the stock exchange is based on the CAPM methodology. Systematic risk is the general risk in the market, representing the risk related to all aspects (e.g. political, economic, etc.) which can impact the behaviour of investors. This risk is distinct from the individual risk of each of the listed securities, being a risk of the market as a whole, and therefore is also called non-diversifiable risk, given that it cannot be reduced or hedged by diversifying the portfolio across various sectors or industries.

The share's systematic risk is defined by calculating its Beta, which in the context of defining the company's cost of capital corresponds to the equity beta.

Currently, to determine the Beta to be considered in the cost of capital - given that the company is not listed on the stock market - PTC uses the value that results from the historical return on the securities of PT SGPS relative to return on market as a whole.

However, the Beta of PT SGPS does not provide a true reflection of the risk associated with the return of PTC, since the risks associated with these two companies are different, especially considering the geographies in which they are present and the services which they offer.

In light of the above, two alternative methodologies were considered to calculate the Beta: i) to estimate the Beta of PTC based on a benchmark of companies which have similar activities or, ii) to seek to infer the beta of PTC on the basis of the Beta of PT SGPS.

As regards the second alternative, it would be necessary to calculate the beta of each activity, performing a careful economic analysis of each one in the different geographies in which they operate, an exercise which, in the case of operations not present in the stock market (for example the activity TMN) would necessarily involve the use of benchmarking.

Subsequently, it would be necessary to evaluate the activities mentioned above in order to assess their impact on the Beta of PT SGPS. In most of the assessments made by analysts, who use the more common methodologies, such as Discounted Cash Flow and the Enterprise value/EBITDA ratio, the results can vary depending on the assumptions used.

Accordingly, given the discretion inherent in any market valuation of the company's activities, the alternative which could be considered would consist of the evaluation of each activity of Grupo PT, at book value, which could have several limitations arising, for example, from the fact that the assets have different maturities and are often shared between different activities.

Accordingly, it is considered that the most appropriate methodology to estimate the Beta of PTC is that based on a benchmark of companies with similar activities, which methodology is also recommended by PwC¹⁴ and is included in the methodologies considered by the IRG in the development of the PIB on the methodology for calculating Beta (PIB 8)¹⁵.

In the definition of a Benchmark, its composition needs to be established, with two possible options: (i) comparable companies and (ii) regulatory precedent.

With regard to a Benchmark of comparable companies (See Table 5), ICP-ANACOM deems the methodology proposed by PwC to be appropriate¹⁶, having the following underlying characteristics:

- definition of a set of companies based on the following criteria: per capita income of the respective countries; offer of similar products and services; market position; rate of growth and company valuation. The Beta of PT SGPS was also considered, despite reservations arising from its consideration in isolation, given the range of geographic markets and services encompassed.
- Use of the Harris and Pringle model¹⁷ to calculate the equity betas of comparable companies. The formula allows the asset's beta to be calculated, i.e., the Beta without

¹⁴ See PwC report 2009 - pages 23 to 29.

¹⁵ PIB 8 - The IRG considers that there are several ways to determine the beta: through the use of historical information, benchmarking or through the definition of a *target* beta", assessing in all cases: (i) the limitations that may exist in obtaining the information; and (ii) the quality of information available.

¹⁶ See PwC report 2009 - pp. 26 and 27.

the effect of capital structure and later leveraged with the capital structure defined as optimal¹⁸ for PTC;

- frequency of observations: Beta can be estimated through observations made on a daily, weekly, monthly or quarterly basis. The number of observations is very important because it contributes to the reduction of uncertainty in the estimation. Indeed, as found with respect to the risk-free interest rate, the use of monthly observations was selected;

