

**Methodology to calculate
the cost-of-capital rate of
CTT – Correios de Portugal, S.A., applicable to 2018
and subsequent financial years**

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1. Executive Summary

The aim of the cost-of-capital rate is to represent the rate of return required to offset the opportunity cost of the investment.

In the context of postal regulation, the determination of the cost-of-capital rate seeks: (i) to ensure the right incentives to investment on the part of the universal postal service (UPS) provider; (ii) to ensure that there are no market distortions, through discriminatory and anti-competitive practises; (iii) to remove any barriers to the entry of new competitors; and (iv) to protect consumers from excessive prices.

ANACOM thus considers it essential to define a methodology that allows an appropriate establishment of the cost-of-capital rate, without any accounting and analytical constraints, to compensate investments made by regulated postal companies in the scope of the provision of the Universal Service (US).

In this respect, it must be stressed that the guiding principles of the Cost Accounting System (CAS) of CTT – Correios de Portugal, S.A. (CTT) establish the concept of reasonable profit, a concept which is in line with Directive 2008/6/EC, amending the Postal Directive (Directive 97/67/EC, of 15 December), by considering that the calculation of universal service net costs (USNC) should take into account, among other elements, the entitlement of the postal service provider designated to provide US to a reasonable profit (Recital § 29 and paragraph 3 of Part B to Annex 1).

This understanding is also supported by the Postal Law¹, by considering that USNC must allow a reasonable profit to be obtained, represented by the cost-of-capital, reflecting the risk incurred in investments made to provide US (point b) of paragraph 3 of article 19).

CTT CAS, which has been regularly reported to Autoridade Nacional de Comunicações (ANACOM), is based on the Fully Distributed Costs (FDC) methodology, thus including all expenses incurred by his operator, plus a reasonable margin of return, which corresponds to the cost-of-capital.

¹ Law No. 17/2012, of 26 April, as it stands, transposing Directive 2008/6/EC of 20 February 2008 to the national legal system.

Bearing in mind that, in the last few years, the methodology to calculate the cost-of-capital used in CTT CAS has remained unchanged, and in the light of relevant changes occurred in the meantime in the postal sector, in particular as regards the privatization and entry into the stock market of several postal operators active in the European marketplace, including CTT itself, it is deemed that the cost-of-capital methodology that is currently used may now be out of date as far as comparable factors used to determine some of the parameters are concerned (such as Beta and gearing).

In addition, and considering that some of the parameters used in the establishment of the cost-of-capital are exogenous, that is, not dependent on the performance of the regulated company (e.g. risk-free interest rate, risk premium, tax rate) rather on the macroeconomic context (country) where the company is located, ANACOM believes that it is also necessary to revise the determination on the methodology to calculate these parameters so as to maintain the regulatory consistency, where appropriate, with the methodology defined by this Authority, in the scope of the regulation of electronic communications, as regards the establishment of the cost-of-capital.

This decision aims to minimize the unpredictability associated to the calculation of CTT's cost-of-capital rate and, at the same time, to provide for greater regulatory certainty, improving transparency for all stakeholders, given that, contrary to the situation that applied so far, the cost-of-capital is no longer determined *a posteriori*, now being established before CAS results for the financial year concerned are prepared.

The *ex-ante* establishment of transparent rules governing the determination of the cost-of-capital rate contributes to a predictable environment to which agents may adjust, anticipating and managing their expectations more effectively. Moreover, when *ex-ante* standards are set out, the need for subsequent investigations, which are typically complex, lengthy, and potentially the matter of disputes, is reduced.

In this context, this methodology aims to determine a cost-of-capital that appropriately allows a reasonable profit to be obtained, taking account of the risk incurred in investments made to provide the US.

2. Framework

Pursuant to applicable legislation, CTT, as provider of the universal postal service (UPS) is required to have in place a cost accounting system (CAS) that allows the separation of accounts between each of the services and products that integrate, and do not integrate, the universal service, so as to allow, in particular, the establishment of universal service net costs (USNC) as well as the separation between costs associated to the various basic operations integrating postal services (clearance, sorting, transport and distribution)², on the basis of consistently applied and objectively justifiable cost accounting principles.

As National Regulatory Authority, it is incumbent on ANACOM³: (i) to approve the CAS submitted by the USP; (ii) to ensure that its correct application is verified by a competent body, independent of the USP; and, (iii) to publish every year a statement of conformity of the USP CAS and of results obtained.

CTT have submitted regularly to ANACOM a CAS that aims to meet obligations arising from: (i) legislation in force; (ii) determinations and recommendations issued by ANACOM further to annual audits to the CAS; and (iii) guiding principles defined by this Authority (1996)⁴, according to which the sum of allocated expenses (current wording given by the Accounting Standardisation System - ASS - to the concept of costs) in CTT CAS must correspond to the total of expenses borne, plus a reasonable margin of return.

Directive 2008/6/EC, amending the Postal Directive (Directive 97/67/EC, of 15 December), in paragraph 3 of part B to Annex 1, lays down also that: “*The calculation⁵ shall take into account all other relevant elements, including any intangible and market benefits which accrue to a postal service provider designated to provide universal service, the entitlement to a reasonable profit and incentives for cost efficiency*”.

² Article 15 of Law No. 17/2012, of 26 April, as it stands, and paragraph 1 of Base XIII of Decree-Law No. 448/99, of 4 November, as it stands.

³ Paragraph 4 of article 16 of Law No. 17/2012, of 26 April, as it stands.

⁴ Letter ICP-192/96 of 2 February.

⁵ Of the universal service net cost.

This understanding is also supported by the Postal Law⁶, which considers that USNC must allow a reasonable profit to be obtained, represented by the cost-of-capital, reflecting the risk incurred in investments made to provide US (point b) of paragraph 3 of article 19).

The concept of reasonable profit established in the guiding principles of CTT CAS, in line with the Postal Directive, has entailed the incorporation of the cost-of-capital, as it reflects the opportunity cost expressed by the rate of return required by investors to finance a given investment, bearing in mind the likely return of alternative investments and a comparable business risk.

In the general context of regulation, and in particular, of postal regulation, the determination of the cost-of-capital rate seeks: (i) to ensure the right incentives to investment on the part of the universal postal service (UPS) provider; (ii) to ensure that there are no market distortions, through discriminatory and anti-competitive practises; (iii) to remove any barriers to the entry of new competitors; and (iv) to protect consumers from excessive prices.

ANACOM thus considers it essential to define a methodology that allows the establishment, without any accounting and analytical constraints, of the cost-of-capital rate that is appropriate to compensate investments made by regulated companies, as well as of a mechanism that allows the revision of its parameters and which not only entails a greater update of the cost-of-capital rate in the light of the macroeconomic background in which the USP operates, but also results in increased transparency and regulatory certainty.

