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CTT – Correios de Portugal S.A.: an analysis before the IPO and subsequent stock price evolution

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Resumo

Os serviços postais têm registado uma tendência negativa na Europa e em Portugal devido à substituição latente do correio físico por meios de comunicação eletrónica. Por outro lado, apesar da diminuição do volume no setor do expresso e encomendas, este é considerado uma das principais fontes de potencial crescimento devido à proliferação do *e-commerce.*

Em 2013, em resultado de determinadas ações impostas pela Comissão Europeia, pelo Banco Central Europeu e pelo Fundo Monetário Internacional, o Estado Português foi obrigado a privatizar um largo conjunto de ativos por si , onde se incluíam os CTT.

Neste contexto, e no quadro da privatização dos , CTT a solução definida para esta Empresa foi a de fazer uma Oferta Pública Inicial onde a empresa passaria a estar cotada no mercado bolsista Português (EURONEXT Lisboa).

O presente projeto visa, analisar e definir o intervalo de preço de ação que deveria ser apresentado aos investidores e, posteriormente, avaliar se o preço da ação oferecido é abaixo do preço justo, como defendido pela literatura.

A análise do caso CTT baseia-se numa metodologia assente na valorização do negócio através da análise dos fluxos de caixa descontados e através de uma análise de empresas e transações comparáveis no setor.

No caso vertente, atingiu-se um intervalo de preço [€4.5;€7.9] que compara com o intervalo definido pela Empresa e pelos seus assessores financeiros [€4.1;€5.5]. Tendo em conta os resultados obtidos e posterior evolução do preço no mercado, há evidência de que o fenómeno da subavaliação do preço da ação dos CTT verificou-se.

Palavras-chave: avaliação de empresas, oferta pública inicial, setor postal e expresso

Abstract

The shipping and mailing services have registered a negative trend in Europe and in Portugal due to a latent substitution of the physical mail for electronic communication channels. On the other hand, besides the volumes decrease on the express and parcels sector, this is considered one of the main sources of potential growth due to e-commerce proliferation.

In 2013, as a result of several measures imposed by the European Commission, the European Commission, the European Central Bank and the International Monetary Fund, the Portuguese Government was obligated to privatize a set of assets held by itself, where CTT was included.

In this context, and in CTT's privatization scenario, the solution defined for this Company was to make an Initial Public Offering (IPO) where the Company would become publicly traded in the Portuguese stock market (EURONEXT Lisbon).

The present project intends to analyse and establish analyse and define the range price that should be offered to investors and, subsequently, assess if the share price offered is below the fair price, as argued by several literature

The analysis of CTT's case is based a methodology of establishing the Company's operation value throughout a discounted cash flow approach and by an analysis of comparable firms and past transactions in the sector.

In the present case, there was reached a range price of [€4.5;€7.9] which compares with the range price settled by the Company and its financial advisers [€4.1;€5.5]. With the results obtained and the subsequent stock price evolution on the market, there are evidences that the IPO underpricing phenomenon of CTT's stock price has occurred.

Keywords: companies' valuation, initial public offering, postal and express sectors

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List of Abbreviations

€M – Millions of Euros

3Q2012 – Third Quarter of 2012

3Q2013 – Third Quarter of 2013

AAA – Triple A Rating by Moody's

ANACOM – Autoridade Nacional de Comunicações – National Communications Authority

BCP – Banco Millenium BCP – Millenium BCP Bank

BES – Banco Espirito Santo – Espirito Santo Bank

Bn – Billions

BPI – Banco Português de Investimento – Portuguese Investment Bank

Bps – Basis points

BS – Business Solutions

CAGR – Compound Annual Growth Rate

CAPEX – Capital Expenditures

CAPM – Capital Asset Pricing Model

CEO – Chief Executive Officer

COGS – Cost of Goods Sold

CRP – Country Risk Premium

CTT – CTT Correios de Portugal, S.A.