- period of time: the consideration of a short series may distort the results and miss relevant information. Indeed, the most recent observations contain effects which may not correctly represent future expectations, whereby series should be used which have a period long enough to correct the effects of volatility that can be felt in the short term. The Beta contains fluctuations over the business cycles of the company and it is noted that, in fact, PT has been undergoing significant changes with respect to the structure of its activities since 1995, with the liberalization of the sector, the internationalization of the group, technological innovation and the diversification of the services it provides. It is considered that, in this context, the period of the series should incorporate the observations which are relevant, in order to ensure that the result is robust and representative of the risks inherent in the company's current structure. According to PwC's report, there is a notable preference among European regulators¹⁹ for periods of 2 to 5 years. Therefore, it is deemed appropriate to use a period of 5 years, providing for a high level of robustness and dependability in the results obtained;

- Beta data is taken from Bloomberg and corresponds to the values resulting from the *Bayes* formula, i.e. adjusted Beta²⁰. This adjustment provides a more robust estimate and less volatile fluctuations.

As regards the Benchmark of regulatory precedent, the regulators selected²¹ were those with recent decisions on Beta for the fixed business (See Table 5).

¹⁷ The calculation formula of *Harris and Pringle* (See PwC report 2009 - pages 58 and 59) is considered a formula which is most in line with reality. $(\text{Equity}) \beta = (\text{Asset}) \beta (1 + D/E)$ where: D/E – capital structure. The *gearing* used corresponds to the optimal gearing defined in Chapter 2.4 = 36.20%.

¹⁸ The optimal gearing defined by ANACOM in Chapter 2.4 = 36.20%

¹⁹ Agcom, NPT, CMT and Ofcom.

²⁰ The beta of a company can be presented as adjusted beta or as raw beta. Raw beta (or historical beta) is derived from comparing the return on the security to market return. Adjusted beta is an estimate for the future return of the security compared to market return. It is derived initially from historical data, with adjustment, assuming that the beta of the security in question will always tend to the average returns provided by the market. The formula for calculating adjusted beta is: $\text{adjusted Beta} = 0.67 * (\text{raw beta}) + 0.33 * (1)$.

²¹ See PwC Report - page 28

Table 5 - Calculation of Beta

Comparable companies	Regulatory precedents
5 year average, monthly observations	2008
0.69	1.02

Source: PwC 2009 report and ICP-ANACOM calculations (see Annex A)

However, with respect to the selection of comparable companies, it is important to note that, as indicated by PwC in its report, whereas not all the criteria defined as desirable from the outset for comparative purposes have been wholly fulfilled, only those companies that come closest were selected. Meanwhile, data on recent regulatory decisions (2008) is restricted to a relatively small set of countries.

ICP-ANACOM, weighing all the constraints, takes the position that the determination of PTC's Beta should result from the average of the Betas calculated based on benchmarks using comparable companies and regulatory precedents, which value corresponds to **0.85**.

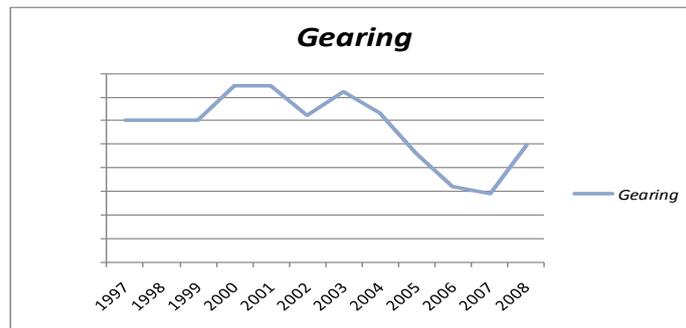
2.4 Gearing

Gearing corresponds to the company's financial structure and is determined by the weight of debt capital as a proportion of total invested capital, a methodology which has been followed by PTC. The determination of the company's financial structure is evidently very important in determining the WACC. The choice of the optimal ratio between equity and debt, in order to optimize the WACC, is known as the optimal capital structure.

PTC has calculated gearing using the ratio between debt, consisting of medium and long term debt, and invested capital (sum of debt capital and equity).