In addition, the methodology to be defined aims also to promote a consistent role in this area on ANACOM's side, reason for which the methodology already defined in former determinations issued by this Authority must be taken into consideration, as regards the establishment of the cost-of-capital in the scope of the regulation of electronic communications, both in relation to the mechanism provided for its determination, and as

⁶ Law No. 17/2012, of 26 April, as it stands, transposing Directive 2008/6/EC of 20 February 2008 to the national legal system.

regards parameters exogenous to the company, a methodology which must be adjusted to the circumstances of CTT as far as other parameters are concerned.

In this context, by determination of 06.07.2017, the Management Board of ANACOM approved a draft decision on the methodology to calculate the cost-of-capital rate of CTT - Correios de Portugal (CTT), applicable to 2018 and subsequent financial years, which was submitted to the prior hearing of interested parties and to a general consultation, contributions received and the prior hearing report being deemed to be integral part of this decision.

3. Cost-of-capital rate

In compliance with previous determinations issued by ANACOM, CTT have used the Weighted Average Cost-of-Capital (WACC), on the basis of the Capital Asset Pricing Model (CAPM), to determine the rate of cost of equity, as method to establish the cost-of-capital rate.

Parameters involved in the calculation of the cost-of-capital rate, as well as the calculation methodology, as submitted by CTT to ANACOM together with CAS results that are sent on a regular basis.

In the scope of postal regulation, the European Committee for Postal Regulation (CERP) has strengthened the understanding that WACC (Weighted Average Cost-of-Capital) is the most appropriate method to determine the cost-of-capital⁷, as this is a methodology widely used in other fully or partly liberalized sectors, but still subject to regulation (e.g. electronic communications, electricity, gas, etc.)

As such, and although ANACOM already considers it more appropriate to use the CMPC/CAPM methodology to determine the cost-of-capital rate, so that its regulatory decisions on the one hand, involve a correct opportunity cost for investors and, on the other, allow regulatory and pricing stability, both for regulated companies and for

⁷ ["Recommendation on best practices for cost accounting rules III" \(pg. 25\) - CERP - 7 May 2009](#)

consumers, the determination of parameters such as: (i) the risk-free interest rate; (ii) the beta factor; (iii) risk premium; (iv) gearing⁸; (v) tax rate: and (vi) cost of debt capital, may be outdated in the light of the recent and significant changes at economic level (risk-free interest rate and risk premium), at the level of the European postal sector (benchmark of comparable companies for the purpose of the determination of beta and gearing) and at legislative level (tax rate).

3.1. Methodology

The methodology used currently in CTT CAS to calculate the cost-of-capital rate is based on a pre-WACC tax (pre-tax), which in line with prior determinations by ANACOM is based on a nominal tax rate.

In this respect it is stressed that determinations previously issued by ANACOM do not specify in a detailed manner the methodology to establish parameters used in the formula to calculate the cost-of-capital, nor the sources of information to be taken into account.

It must also be highlighted that, in the scope of the audit to 2014 results of CTT CAS, auditors mentioned the need for a methodology that detailed thoroughly the way how each parameter involved in the establishment of WACC is calculated, rules for calculation requiring a clear and transparent definition, and the methodology being revised whenever deemed to be necessary.

In addition, in view of the existence of parameters (e.g. beta) for which a direct calculation was not possible (given that CTT's postal activity was not stock listed), and also of the difficulty in obtaining comparable companies (as there were few companies with similar activity that were stock listed), not only did the degree of complexity and subjectivity inherent to the calculation of the cost-of-capital increase, but there were also limitations at the level of the amount of information used.

⁸ Gearing - quotient obtained by dividing the average value of debt capital (average of the sum of medium- and long-term financing) by the average value of invested capital (average of equity + average of debt capital).

It is thus deemed justified to perform a revision of the methodology to calculate the cost-of-capital, so as to increase transparency and clarity in the establishment of parameters used, this revision benefiting from the development of the postal sector throughout Europe, in particular as a result of the privatisation of several postal operators (CTT included), which will contribute to the creation of a benchmark of comparable stock-listed companies, in situations closer to that of CTT, contrary to what was possible a few years ago.

In this respect, and in the scope of the audit to 2014 results of CTT CAS, auditors refer that the range of comparable companies that must integrate the benchmark to be used must take into consideration the following criteria:

1. Bodies operating in the postal sector on senior markets;
2. Bodies with traded securities (shares) in organized stock exchanges; and,
3. Bodies providing products/services similar to those provided by CTT.

In view of the recent privatizations of operators occurred in the European postal sector, it is deemed that the benchmark of comparable stock-listed companies, for the purpose of the determination of parameters used in the formula to establish CTT's cost-of-capital, that meet criteria listed above, must include the following companies:

Table 1 - Benchmark for the postal sector

Benchmark	Country
CTT	Portugal
Royal Mail	United Kingdom
Bpost	Belgium
Österreichische Post (Austrian Post)	Austria
Malta Post	Malta
PostNL	The Netherlands

Moreover, as new privatizations of postal operators are expected to take place at European level, it is deemed that, where appropriate, the current benchmark should be revised and updated, not only on account of benchmark companies that for some reason are no longer considered to be comparable, but also to allow the inclusion of other comparable companies that may arise in the meantime, which not only meet criteria

referred above but also present a minimum stock listing history (two years) that may dilute any speculative changes in the value of shares in the first months on the stock market.

Notwithstanding the definition, a priori, of the methodology to calculate the cost-of-capital rate, applicable to 2018 and subsequent financial years, and given that the current macroeconomic context advises a regular revision of parameters, it is deemed that the referred parameters require an annual revision, on the basis of the methodology in force, being incumbent on ANACOM to determine the cost-of-capital rate applicable to each financial year, up to the first half of the year concerned, on the basis of the availability of elements required for its determination.

In this respect, in the case of situations where it is not possible to use all data, and respective series, required to determine parameters considered in the calculation of the cost-of-capital, either due to the absence of available information or to the occurrence of facts that call into question the continuity or validity of series used, the establishment of the referred parameters must, whenever possible, be performed in a way as close as possible to the methodology in force, introducing the required deviations as necessary to address the absence and/or insufficiency of information concerned.

In this sense, where it is found that databases that allow the establishment of parameters show limitations, and that the application of the defined methodology is not possible, there are grounds for the respective change/replacement (only where it is not possible to guarantee the inclusion in the calculation of at least 80% of observations or of sources of information required for the establishment of parameters, considering that all comparable companies continue to comply with selection criteria), which may be triggered by either party, by 31 May of the year concerned and subsequently submitted to a prior hearing of stakeholders and public consultation. Otherwise, the value will simply be updated to the financial year concerned.

3.1.1. Pre-tax Weighted Average Cost-of-Capital (WACC)

In methodological terms, WACC corresponds to the weighted average of the cost of equity (K_e) and of the cost of debt (K_d).