D&A – Depreciations and Amortisations

DCF – Discounted Cash Flow

DDM – Dividend Discount Model

DIV – Dividend

DPS – Dividend Per Share

EBIT – Earnings Before Interests and Taxes

EBITA – Earnings Before Interests Taxes and Amortisations

EBITDA – Earnings Before Interests, Taxes, Depreciations and Amortisations

EPS – Earnings Per Share

ESS – External Supplies and Services

EU – European Union

FCF – Free Cash Flow

FCFE – Free Cash Flow to Equity

FCFF – Free Cash Flow to the Firm

GDP – Gross Domestic Product

IMF – International Montery Fund

IPO – Initial Public Offering

MRP – Market Risk Premium

NOPLAT – Net Operating Profit Less Amortisations and Taxes

NPV – Net Present Value

NWC – Net Working Capital

PER – Price to earnings

PV – Present Value

ROIC – Return on Invested Capital

U.S. - United States of America

UPU – Universal Postal Union

WACC – Weighted Average Cost of Capital

YTM - Yield to Maturity

Sumário Executivo

O presente projeto visa determinar o valor da ação da Empresa CTT no cenário de entrada no mercado bolsista português (EURONEXT Lisboa) em 2013, de acordo com as imposições feitas pela Comissão Europeia, Banco Central Europeu e pelo Fundo Monetário Internacional, decorrentes do Plano de Assistência Económica e Financeira (PAEC). Esta operação tinha o intuito de por um lado, reduzir o peso do Estado Português na economia e por outro lado, assegurar a entrada de meios financeiros líquidos decorrentes da venda. Adicionalmente, o projeto procurará, ainda, verificar se o fenómeno da subavaliação das ações aquando da sua entrada no mercado se verifica.

Com o propósito de responder aos objetivos referidos, este projeto está organizado nas seguintes secções: (i) análise das tendências de mercado por área de negócio; (ii) análise à rentabilidade operacional e financeira histórica; (iii) elaboração de estimativas necessárias à avaliação da operação, nomeadamente vendas, gastos operacionais e que se concretizam em demonstrações financeiras completas; (iv) testar a robustez das projeções elaboradas e do respetivo modelo financeiro, através de uma análise de sensibilidade às variáveis operacionais críticas para a Empresa; (v) análise da evolução do preço da ação no mercado bolsista e respetiva conclusão sobre o fenómeno da subavaliação das ações na sua oferta pública inicial.

O setor dos serviços postais tem apresentado consecutivas diminuições ao nível do total de tráfego que decorre essencialmente da substituição dos meios físicos pelos meios de comunicação eletrónica. Adicionalmente, e tendo em conta a elevada correlação entre o PIB e o tráfego postal, a crise económica e financeira em Portugal acelerou esta tendência. Por outro lado, o setor do expresso e encomendas e dos serviços financeiros, foram também afetados pelo débil desempenho da economia Portuguesa.

A Empresa é líder nos serviços postais em Portugal com uma quota de mercado de 96% (3Q2013), sendo que os rendimentos operacionais deste segmento representam 74% dos rendimentos totais. O total de itens processados neste segmento diminuíram consecutivamente nos últimos anos ($CAGR_{10-12}$: -6.6%) sendo expectável uma suavização da tendência através de um aumento dos preços praticados e com a recuperação da economia Portuguesa. Adicionalmente, o segmento do expresso e encomendas (18% das vendas), profundamente afetado pelo desempenho da economia, é considerado uma das principais

fontes de crescimento devido ao potencial existente no *e-commerce* (tendência esta que já se verificou no último trimestre de 2013). Paralelamente, o segmento dos serviços financeiros foi alvo de um aumento da oferta de serviços e da renegociação de acordos existentes com entidades parceiras com o intuito de garantir uma melhor base de comissões para a Empresa, tendo já demonstrado melhorias consideráveis no último trimestre ao nível dos montantes de aplicações recolhidas e do número e valor de prémios de seguros emitidos.