However, taking into account that PTC's level of gearing has fluctuated widely over time (See Table 6), essentially because: (i) PTC does not hold medium and long term loans on a consistent basis and therefore its debt stems mainly from provision for retirement and health care benefits; and (ii) the basis used by PTC to calculate gearing is not the most appropriate, as outlined in the PwC report, ICP-ANACOM has deemed it necessary to adopt an alternative approach that is not impacted by the variations resulting from the financial management strategies pursued by the company's group.

Table 6 – PTC Gearing



Source: Results of PTC's AAS PTC – 1997/2008

The report prepared by PwC cites four methodologies which can be used to calculate gearing, and which have been used by European regulators: (i) real gearing, (ii) target gearing²²; (iii) optimal gearing; and (iv) regulatory precedent.

In general, it is observed that most European Regulators²³ have adopted optimal gearing, an option which has several advantages: (i) it increases predictability and regulatory certainty; and (ii) it eliminates the volatility of gearing in terms of the funding policies pursued by the companies, thereby promoting efficiency and transparency.

PwC²⁴ is of the same opinion, proposing the calculation of optimal gearing through a Benchmark.

It should be noted that optimal gearing can also be calculated by constructing a financial model that simulates the performance of the company for different levels of gearing, to maximize the value of the company. This model requires a large amount of information, which is not always available (e.g. company valuation, debt ratios, continuity of operations, etc.) and may require set of assumptions to be defined which are subjective in nature (e.g., analysis of the business, company book value or market value of the firm; debt fair value, etc.).

In this respect, and considering existing limitations, ICP-ANACOM deems that the most appropriate methodology consists of the use of a Benchmark.

In its report, PwC proposes the use of these two forms of benchmark to calculate this indicator: (i) comparable companies; and (ii) recent regulatory precedent (2008).

²² See PwC Report 2009 - page 46

²³ IBPT, ARCEP, ComReg, Agcom and CMT.

²⁴ See PwC report 2009 - pages 42 to 46

As regards the benchmark of comparable companies, to ensure the overall coherence of the proposed methodology, the comparable companies selected are the same as those used to determine the Beta, including PT SGPS (See Table 7) and five years of historical data was considered.

Table 7 - Gearing of comparable companies

Company	5 year average Gearing
Belgacom	30.05%
BT Group	63.08%
Deutsche Telekom	39.43%
Elisa OYJ	30.53%
France Telecom	46.76%
Hellenic Telecommunications	46.71%
KONINKLIJKE KPN NV	57.03%
Magyar Telecom	26.15%
Swisscom	43.50%
Telekom Austria	43.91%
Telecom Italia	54.55%
Telefonica	56.14%
Telenor ASA	31.02%
TeliaSonera AB	17.39%
PT SGPS	53.39%
Average	42.64%

Source: PwC 2009 Report and *Bloomberg*

in terms of the *Benchmark* of regulatory precedent, the regulators selected²⁵ were those with recent decisions on the *gearing* for the fixed business (See Table 8).

²⁵ See PwC Report 2009 - pg. 47

Table 8 - Gearing of regulatory precedent

Regulatory precedent
2008
29.77%

Source: PwC Report 2009

For the reasons already given with regard to the calculation of Beta, ICP-ANACOM considers that it is necessary to adopt gearing which is obtained from the average between benchmarks using comparable companies and regulatory precedent, determined as being **36.20%** for the three-year period of 2009 - 2011.

2.5 Risk Premium

The risk premium corresponds to excess financial return, i.e. it represents the difference between the risk of investing in the stock market and investing in risk-free assets.

$$\text{Risk Premium} = R_m - R_f$$

Where:

R_m - expected return from the stock market

R_f - risk-free interest rate

PTC has been using information from Bloomberg to calculate the value of the risk premium.