The current methodology to determine the cost-of-capital, in CTT CAS, is based on the pre-tax WACC formula, which results from the adjustment of tax in the post-tax WACC formula, the tax expense being incorporated, and allocated to the different products and/or services. The criterion of causality is thus observed in a more appropriate way, in contrast to the post-tax methodology, which allocates the tax expense via common costs.

The WACC pre-tax methodology thus results from the following formula:

$$\text{CMPC}_{\text{pre-tax}} = \text{CMCP}_{\text{post-tax}} \times \frac{1}{(1 - t_i)}$$

$$\text{WACC}_{\text{pre-tax}} \qquad \qquad \text{WACC}_{\text{post-tax}}$$

whereby:

$$\text{CPMC}_{\text{pre-tax}} = [K_e \times (1 - \text{Gearing}) + K_d \times \text{Gearing} \times (1 - t_i)] \times \frac{1}{(1 - t_i)}$$

$\text{WACC}_{\text{pre-tax}}$

where:

K_e – represents the rate of cost of equity, calculated through the Capital Asset Pricing Model methodology - CAPM - (*vide* section 3.1.2 Capital Asset Pricing Model - CAPM);

K_d – represents the rate of cost of debt capital;

Gearing – represents the weight of debt capital in the total of invested capital; and

t_i – represents the (nominal) income tax rate.

3.1.2. Capital Asset Pricing Model (CAPM)

The establishment of the cost of equity (K_e) is based on the Capital Asset Pricing Model methodology - CAPM, using the following formula:

$$K_e = \text{Taxa de juro sem risco} + \beta \times \text{Prémio de risco}$$

$$K_e = \text{Risk-free interest rate} + \beta \times \text{Risk premium}$$

where:

Risk-free interest rate (R_f) – corresponds to the rate of return expected by an investor as a result of investments in assets with no associated risk, that is, investments free of uncertainty as to the return to be obtained.

β (Beta) - represents the covariance between a company's equity returns and the stock market as a whole, that is, it reflects the risk of that company compared to the risk of the general market.

Market Risk (R_m) – Corresponds to the return expected by an investor when he invests in the stock market in a diversified portfolio.

Risk Premium ($R_m - R_f$) - corresponds to the differential between the risk of investing on the stock market in a diversified portfolio (R_m) and the investment made in risk-free assets (R_f), thus representing the excess return required by investors for the risk taken, by comparison to the return of the investment in an asset to which no risk is associated.

The CAPM model is the most widely used⁹ as it presents a clear theoretical basis and is easy to implement. The model reflects the underlying efficient portfolio theory, according to which in a market economic actors will invest in an efficient portfolio, that is, a portfolio that will maximize returns expected for a given level of risk, in the light of the degree of aversion to risk on the part of each actor.

⁹ Graham and Harvey (2001), *The theory and practice of corporate finance: evidence from the field*, *Journal of Financial Economics*. The survey conducted with 400 Financial Directors showed that ¾ use the CAPM model.

Methodology applicable to 2018 and subsequent financial years

ANACOM takes the view that the establishment of CTT's cost-of-capital rate, applicable to 2018, must continue to be based on the use of the Weighted Average Cost-of-Capital (WACC), as defined earlier, using the pre-tax formula and the cost of equity (K_e) being based on the Capital Asset Pricing Model methodology (CAPM). The methodology currently used thus remains in force.

3.2. Methodology to calculate parameters

3.2.1. Cost of Equity (K_e)

3.2.1.1. Risk-free interest rate (R_f)

The risk-free interest rate (R_f) reflects the return obtained by an investor as a result of investments in risk-free assets, although a certain degree of risk, even if low one, may always exist, namely:

- Market risk: changes in the market rate of return;
- Liquidity risk: risk related to the inability to sell financial instruments in the short term.

Financial and regulatory practises have generally considered government bonds to be a reliable and proper parameter to reflect the absence of risk. By way of example, and in the scope of the regulation of electronic communications, it is stressed that an identical position was taken by the Independent Regulators Group (IRG), set out in the “Principle of implementation and best practice” on risk-free interest rate¹⁰.

¹⁰ IRG considers government bonds to be a reliable parameter that may be used as a good proxy for the risk-free interest rate. It also stresses that some selection criteria should be taken into account, such as maturity, the period of the series and the market where the company operates.

In this respect, it must be stressed that, up to the 2011 financial year, the risk-free interest rate (R_f) considered in the establishment of the cost-of-capital used in results of CTT CAS corresponded to the average of observations of 10-year treasury bonds, by reference to the preceding year.

However, the instability resulting from the international and national financial crisis led to the subsequent loss of investor confidence, and the narrowing of financing in peripheral EU economies, including the Portuguese economy, with very significant consequences at the level of public-debt markets.

The unfolding of the international financial crisis, in general, and of the national financial crisis, in particular, resulted in an atypical behavior of the Portuguese sovereign debt, leading to such an increase of treasury bond interest rates (sovereign debt), given the increase of the perceived risk, that national treasury bonds could hardly be considered to be a risk-free investment.

This situation led also ANACOM to determine the change of the reference used to establish the risk-free interest rate required to calculate the cost-of-capital considered in the 2011 results of CTT CAS. As such, ANACOM defined that the risk-free interest rate to be considered should be the same as the one previously defined by this Authority in the scope of the regulation of electronic communications for the same period, as this parameter (risk-free interest rate) was deemed to be exogenous, and as such independent from the company's performance, an appropriate regulatory consistency being thereby ensured.

As such, the risk-free interest rate (R_f) incorporated in the cost-of-capital considered in the 2011 results of CTT CAS was established on the basis of yields of 10-year treasury bonds of a selected set of countries of the Euro Area (Belgium, Spain, France, Ireland, Italy and Portugal).

The methodology defined to determine the risk-free interest rate has been updated in the last few years, according to the evolution of financial markets, so as to ensure that it reflects, as much as possible, the interest rate that would be required by an investor to finance a risk-free investment. As such, between 2012 and 2015, the risk-free interest rate

was determined on the basis of the GDP (Gross Domestic Product) weighted average - (source: Eurostat) of the respective country, of yields of 10-year treasury bonds of all countries of the Euro Area¹¹.

However, due to the positive development of national economy and its access to financial markets, this methodology was revised again, having been considered in 2016 that it would be possible to resume the use of Portuguese government bonds for the purpose of the calculation of the risk-free interest rate, bearing specifically in mind that: (i) the Portuguese debt market risk had shown lower volatility; (ii) the intervention of the European Central Bank in the purchase of sovereign bonds (in particular from peripheral countries) had brought about greater stability; and (iii) yield values, which in the past had been abnormally high, no longer occurred.

As the risk-free interest rate corresponds to the interest required by an investor to make a (risk-free) investment in Portugal, this parameter has an exogenous nature, that is, it does not depend on the performance of the company concerned, thus ANACOM considers that its calculation must be based on the methodology already defined by this Authority in previous determinations on the calculation of the cost-of-capital in the scope of the regulation of electronic communications, that is, it must correspond to the average of yields of 10-year Portuguese government bonds, resulting from monthly observations in the course of 2016 and 2017.