Em 2011, e em resultado de uma tendência negativa registada ao nível dos rendimentos operacionais, a então Administração da Empresa comprometeu-se com o seu acionista, o Estado, a reduzir os gastos operacionais até 2012 em €103M. A empresa não só conseguiu alcançar esta meta como até ao terceiro trimestre de 2013 aumentou a sua rentabilidade operacional (medida em termos de margem EBITDA) em 3 pontos percentuais.

Estes desenvolvimentos serviram de base para a elaboração das projeções necessárias para proceder à valorização da Empresa. Esta valorização é elaborada, de um ponto de vista metodológico, através dos fluxos de caixa descontados (DCF) e da análise do valor de mercado de empresas comparáveis e de transações no setor (Múltiplos).

As análises realizadas sustentam um valor médio dos capitais próprios da empresa em torno dos €929.3M (€6.2 por ação). O intervalo de preço definido [€7.9;€4.5] compara com o intervalo de preço definido pela Empresa no prospeto [€5.5;€4.1], o que evidencia uma possível subavaliação da ação. Adicionalmente, três meses após a inclusão da ação mercado bolsista, o preço atingiu €6.3, evidenciando uma oferta abaixo do valor justo da ação. As conclusões apresentadas consideram-se mais sólidas pelo facto de que através de uma análise de sensibilidade, em que é considerado um crescimento nulo no longo prazo e uma margem EBITDA de 16% (179 pontos base do atingido no 3Q2013), o preço da ação é de €5.2 (recapitule-se que o limite superior definido pela Empresa é de €5.4).

Por último, destaca-se o caráter subjetivo das projeções e pressupostos definidos visto que uma análise desta dimensão exigiria o acesso a informação de gestão, nomeadamente ao plano de negócios definido pela Administração e aos investimentos futuros expectáveis.

1. Introduction

The postal market across Europe has decreased considerably ($CAGR_{11-15}$: -6.7%) having revenues declined from €7.4Bn in 2011 to €5.6Bn in 2015 [12]. In Portugal, the trend is parallel and the main reasons for the decrease are similar, namely (i) electronic substitution and growth in the internet access and mobile communications industries; (ii) individual preferences and habits namely adoption of e-commerce and e-billing; and (iii) the expansion of the online advertising which affects the advertising mail. In addition, and since GDP and postal traffic are highly correlated, the financial crisis in Portugal and the respective austerity plan also affected largely the development of this market ($CAGR_{08-12}$: -5.3%). In Portugal, the major player in the postal market is CTT – Correios de Portugal (from now on CTT or the Company) with a market share of 96% in 2012, which also operates in the express and parcels and financial services segments. The main services provided by each business unit are the following: (i) – mail (74% of revenues) - collection, sorting, transportation and distribution of domestic and international mail. Additionally, the Company offers also business solutions providing mail and document management services, printing and finishing services, digital mail, among others; (ii) Express and parcels services (18% of revenues) - collection, processing, transport and delivery of express and parcel services in Portugal, Spain and Mozambique; and (iii) Financial services (8% of revenues) - savings and insurance brokerage services (including public savings certificates and public debt targeted at retail investors), payment and collection services (including payment at CTT branches and the Payshop network), international money transfers and money orders as well as other financial products and services.

After the bailout in 2011, the Portuguese Government made a commitment towards the reduction of the presence of the State in the economy and identified a set of companies that must be privatized. After analysing different alternatives to privatize CTT, the Government decided that the best solution was to make an Initial Public Offering (IPO) and became publicly traded until the end of 2013. The traditional IPO process follows a standardized form where companies are obligated to prepare a registration statement (prospectus), which is a legal document providing financial and other information about the Company and the sector to investors. Therefore, the Company and its financial adviser's must define the range price

in the prospectus and present it to potential investors which would have subsequently to exhibit and quantify their purchase intentions and then the Company can adjust the price among the range price settled in accordance with the demand.

This project, aims to perform the role of Company's Financial Adviser and help the Company to determine the fair share price that should be offered to potential investors in the prospectus. Additionally, this project has the purpose to access if the IPO underpricing phenomenon occurred, since empirical data highlights that between 1960 and 2011, at the end of the first day of trading, the U.S. aftermarket was 17% above the initial price (on average) (Berk, J. & Demarzo, P., 2014).