Both in terms of methodology and in conceptual terms, the determination of the expected risk premium of the stock market is not a task which generates consensus. The analysis of risk premium behaviour, however, is complicated because, along with its determinants, it is not directly observable. In addition, risk premium varies over time according to how investors perceive the risk of the asset in question and also according to their attitude towards risk.

In fact, risk premium is an extremely volatile variable, whereby emphasis should be given to observations based on longer data series, as advocated by *Damodaran* in the

study on the risk premiums²⁶, where it is stated that, because they provide for a smaller standard error, observations based on the longest data series outweigh the benefit derived from the more relevant observations associated with shorter and more recent periods. In this sense, the result becomes more consistent as the period considered is lengthened.

However, taking into account the extent to which the Portuguese market is integrated in international financial markets and the fact that the data set available for the market itself is limited, the Benchmark of more mature financial markets may constitute a good reference for the risk premium of the market because they provide for a longer historical period and therefore for a reduction in the estimation error.

Assuming, therefore, that the Benchmark proves to be an appropriate solution, it is fundamental to define the methodology with respect to: (i) use of *ex-post* data versus *ex-ante data*; and (ii) consideration of the arithmetic average of the data series versus the geometric average of the data series.

In general, the *ex-post* methodology consists of estimates based on historical data, in contrast to an *ex-ante* methodology which takes account of estimates based on future expectations. Furthermore, the geometric average corresponds to the average annual return with respect to an investor who buys and maintains their portfolio with a long-term perspective, while the arithmetic average reflects the average annual return associated with an investor who makes a daily decision to invest and has no objective to hold the company's capital over an indefinite and extended period.

Ex-post versus ex-ante methodology

Current practice for estimating the market premium is the use of premiums made and observed over long historical series (25 to 100 years), as explained in PwC's report²⁷. Furthermore, according to PwC's analysis²⁸, it is evident that most countries favour an *ex-post* methodology.

However, this premium (calculated from *ex-post* data) may not correspond to the expectations of investors at the time the decision to invest is taken. After all, what matters is the opportunity cost of capital, which is only available and is only relevant at

²⁶ Damodaran, Aswath, "Equity Risk Premiums", Stern School of Business

²⁷ Belgium (IBPT) - 35 years; France (Arcep) - 26 years; Norway (NPT) - 105 years and United Kingdom (Ofcom) - 107 years.

²⁸ See PwC Report 2009 - pp. 31 and 32

the time the investment decision is taken. This, in turn, requires that current market conditions be taken into account.

In this sense, it is considered appropriate to include *ex-post* and *ex-ante* data with a weighting factor associated with each. PwC recommends the *DMS and LBS* databases (2008) for the *ex-post* approach and the studies of the *Competition Commission* (2008) and Welch (2007), for the *ex-ante* approach. ICP-ANACOM considers that the *Damodaran* database should also be considered for the *ex-post* approach, and the database of *Bloomberg* for the *ex-ante* approach, given that it is the database of reference.

Given the recent financial crisis, it is important that the risk premium already incorporates the impact seen as of the last quarter of 2008. To this end, according to PwC, a recent review conducted in a study carried out by *Grabowski*²⁹ should be taken into account.

It is likewise noted that consideration should be given to recent regulatory precedent (2008), identified by PwC, since this constitutes a good basis for comparison.

Given the above, consideration is given to the proposal set out in PwC's report to consider the four sources of information cited to calculate the risk premium (*ex-post* data, *ex-ante* data, recent revisions and regulatory precedent), providing a degree of consistency, as appropriate and adjusted to the parameter that is to be determined. PwC used a weighting based on professional judgement for each of the sources of information, presenting two distinct scenarios in this respect. However, the view is taken that there are no objective reasons to assign different weightings to these information sources. Therefore an equal weighting will be given to each source, corresponding to an individual weighting of 25%.

Geometric average versus Arithmetic average

Every day, investors make decisions to invest with respect to the purchase and sale of shares. There is no clear and binding commitment to maintain a share portfolio indefinitely without there being at least an implied intention to act on the decision to invest, even though this may not be carried through.