Accordingly, and by way of example, the adoption of this methodology in the establishment of the risk-free interest rate to be considered in the 2017 financial year, that is, on the basis of average of yields of 10-year Portuguese government bonds, resulting from monthly observations in 2015 and 2016, would result in a value of 2.80%¹² for the R_f parameter (*vide* Table 2).

¹¹ Historical series, based on monthly observations in the course of the two years preceding the year of the decision - source: European Central Bank.

¹² [Risk-free interest rate - ANACOM Decision for the cost-of-capital rate of MEO, S.A. applicable in 2017.](#)

Table 2 – Establishment of the risk-free interest rate

	Average
2015 risk-free interest rate	2.42%
2016 risk-free interest rate	3.17%
2015 and 2016 average	2.80%

Methodology applicable to 2018 and subsequent financial years

The risk-free interest rate to be used in the calculation of CTT’s cost-of-capital must thus be based on the methodology already defined by this Authority in previous determinations in the scope of the regulation of electronic communications, for the same period, corresponding to the average of yields of 10-year Portuguese government bonds, resulting from monthly observations in the two years preceding the financial year concerned, that is, 2016 and 2017, using data of the European Central Bank as a source.

3.2.1.2. Beta (β)

As referred earlier, the CAPM methodology is based on the determination of the risk of an asset listed on a stock exchange (share), which results from the sum of the systematic (or market) risk plus the specific (or company) risk.

The general market risk (systematic risk) corresponds to the risk related to all aspects (e.g. politic, economic, etc.) that are able to change the behaviour of investors, thus representing the risk that is inherent to a portfolio which is already diversified, differing from the individual risk associated to each of the stock-listed securities.

The risk associated to the share is defined by calculating its beta (β) that in the context of the definition of the company’s cost-of-capital, corresponds to the equity β , and reflects

the sensitiveness of a specific asset to changes in the return of the market portfolio, that is, the company's exposure to the economic cycle.

The cost-of-capital considered in CTT CAS, up to the 2013 financial year, did not include the β of CTT's share, resulting from the historical observation of the value of the share against the market variation, rather a β determined by a benchmark, by reference to a set of stock-listed companies that develop similar and comparable activities to those developed by CTT (postal activities/orders/distribution and logistics), obtained on the basis of series of weekly observations, over a one-year period, given that CTT was listed on the stock exchange only in 2013.

In addition, it must be stressed that, in the cost-of-capital considered in 2014 results of CTT CAS, not only the calculation of the β parameter began to consider the β value of CTT's share, but changes were also introduced in the calculation of this parameter, in particular as regards companies deemed to be comparable and the method used to determine the re-leveraged β .

As far as comparable companies are concerned, attention must be drawn to the increase in Europe of the number of postal operators listed on a stock exchange for over 12 months, which together with CTT's entry into the stock exchange, led in 2014 the benchmark used by CTT to include CTT's β , and companies deemed to be comparable became essentially European, as they are probably more similar to the national postal market, and consequently, with expense structures and business models likely to be more comparable, thus replacing North-American and Asian companies that were used previously (Fedex Corp.; United Parcel Service (UPS); UTI Worldwide; Singapore Post).

Accordingly, the β used in the cost-of-capital of 2014 results of CTT CAS is a result of the average of the last five years of β of European postal operators considered to be comparable (Deutsch Post World Net - DPW; Austrian Post; Royal Post and BPost), with a weight of 50%, and the β of CTT's own share (CTT Group), to which the remaining 50% correspond.

As regards the change occurred in 2014, it must be stressed that not only did the number of companies deemed to be comparable decrease (from six in 2013 to five in 2014, CTT

being considered to be comparable according to its recent entry into the stock market), as a weighting by 50% was conferred on observation of CTT's β (equivalent to the weight of the other four companies of the benchmark). As a result, it was possible for the observations of the β of a company, which at the time had been recently listed in the stock exchange (CTT), potentially under the influence of speculative effect associated to its listing in the stock exchange, to be able to influence excessively the value of this parameter, compared to other companies of the benchmark, thus increasing its volatility.

However, and although it is acknowledged that the change introduced could lead to an improvement of the benchmark used to determine the β parameter, and given the existence at present, in comparison to 2014, of a greater number of European postal operators listed in the stock exchange for over two years, whose mail business area has a very significant weight in their total activity - Malta Post (Malta); and PostNL (the Netherlands), it is deemed that the benchmark to be used should correspond to operators considered in Table 1 above.

Moreover, ANACOM takes the view that an equivalent weighing must be given to each of the companies considered, CTT included, and that the benchmark should only include companies that present a minimum two-year stock listing history, to dilute any speculative changes in the value of shares in the first months on the stock market.

Still on the subject on changes introduced, it must be stressed that the determination of the re-leveraged β started to be determined on the basis of the average market capitalisation value, instead of the accounting value of CTT's equity. Although some authors consider the use of the company's market value (market capitalisation) to better reflect the fair value of a company, the accounting value of equity is probably subject to a lower volatility, compared to its market value. It must be also stressed that, as CTT CAS is a model based on the methodology of historic expenses, it is deemed that the option for accounting capital is the most consistent.

The lower volatility of the accounting value of equity (compared to the use of its market capitalisation) thus results in greater regulatory predictability, not only at the level of the remuneration of the investor (through the cost-of-capital), but also at the level of the

regulation of CTT's tariff offerings, which use CAS (based on a methodology of historic expenses) as a relevant source of information to determine the expense incurred in the provision of each service.

In addition, and aiming for an adequate definition of the benchmark to be used, it is necessary to define not only its composition (comparable companies), but also a set of underlying characteristics, namely:

- a) The definition of comparable companies that must integrate the benchmark, through the identification of stock-listed European postal companies, that are comparable to CTT, both as regards the activities developed and the characteristics of markets where which they operate;
- b) The use of the Harris and Pringle¹³ model to determine the β of equity of comparable companies. This model allows the calculation of the unlevered β of the asset, that is, the β without the effect of capital structure, which is later leveraged with the capital structure defined as optimal for CTT;
- c) The frequency of observations: β may be estimated through daily, weekly, monthly or quarterly observations. In this scope, similar to the case of the risk-free interest rate, monthly observations are deemed to be the most appropriate;
- d) The period of time: the use of short series could distort results and suppress relevant information, as more recent observations may involve probable effects that do not reflect properly future expectations. As such, the use of series that are long enough to allow the correction of effects of short-term volatility are thus recommended. To that extent, it is deemed that the series period must accommodate relevant observations that guarantee a robust result, representative of risks inherent to the company's current structure, and it is clear that European Regulatory Authorities prefer long periods of time. Accordingly, it is deemed

¹³ The Harris and Pringle calculation formula is considered to be the one that best reflects reality (Equity) $\beta =$ (Asset) β (1 + D/E) where: D/E - capital structure.

appropriate to use a 5-year period of time, so as to allow an appropriate level of robustness and security of results obtained; and

- e) Data on β obtained via Bloomberg as they correspond to values adjusted through the Bayes formula, the so-called adjusted beta¹⁴, which allows the determination of a more robust estimate, that is less volatile to fluctuations.

Once the benchmark of comparable companies required to determine the β to be considered in the calculation of the cost-of-capital has been defined, an equivalent weighing must be allocated to the value of β determined for each of the companies, CTT included. The benchmark must only include companies that present a minimum two-year stock exchange listing history, to dilute any speculative changes in the value of shares in the first months on the stock market.

Methodology applicable to 2018 and subsequent financial years

In the light of the evolution registered in the last few years in the European postal sector, with the increase of stock-listed postal operators, CTT included, ANACOM takes the view that the beta (β) parameter to be considered in the calculation of CTT's cost-of-capital rate must be determined on the basis of the average β value determined according to the benchmark of comparable companies defined earlier (Table 1), each company of the benchmark being allocated an equivalent weighing, CTT included. The benchmark should only include companies that present a minimum two-year stock exchange listing history, to dilute any speculative changes in the value of shares in the first months on the stock market.

The β determined for each of the companies in the benchmark (*vide* Table 1) must correspond to its adjusted beta, provided by Bloomberg - historic series for the five years

¹⁴ The beta of a company may be presented as an adjusted beta or as raw beta. Raw (or historic) beta is based on the comparison of the asset return with the market return. The adjusted beta is an estimate for the future asset return compared to the market return. It results mainly from historic data, an adjustment being performed, assuming that the asset beta taken into account will always tend towards the average return provided by the market. The calculation formula for the purpose of the determination of the adjusted beta is: adjusted beta = 0.67 x (raw beta) + 0.33 x 1 (market beta).

preceding the year of the decision, on the basis of monthly observations. Bloomberg data must be unleveraged from the financial structure of the company they concern, and subsequently leveraged using the Harris & Pringle formula (Equity β = Asset β (1 + D/E¹⁵), using the capital structure (gearing) defined for CTT for the year concerned, which must take account of the accounting value of its equity.

3.2.1.3. Risk premium ($R_m - R_f$)

By definition, the risk premium corresponds to the differential in terms of return required to invest in a given asset, in a given market, compared to the return of the investment in a risk-free asset.

It is not a consensual task, either in methodological or in conceptual terms, to determine the risk premium expected from the stock market. The analysis of its behaviour is complex, given that, both the risk premium, and factors that determine it, are not directly observable, changing over time according to the behaviour of investors towards risk and to their perception of the risk of the asset concerned. As such, like other European Regulatory Authorities, ANACOM decided in prior determinations on the methodology to calculate the cost-of-capital in the scope of the regulation of electronic communications that the definition of the risk premium should be based on the use of a benchmark.

In conceptual terms, the estimate of the risk premium could be based on an *ex-post* methodology, involving estimates based on historic data or, on the other hand, on an *ex-ante* methodology, which takes into consideration estimates according to future expectations. In this respect, it must be referred that, although both methodologies (*ex-post* and *ex-ante*) are widely used to determine the premium risk, both by academics and by financial analysts, the use of an *ex-post* methodology does not allow the operator, when deciding the investment, to be provided with information on its opportunity cost (cost-of-capital), unlike the *ex-ante* determination, in the scope of which the operator, when making the decision to invest, is required to take into consideration its expectation

¹⁵ D/E – Debt/Equity or gearing, corresponds to the capital structure given by the ratio between debt capital and equity.

on its opportunity cost, determined on the basis of current market conditions and in future perspectives, thus contributing to greater regulatory predictability.

Given that the risk premium reflects the risk associated to an investment made by an investor in a given market, in this case Portugal, ANACOM takes the view that this parameter is a reflection of the market itself (Portugal), and as such it is exogenous to the operator. In this sense, in order to favour not only the best practises for its determination, as well as regulatory consistency, ANACOM believes that the risk premium to be used in the calculation of CTT's cost-of-capital must be based on the same methodology defined by this Regulatory Authority for electronic communications, resulting on the same value for the same period, whereby different risk premiums are avoided for each regulated operator, as regulated companies operate on the national market.

The methodology previously defined by ANACOM for calculating the cost-of-capital in the regulation of electronic communications, in the light of the volatility associated to the risk premium, favoured observations based on longer series, as supported by Damodaran in the research carried out on this subject¹⁶, which refers that observations based on longer series (25 to 100 years) exceed the advantages of more relevant observations, associated to shorter and more recent periods, by allowing a lower standard error, their consistency tending to increase with the extension of the period considered.

In the view of ANACOM, the volatility inherent to the risk premium creates the need to update this parameter on an annual basis, this update taking place according to point 3.1 - Methodology.

The methodology to calculate the cost-of-capital in the scope of the regulation of electronic communications, in the light of the need to update the annual risk premium, and in order to ensure the availability and accessibility of databases used, must also be stressed. ANACOM defined that this parameter should be calculated on the basis of estimates from the Damodaran database¹⁷ (which takes into account the intrinsic risk of access to investment in the country concerned) and in studies of Pablo Fernandez (by

¹⁶ Damodaran, Aswath, "Equity Risk Premiums", Stern School of Business.

¹⁷ <http://pages.stern.nyu.edu/~adamodar/>

carrying out surveys to analysts, academics and Portuguese financial and non-financial companies), on the basis of future (*ex-ante*) expectations, data which are publicly available, from authors deemed to be reference.

In 2016, the methodology to calculate the risk premium to be used in the calculation of the cost-of-capital to be considered in the regulation of electronic communications was updated, the benchmark having been added data of the Dimson, Marsh and Staunton (DMS) series, available for Portugal as from 2014, as it is an academic source which is professionally acknowledged for the determination of the risk premium, used by several European Regulatory Authorities, as it presents long series of information and provides stability to the methodology.

As such, given that the risk premium is an exogenous parameter, and aiming to maintain regulatory consistency, ANACOM deems that it should be determined on the basis of the methodology already defined by this Authority for calculating the cost-of-capital to be considered in the regulation of electronic communications, thus corresponding to a simple average between *ex-ante* data (Damodaran, Pablo Fernandez and Dimson, Marsh and Staunton - DMS), covering expectations for Portugal and calculated in the year preceding the decision.

By way of example, the adoption of this methodology in the determination of the risk premium to be considered in CTT's cost-of-capital for 2017 would result in a risk premium by 6.98% (vide Table 3).