²⁹ *Grabowski, J, Roger (2009), "Problems with cost of capital estimation in the current environment-update"*

According to available data, it is not possible to clearly assess the relevance of all the shareholders who take a long-term strategy. Furthermore, ICP-ANACOM considers that it is unreasonable to assume, for purposes of ascertaining the rate of cost of capital, that an investor will hold their participation on an unconditional basis (i.e. regardless of any developments that may impact the value of the company) and for an indefinite period. In this respect, and so as not to underestimate the risk premium associated with the average PTC investor, this should be calculated based on the arithmetic average of the observations.

As a result of the methods set out above, the determination of the risk premium results from the average of results obtained, using the arithmetic average of the four sources of information (*ex-post data*, *ex-ante data*, recent revisions and regulatory precedent), (See Table 9).

Table 9 - Calculation of risk premium

	Source	Weighting	Risk premium
Ex-Post	DMS and LBS (2008) - France		6.20%
	DMS and LBS (2008) - Italy		7.70%
	DMS and LBS (2008) - Ireland		5.10%
	DMS and LBS (2008) - Netherlands		6.10%
	DMS and LBS (2008) - Norway		5.60%
	DMS and LBS (2008) - Spain		4.60%
	DMS and LBS (2008) - United Kingdom		5.40%
	Damodaran (2009)		6.50%
	Ex-post total	25%	1.48%
	Ex-Ante	Competition Commission (2008)	
Welch (2007)			5.75%
Bloomberg (2008)			6.45%
	Ex-ante total	25%	1.38%
Recent Revisions	Grabowski (2009)		6.00%
	Total Recent Revisions	25%	1.50%
Regulatory Precedents	CMT Spain (2008)		7.00%
	ComReg Ireland (2008)		6.00%
	Arcep France (2008)		5.00%
	Total Regulatory Precedents	25%	1.50%
Risk premium		100%	5.86%

Source: PwC 2009 Report and ICP-ANACOM calculations

In this light, ICP-ANACOM considers that in the three-year period 2009-2011, the risk premium to be considered is **5.86%**.

2.6 Cost of borrowed capital

The cost of borrowed capital reflects the interest rate for medium and long term debt financing. Since 2001, PTC has used the rate of the medium and long term loan contracted in 2000 from PT SGPS. From 2005, and given that the loan was repaid in 2004, the rate of borrowed capital was determined using the average of several packages of medium and long term PTC debt.

It should be noted that the debt premium implicit in the average rate of borrowed capital used by PTC from 2004 to 2007 has a value which is clearly below the 1.3% average of the values adopted by European regulators mentioned by PwC³⁰.

As mentioned above with respect to gearing, PTC does not hold medium and long term loans on an ongoing basis. In this sense, PwC recommends that the rate of borrowed capital is determined taking into account the debt premium³¹.

Since PTC does not issue bonds, one could consider the debt premium corresponding to PT SGPS. It should be noted, however, that to consider only the debt premium of PT SGPS would equate PTC to PT SGPS with respect to the rating assigned to the companies. This could prove to be inconsistent, since these businesses have different levels of risk, taking into account the individual capital structure and businesses.

Because there is no value which enables PTC's debt premium to be measured directly, and bearing in mind that the methodology used for assessing other parameters such as the gearing and Beta was based on a Benchmark encompassing the same comparable companies³², this methodology is also deemed suitable for determining the debt premium³³. As was the case in the determination of other parameters that make up the cost of capital, PT SGPS was also considered in the sample of comparable companies.

The choice of the maturity and duration of the series should be consistent with the choice made with respect to the risk-free interest rate while taking into account that the

³⁰ Ireland, Italy, Spain and the United Kingdom See PwC Report 2009 - page 37.

³¹ The debt premium is the spread over the rate corresponding to risk-free investments which is required by the creditors of the company and which reflects the quality of the loan recipient (usually reflected in the ratings assigned to the company) and its ability to fulfil the responsibilities of the debt.