Table 3 – Calculation of the Risk Premium for 2017

Risk Premium for 2017		Value
Damodaran	Portuguese market risk premium	9.24%
Pablo Fernandez	Market Risk Premium and Risk rate used for 41 countries in 2015 Pablo Fernandez, Alberto Ortiz and Isabel F. Acin – IESE Business School April 23, 2015.	7.6%
DMS	Credit Suisse Global Investment Returns Yearbook 2017	4.10%
Risk Premium for 2017- Average		6.98%

In this scope it must be stressed that the risk premium used in CTT's calculation of the cost-of-capital considered in the 2015 and 2016 CAS results, which was based on the monthly average of values indicated by the Damodaran database (methodology already used in 2014), resulted respectively in 5.92% and 6.14%.

Methodology applicable to 2018 and subsequent financial years

Given that the risk premium ($R_m - R_f$) reflects the market itself, thus being exogenous to the operator, ANACOM believes that it should be calculated on the basis of the methodology previously defined by this Regulatory Authority for electronic communications, for the same period, thus corresponding to a simple average between *ex-ante* data (Damodaran, Pablo Fernandez and Dimson, Marsh and Staunton - DMS), covering expectations for Portugal and calculated in the year preceding the decision.

3.2.2. Cost of Debt Capital (K_d)

3.2.2.1. Gearing

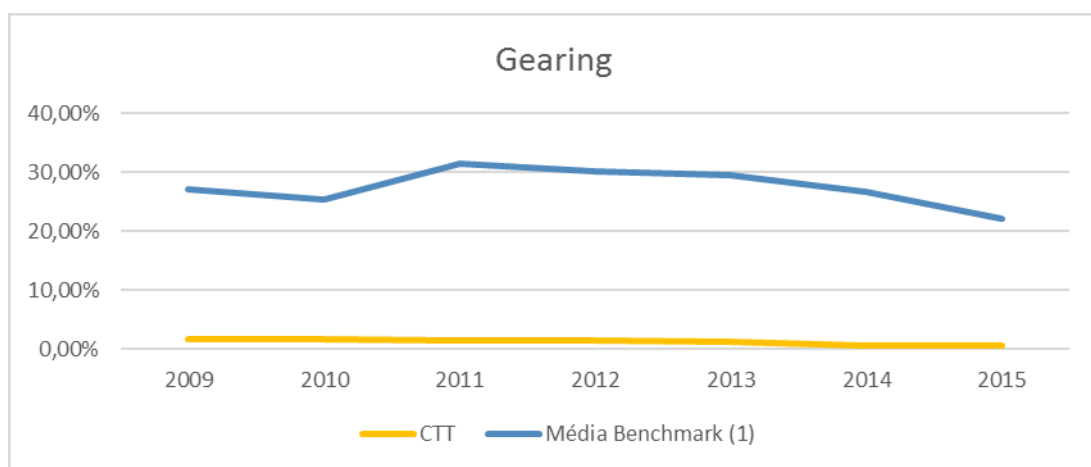
The company's financial structure (gearing), reflected by the weight of debt capital in the total of invested capital (methodology which has been used by CTT), plays an important role in the determination of WACC.

The determination of gearing by CTT, in the calculation of cost-of-capital, has been based on the quotient between the average debt capital (medium/long term debt) and the average invested capital (sum of average values of debt capital and equity), both obtained through the average of their values at the end of the financial year concerned and the preceding year, according to CTT Reports and Accounts.

It must be stressed that in the last few years (period between 2009 and 2015), when compared to postal operators considered in the benchmark (Table 1), CTT's gearing

(1.31% average) is significantly lower than the estimated¹⁸ gearing average for benchmark operators (around 27.5%), for the same period, on the basis of the information included in their Reports and Accounts (*vide* Chart 1).

Chart 1 – CTT gearing vs. gearing of benchmark operators



Benchmark average

Source: Reports and Accounts (2009-2015) of postal operators considered in the benchmark for the 2009-2015 financial years.

Note: (1) benchmark of comparable companies excluding CTT (Austrian Post; B Post; Royal Mail; Post NL; and Malta Post).

This situation may partly explain the high cash in-flow inherent to the financial leveraging associated to the provision of financial services, thus resulting in debt capital that is significantly lower than equity, that represent around 98% of invested capital.

As such, CTT's gearing can hardly be compared to that of a predominantly postal operator who is not provided with the leverage resulting from the provision of financial services, reason for which ANACOM believes that the gearing currently used by CTT (real gearing) is not the most appropriate, as it differs significantly from the gearing of a postal operator that is not provided with the financial leverage effect.

¹⁸ Average of gearings estimated on the basis of Reports and Accounts of postal operators of the benchmark, based on consolidated accounts where individual accounts were not available, the effect of a Banque Postale being removed, where appropriate, and where disaggregated information is available.

In this sense, the determination of the cost-of-capital must be based on a gearing that reflects a reference capital structure, having been verified, in this respect, in the scope of the regulation of electronic communications, that several Regulatory Authorities have opted to determine it using a benchmark, thereby increasing its predictability and regulatory certainty, and removing the volatility of gearing depending on the financing policies followed by the regulated operator.

In the alternative, the determination of an optimal gearing may result from the construction of a financial model that simulates the performance of the company taking into consideration different levels of gearing, so as to maximize its value. However, the use of this model requires a very high level of information, which is not always available (e.g. company value, debt ratios, continuity of operations, etc.), which may require the definition of a set of assumptions of a subjective nature (e.g., business analyses, accounting value or market value of the company; debt at fair value, etc.) which increases the subjectivity of the value used.

As such, this Regulatory Authority takes the view that the determination of a gearing that is suitable for calculating the cost-of-capital must be based on a benchmark of comparable companies, both at the level of services provided and of markets where they operate on.

ANACOM thus deems that the gearing to be used in the determination of cost-of-capital must be calculated using the benchmark defined in point 3.1 - Methodology (Table 1), corresponding to the average of the gearing of comparable companies that is set out in Report and Accounts, provided by Bloomberg - historic series for the 5 years preceding the year of the decision.

By way of example, and on the basis of estimates performed by this Regulatory Authority, using information available in Report and Accounts of several operators included in the benchmark (made available in the respective websites) the average gearing for 2015 would have corresponded to around 19.54% (*vide* Table 4), in contrast to the gearing used by CTT for that same financial year, by 0.56%.

Table 4 - Gearing of comparable companies (benchmark)

<i>Comparable companies</i>	<i>Country</i>	<i>Average 5-year gearing</i>
CTT	Portugal	1.38%
Royal Mail	United Kingdom	33.09%
Bpost	Belgium	10.88%
Österreichische Post (Austrian Post)	Austria	4.56%
Malta Post	Malta	21.91%
PostNL	The Netherlands	45.46%
Average (2010-2014)		19.54%

Source: Gearings estimated by ANACOM on the basis of reports and accounts provided by postal operators in their websites, based on non-consolidated accounts (where available), and disregarding the existence of a Banque Postale, where disaggregated information was available.

Methodology applicable to 2018 and subsequent financial years

This Regulatory Authority thus considers that the benchmark to be adopted for determining the gearing for the purpose of the calculation of the cost-of-capital rate to be used in CTT CAS must correspond to the average of gearing of comparable companies used in the benchmark, on the basis of the average gearing for the 5 years preceding the year of the decision, taking into consideration the Report and Accounts of the referred companies as made available by Bloomberg.

3.2.2.2. Debt premium

The cost-of-capital rate reflects the interest rate for financing medium- and long-term debt.

The cost of debt capital has been calculated on the basis of an estimate of CTT's management, which has been reflected in the application of a financial debt spread by 0.5% to the risk-free interest rate.

As such, it is deemed that the definition of the debt premium, on the basis solely of a management estimate, is probably not the most appropriate methodology, as it could be subject to the arbitrariness of the operator's management, failing to reflect what is by definition the debt premium, that is, the additional return required by the company's creditors (compared to a risk-free investment), so as to reflect the capacity of the financed company to meet debt liabilities, which is usually reflected by its rating.

It must be stressed that the CTT's low debt capital (compared to the whole of invested capital), corresponding mainly to leasing contracts, do not appropriately reflect the debt premium required by an investor to finance CTT's activity, in contrast to a probable debt premium implicit in a loan taken up by this operator primarily to finance its activity.

ANACOM thus takes the view that the current methodology to determine the debt premium in the calculation of the cost of debt capital must be revised, so that it reflects the financing cost required by an investor to finance a sector-representative company.

In this respect, and given that in the last few years there has been a reduction in the number of bodies that use CDS associated to the issue of debenture loans, ANACOM, in the scope of the methodology to calculate the cost-of-capital to be considered in the regulation of electronic communications, determined that monthly observations of historic series of credit default swaps spreads (CDS) should be replaced by the spread average made available through the database provided by Bloomberg (EUR EUROPE COMMUNICATIONS BBB+, BBB, BBB-BVAL Yield Curve 10Y), as the continuous use of CDS has limited the quality of the benchmark used.

Bearing thus in mind that the lower use of CDS associated to the issue of debt by companies has resulted in the degradation of the quality of this proxy is the assessment of the debt premium, ANACOM takes the view, similar to other regulatory determinations on the methodology to calculate the cost-of-capital, that the debt premium must correspond to the spread average made available through the database provided by Bloomberg (BFV EUR Industrial BBB-, daily observations), for the two years preceding the financial year concerned, as this seems to be the proxy that best reflects the debt premium required by an investor to finance a sector-representative company.

By way of example, the application of this methodology to the 2017 financial year, on the basis of observations for 2015 and 2016, corresponding respectively to 1.70% and 1.34%, would result in a debt premium by around 1.52%.

Methodology applicable to 2018 and subsequent financial years

ANACOM believes that the debt premium must be based on the cost to finance a sector-representative company, and must be calculated on the basis of the spread average made available through the database provided by Bloomberg (BFV EUR Industrial BBB-, daily observations), for the two years preceding the financial year concerned, as this seems to be the proxy that best reflects the increased profitability required by an investor to finance a sector-representative company.

3.2.2.3. Tax rate

The cost-of-capital incorporated in results of CTT's CAS, from 2008 onwards, and further to a determination issued by ANACOM, was calculated only on the basis of the legal tax rate, as this rate, compared to the effective rate, is less subject to fluctuations, given that its variation is due only to amendments at the level of fiscal legislation, and is not influenced by management decisions that are able to significantly affect its volatility, which brings about greater regulatory predictability.

ANACOM thus takes the view that the cost-of-capital must be determined on the basis of the use of the legal tax rate, which is able to:

- (i) Avoid any of the frequent and significant fluctuations of the effective tax rate, resulting mainly from annual corrections for the purpose of the basic taxable amount, as well as of variations in deferred taxes;
- (ii) Decrease complexity when establishing the tax rate to be considered (compared to the effective rate);
- (iii) Increase regulatory predictability; and

- (iv) Determine a fixed and exogenous value to the regulated company which is easily observable.

As such, and given that the tax rate is made up of three different components: (i) corporate tax rate (IRC); (ii) state surtax rate; and (iii) municipal surtax, the value of the tax rate to be considered in CTT's cost-of-capital must tend to be the same as that determined in the methodology to calculate the cost-of-capital to be considered in the regulation of electronic communications, for the same period, given that only in the scope of the estate surtax could there be a difference in the calculated value, as its determination is incremental according to the company's taxable profits.

As such, ANACOM takes the view that the tax rate to be considered in CTT's cost-of-capital must result from the sum of values of each component that comprise it (corporate tax rate, state surtax rate, and municipal surtax), obtained through the application of the methodology described below:

(i) Corporate tax rate (IRC)

The corporate tax rate must correspond to the rate in force for the financial year concerned, for which the cost-of-capital is being determined.

By way of example, for 2016, the corporate tax rate corresponded to 21% (article 87 of the Corporate Income Tax Code - CIRC).

(ii) State surtax rate

The State surtax rate, due to legislative amendments in the last few years, has been progressively determined according to the company's taxable profits, a 3% rate being levied in 2017 on the taxable profit in excess of 1,500,000 Euro and up to 7,500,000 Euro, a 5% rate on taxable profit between 7,500,000 and 35,000,000 Euro and a 7% rate for taxable profit over 35,000,000 Euro¹⁹.

¹⁹ Article 87-A of Law No. 82-B/2014, of 31 December.

An analysis of CTT's Reports and Accounts for the last three years (2013-2015) shows that the taxable profit for each of the financial years of this three-year period was significantly higher than the upper limit of the last bracket (35 million Euro), as from which the maximum State surtax rate is applicable (7% in 2016) - *vide* Table 5.

Table 5 – CTT taxable profit (2013-2015)

Year	Taxable profit (Thousand euros)	Effective State surtax rate
2013	52,532	4.63%
2014	64,193	5.61%
2015	79,316	5.87%
Average	65,347	

Source: Calculations on the basis of CTT's Reports and Accounts.

In this context, and bearing in mind the legislative amendments in the last few years to the calculation of the State surtax rate, not only to simplify the calculation, but also to bring it closer to the surtax rate borne in the year concerned, ANACOM believes that the State surtax rate to be considered must correspond to the rate resulting from the application of the legislation in force for the year concerned to the average of positive taxable profits of the three-year period preceding the year of application.

By way of example, for the 2016 financial year, given the average of CTT's taxable profits for the 2013-2015 period (65,347 thousand Euro), the State surtax rate to be applied to the tax rate to be considered for the 2016 financial year (on the basis of the 2013-2015 period), would thus result in 5.60%.

(iii) Municipal surtax

As far as the municipal surtax is concerned, as this is an exogenous parameter to the company, given that it does not result from the value of its taxable profits in each financial year, it is deemed, and like in former determinations issued by ANACOM on the methodology to calculate the cost-of-capital to be considered in the regulation of

electronic communications, and for the purpose of simplifying the process of calculation and determination of the value, that the municipal surtax should correspond to the maximum value established by law for the year concerned.