³² See PwC Report 2009 - page 40 - Taking into consideration the maturity of 10 years, Belgacom, Magyar Telecom and ElIsa OYJ were excluded.

³³ See PwC Report 2009 - pages 40-41

rate of borrowed capital is obtained from the sum of the risk-free interest rate and the debt premium. Therefore, a 10 year maturity will be used and a 2 year data series (January 2007 to December 2008), resulting in a value of 0.99% for the debt premium (See Table 10).

Table 10 - Debt premium

Company	Credit Default Swaps 01-01-07/31-12-08
BT Group	0.96%
Deutsche Telekom	0.89%
France Telecom	0.78%
Hellenic Telecommunications	0.81%
KONINKLIJKE KPN NV	0.99%
Swisscom	1.41%
Telekom Austria	0.75%
Telecom Italia	1.54%
Telefonica	0.95%
Telenor ASA	0.75%
TeliaSonera AB	0.75%
PT SGPS	1.24%
Average	0.99%

Source: PwC 2009 Report and *Bloomberg*

However, to provide a more consistent result, and since in the past PTC has been financed by its sole shareholder (PT SGPS), consideration was also given to the debt premium which results from the database of *Bloomberg*³⁴ (another source of information recommended by PwC) which reflects those telecommunications companies with a BBB rating (identical to the current rating PT SGPS). Considering the data series of the last two years (January 2007 to December 2008), this value is determined at **1.48%**.

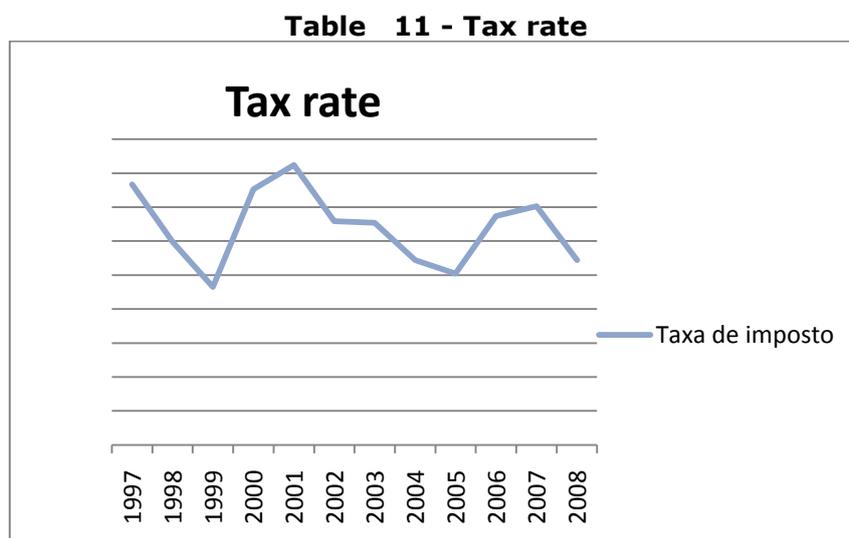
In light of the above, ICP-ANACOM determines that both sources of information: (i) Credit Default Swap Spreads for comparable companies with issuance of 10 year bonds, and (ii) the implicit spread for telecommunications companies with BBB implicit, should be used to determine the debt premium of PTC. For both sources of information a history of two years should be used, determining a value of **1.23%**, which corresponds to the arithmetic average of the two sources of information detailed above.

³⁴ See PwC Report 2009 - pg. 41

2.7 Tax rate

In calculating the cost of capital, PTC considered the effective tax rate obtained directly from the annual report and accounts, using the ratio between income tax for the financial year and earnings before tax.