As such, and taking into account the methodology described above, by way of example, the tax rate to be applied in 2016 would be 27.87%, the respective calculation being detailed below in Table 6.

Table 6 – Indicative tax rate applicable to 2016

Tax rate	
Article 87 Corporate Income Tax Code ²⁰ - corporate tax rate	21.00%
Article 87- A Corporate Income Tax Code - State surtax rate	5.60%
Municipal surtax	1.50%
Tax rate	28.10%

Methodology applicable to 2018 and subsequent financial years

ANACOM takes the view that the tax rate should correspond to the nominal tax rate, resulting from the sum of the three components that comprise it (corporate tax rate, state surtax rate, and municipal surtax), on the basis of the following methodology:

1. Corporate tax rate (IRC)

The corporate tax rate must correspond to the IRC rate in force for the financial year concerned by the decision on calculation of cost-of-capital.

2. State surtax rate

The State surtax rate has been progressively determined according to the company's taxable profits, quantitative limits having been established for which the applicable marginal tax rates have been defined, being also stressed that both quantitative limits

²⁰ CIRC – Código do Imposto sobre o Rendimento das Pessoas Coletivas.

and rates have been subject to legislative amendments in the last few years.

As such, and taking into consideration to the historical taxable profits of CTT for its most recent three-year period (2013-2015), it is deemed that the State surtax rate to be applied must correspond to the rate resulting from the application of the legislation in force for the year concerned to the average of positive taxable profits of the three-year period preceding the year of application.

3. *Municipal surtax rate*

As far as the municipal surtax rate is concerned, ANACOM takes the view, as established previously in the scope of the methodology to calculate the cost-of-capital to be considered in the regulation of electronic communications, that the municipal surtax should correspond to the maximum value established by law for the year concerned.

3.3. Basis of remuneration of the cost-of-capital

The cost-of-capital is calculated as the product of the WACC rate and the basis of remuneration, the latter being particularly relevant, as it must reflect the investment made by the operator in the development of its operational activity.

At present, the basis of remuneration used in the determination of the cost-of-capital corresponds to the sum of the average value (arithmetic average at the beginning and end of the financial year) of medium- and long-term equity and debt capital, related to the financing of its activity, and in particular as far as the latter is concerned, values of debt capital are related to financial leasing.

The calculated cost-of-capital is then allocated proportionally to the different cost centres, taking into account net average assets (resulting from the sum of net average tangible and intangible assets) engaged to each cost centre.

In this scope, the Postal Law²¹ provides in point b) of paragraph 3 of article 19 that the calculation of the US net cost must take into account “*the entitlement of the universal service provider to a reasonable profit, represented by the cost-of-capital related to investments required to provide the universal service, which must reflect the risk incurred*”.

As such, ANACOM takes the view that the capital invested by the USP must have a direct correspondence to the investment made, and just like with this Authority’s former decision in the scope of the methodology to calculate the cost-of-capital to be considered in the regulation of electronic communications, it would be better reflected by the investment made in non-current assets required for the development of its activity, and consequently, to the opportunity cost incurred by investors, compared to the use of average invested capital, obtained by adding the average medium- and long-term equity and debt capital.

Given that CTT’s costing model is based on the methodology of fully distributed expenses, it is deemed reasonable to consider that the basis of remuneration incorporates the total value of the non-current asset (associated to the regulated and non-regulated activity), in CTT’s financial statements, as the calculated cost-of-capital is allocated to regulated products, in the proportion only of non-current assets involved in its provision, on the basis of the Activity Based Costing (ABC) methodology, that aims to create a direct relation between the allocation of expenses and activities required to the sale and/or provision of a product/service.

It is thus deemed that the direct application of the cost-of-capital rate to CTT’s non-current asset in its financial statements for the financial year concerned is the most appropriate methodology, as it reflects a more direct remuneration of the investment made by the operator in the scope of its operational activity.

²¹ Law No. 17/2012, of 26 April, as it stands.

Methodology applicable to 2018 and subsequent financial years

Just like with this Authority's former decision in the scope of the methodology to calculate the cost-of-capital to be considered in the regulation of electronic communications, ANACOM believes that the basis of remuneration to be used in the calculation of CTT's cost-of-capital must correspond to the non-current asset, namely items of tangible and intangible assets engaged to CTT's operational activity, excluding assets held for sale.

Any other asset classified by CTT to be investment and which in its view must be remunerated, should be submitted to ANACOM, duly justified, so that grounds for its inclusion in the basis of remuneration are validated.

3.4. Definition of the cost-of-capital rate

The prior adoption of a clear methodology and the consequent a priori definition of the value of the cost-of-capital rate, to be applied as from 2018, promotes regulatory predictability and market transparency.

Given that the methodology to calculate CTT's cost-of-capital has not been updated in the last few years, and in the light of the evolution of the postal sector, in particular as regards the privatization and entry into the stock market of several European postal operators, including CTT itself, ANACOM deems that the current methodology requires a revision, both as regards comparable elements used to determine some of the endogenous parameters (e.g. Beta and gearing), and also as regards the determination of exogenous parameters that do not depend on the performance of the regulated company, rather on the economic context (country) where the company is located (e.g. risk-free interest rate, risk premium, tax rate).

ANACOM thus establishes the revision of the current methodology to calculate the cost-of-capital to be considered in CTT CAS, applicable to 2018 and subsequent financial years, aiming for its update in view of changes occurred in the postal sector and clarifying information sources and methodologies to be used to calculate the various parameters

taken into consideration, maintaining the regulatory coherence with the methodology previously defined to calculate the cost-of-capital to be considered in the regulation of electronic communications.

Annex I: List of acronyms and abbreviations

ABC	Activity Based Costing
NRA	National Regulatory Authority
CAPM	Capital Asset Pricing Money
CDS	Credit Default Swaps
CIRC	Corporate Income Tax Code (<i>Código do imposto rendimento de pessoas coletivas</i>)
USNC	Universal Service Net Cost
CMPC	<i>custo médio ponderado de capital</i> (Weighted Average Cost-of-Capital)
FDC	Fully Distributed Costs
IRC	Corporate Income Tax (<i>Imposto sobre o rendimento de pessoas coletivas</i>)
GB	Government Bonds
T-Bond	Treasury bond
GDP	Gross Domestic Product
USP	Universal Postal Service Provider
CAS	Cost Accounting System
ASS	Accounting Standardisation System
US	Universal Service
WACC	Weighted Average Cost-of-Capital

Annex II: List of operators

CTT	CTT – Correios de Portugal, S. A.
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Annex III: List of other bodies/organizations

ANACOM	Autoridade Nacional de Comunicações
CERP	European Committee for Postal Regulation
IRG	Independent Regulators Group