The effective tax rate may suffer a lot of volatility from year to year (See Table 11), since it is dependent on the adjustments that are made each year to the nominal tax rate in terms of permanent and/or temporary differences (e.g. capital gains, goodwill, equity) which contribute to reducing regulatory predictability with regard to the rate of cost of capital. Furthermore, the implementation of the accounting standardisation system, which comes into force from 2010, could substantially alter the adjustments to be considered in ascertaining the effective rate.



Source: AAS Results of PTC 1997-2008

In this respect, determining the nominal tax rate is less complex than determining the effective tax rate, while it provides greater regulatory predictability and a figure which is set from outside the company and which is easily observable. In addition, over the long term, the effective tax rate will tend towards the nominal tax rate, since the adjustments tend to offset each other.

In light of the above, ICP-ANACOM determined to use the nominal tax rate, assuming a value of **26.50%** for the three-year period of 2009-2011.

3 Basis of return of the cost of capital

The cost of capital is determined from the product of the WACC rate and the basis of return, whereby the latter is particularly important because it should reflect the operator's investment in its operational activity. PTC has considered the value of invested capital, calculated using the sum of borrowed capital and equity, as the basis of return for the purposes of calculating the cost of capital and hence the asset allocation, whereas the remainder (the difference between the value of non-current assets and the value of invested capital, given as working capital) is allocated as common costs.

Paragraph 2 of article 74 of Law No 5/2004 states that "in imposing the obligations, the NRA shall: a) Take into account the investment made by the operator, and allow said operator a reasonable rate of return on the capital invested, taking the risks involved into account (...)".

The position is taken that the capital invested is the investment made by the company, evident in an immediate way in the non-current assets of the company. In this context, the capital invested for return shall be reflected in the company's non-current assets, whereby the cost of capital should be directly applied.

In its report, PwC recommended that the basis of return of the cost of capital should correspond to the assets directly associated with the regulated activity of the company.

Considering that the cost model presented by PTC is based on the methodology of fully distributed costs, it is reasonable to consider as the basis of return the total value of non-current assets (associated with regulated and unregulated products and services), with allocation performed using the Activity Based Costing methodology.

In light of the above, the direct application to non-current assets of PTC constitutes a more appropriate methodology, taking into account that they provide a direct return on the investment made by the company in its operational activity.

In this context, ICP-ANACOM determines that PTC should consider non-current assets in its basis of return of the cost of capital, including tangible assets, intangible assets and financial investments. Any other assets which PTC classifies as an investment and which in its view should have a return will have to be submitted to ICP-ANACOM and duly justified for the validation of their proper inclusion in the basis of return.

4 Defining the rate of cost of capital

The prior adoption of a clear methodology and the resulting definition, *a priori*, of the rate of the cost of capital for the years 2009 - 2011 promotes regulatory predictability and transparency in the markets. As such it is deemed appropriate to adopt a fixed rate for the rate of cost of capital for the three-year period of 2009-2011 (See Table 12).

Table 12 - Rate of cost of capital - 2009/2011

Parameters	Rate
Risk-free interest rate	4.47%
Debt premium	1.23%
Beta	0.85
Risk premium	5.86%
Gearing	36.20%
Tax rate	26.50%
Cost of equity	9.47%
Pre-tax CMPC	10.28%

Source: ICP-ANACOM Calculation

Since the rate of the cost of capital is determined at the end of 2009, it is considered that there should be a transition period which will allow PTC to adjust its operations to the rate of cost of capital resulting from this methodological change. In this respect, a glide path is established, having as its starting point the cost of capital rate presented by PTC in its AAS results for the 2008 financial year (Tx 08 - 13.24%).

It is important to note that the results of the 2008 AAS have not been audited. However, despite the conclusions that may result from the audit, the premises now defined and the values established for the transitional period should be maintained, since the value in question (Tx 08) only reflects an approximation to the initial point and has no effect on the determination of the point of arrival.

In light of the above, a linear and annual 1.0% decrement rate is considered for the value of the cost of capital rate (rounded to one decimal place for the sake of simplicity)

between 2009 and 2011, until the value of **10.3%**, as defined by ICP-ANACOM, is achieved in 2011. This results in the values set out in Table 13.

Table 13 - Glide path - 2009/2011

1st year - 2009	$Tx\ 08 - (Tx\ 08 - Tx\ 09/11)*0,33$	12.3%
2nd year - 2010	$Tx\ 1st\ year - (Tx\ 08 - Tx\ 09/11)*0.33$	11.3%
3rd year - 2011	$Tx\ 2nd\ year - (Tx\ 08 - Tx\ 09/11)*0.33$	10.3%

Source: ICP-ANACOM calculation

Tx 09/11 – corresponds to rate set out in table 12

However, in the event that, during the period in question, any extraordinary situation occurs which has a significant impact on the validity of the assumptions used, the parameters defined will be reviewed. This review, provided it is properly justified, can be triggered on the initiative of ICP-ANACOM or PTC.

In this regard, ICP-ANACOM undertook the assessment of the relevant parameters for determining the cost of capital rate, dividing them into two distinct blocks: (i) parameters which depend on the macroeconomic conditions in the country, and are therefore external to the company, including the risk-free interest rate, the tax rate and risk premium, and (ii) parameters related to the company itself, in particular, Beta, gearing and debt premium.

It is considered that these latter parameters are not subject to revision during the three-year period of 2009-2011, since the *benchmark* used for their calculation is broad enough to deflect possible changes and to accommodate a degree of volatility, whereas they will certainly be reviewed when the rate is defined for the following three-year period. Regarding the former parameters, the situation is different and needs some attention in the sense that its variation is immediate and direct because it depends on fiscal policy and the country's macroeconomic environment, whereby it is completely external to the company and, as such, can be revised.

It should be noted that the review mechanism can be triggered until the end of the first quarter of the year following the year in question, whereas the effects of any calculated adjustments should have bearing on the respective financial year, prior to the presentation of the annual results of the AAS.

ICP-ANACOM deems significant, a deviation exceeding 0.5 percentage points in the cost of capital rate of PTC, defined in the present Decision, whereby any change in the value of the cost of capital rate to be applied in the three-year period of 2009-2011 will be

subject to determination of this Authority and will be subject to the prior-hearing of interested parties.

Annex A

Beta

	<i>Adjusted Beta 5 years monthly observations (Bloomberg)</i>	<i>Gearing average 5 years</i>	<i>Asset Beta 5 years (Harris & Pringle Formula)</i>	<i>PTC Optimal Gearing</i>	<i>Equity Beta 5 years (Harris & Pringle Formula)</i>
Belgacom	0.52	30.05%	0.36	36.20%	0.57
BT Group	1.01	63.08%	0.37	36.20%	0.59
Deutsche Telekom	0.65	39.43%	0.39	36.20%	0.62
Elisa OYJ	0.90	30.53%	0.63	36.20%	0.98
France Telecom	0.56	46.76%	0.30	36.20%	0.47
Hellenic Telecommunications	0.77	46.71%	0.41	36.20%	0.64
KONINKLIJKE KPN NV	0.61	57.03%	0.26	36.20%	0.41
Magyar Telecom	0.80	26.15%	0.59	36.20%	0.92
Swisscom	0.60	43.50%	0.34	36.20%	0.53
Telekom Austria	0.78	43.91%	0.44	36.20%	0.68
Telecom Italia	0.79	54.55%	0.36	36.20%	0.56
Telefonica	0.85	56.14%	0.37	36.20%	0.59
Telenor ASA	0.90	31.02%	0.62	36.20%	0.97
TeliaSonera AB	0.85	17.39%	0.70	36.20%	1.09
PT SGPS	0.91	53.39%	0.42	36.20%	0.66
Average	0.77	42.64%	0.44	36.20%	0.69

Source: *Bloomberg*, PwC Report (2009) and ICP-ANACOM calculation