The project will include the following components : (i) analysis of the postal, express & parcels and financial services market trends in Portugal; (ii) analysis of Company operational performance; (iii) profitability and financial analysis; (iv) forecast of the business evolution, namely revenues and operating expenses which will lead to full financial statements and cash flow generation; (v) assessment of the robustness of the key assumptions made, through a sensitivity and scenarios analysis; and (vi) analysis of the stock price evolution.

Finally, in order to define the range price and verify if the IPO underpricing phenomenon occurs, the most common valuation tools are applied, namely the FCFF, FCFE, DDM and both market and transaction Multiples.

The evaluation methodology led to an average Equity Value per share of €6.2 which contrasts with the average price of €4.8 (29% below) settled by the Company and its financial advisers in the prospectus. Furthermore, the first day of the stock on the market (PSI20) was in the fourth day of December 2013 and only 3 months later the price achieved €6.3, which supports the underpricing hypothesis.

2. Revision of existing literature

2.1.   Discounted cash-flow approach

Valuing a Company through the DCF is similar of valuing an asset, because we estimate the value of any asset by discounting the expected cash-flows that will be generated by that asset using a discount rate that reflects its level of risk (Damadoran, 2001).

DCF is the most common method used to evaluate a given Company because it reflects the expectations of investors on the Company profitability and growth opportunities. The DCF is similar to the methodology applied when analysing real investments with some adjustments: the key issue is to identify the future outflows and inflows of the Company ignoring the way that the Company is financed, since we only care about the feasibility of the business itself and analyse the profitability of the business for their shareholders (Mota et al, 2014).

Regarding the Net Present Value (NPV) concept, and when analysing real investments, the acceptance rule should be based on investments that generate present cash-flows higher than the investment required. Based on the fundamental of project valuation, and with some arrangements, the enterprise value will be the expected net cash-flows as a result of the operational, economic, financial and other activities (Kiev, 2013). «The enterprise DCF model discounts free cash flow, meaning the cash flow available to all investors—equity holders, debt holders, and any other non-equity investors—at the weighted average cost of capital, meaning the blended cost of capital for all investor capital (Koller, 2015)».

In order to evaluate a Company through the cash flow generated by its operations, one can use two different but similar approaches: the Free Cash Flow to the Firm or the Free Cash Flow to the Equity. In the first approach, it is necessary to discount the cash-flow available to all shareholders and discount them at the WACC being afterwards necessary to make the necessary adjustments to find the Company's equity value. On the other hand, the second approach consists on discounting the cash flow available to equity holders (after debt variation and after-tax interest expenses) and discount them at the cost of equity which leads directly to the equity value.

This concept of discounting cash flows is simply the present value of the future cash-flows, which should be discounted with a discount rate that reflects the capital structure of the

Company, generally the Weighted Average Cost of Capital (WACC), when using the free cash flow to the firm.

The purpose is to find the cash flow generated by the business after all the investments needed, both in capital expenditures and in working capital. The most common way is to discount the free cash flows to the firm at the (WACC) to obtain the Enterprise Value, and then add the non-business assets and subtract the financial debt (Bodie et al, 2014).

The free cash flow is the cash flow available to all investors- equity holders, debt holders, and other non-equity investors, so it is independent of the capital structure. The capital structure is taken into account in the discount process of those cash flows, through the WACC, which represents rates of return required by the Company's debt and equity holders blended together. It's simply the Company's opportunity cost of funds (Koller, 2015).

The free cash flow to the firm is the after-tax cash flow generated by the business (Operational Cash Flow), net of the investments in capital expenditures and working capital. This is the cash flow available to both debt and equity holders, and equals:

$$FCFF = EBIT\ (1 - t) + Depreciation -$$
$$Capital\ expenditures(net\ of\ disposals) \mp Variation\ in\ NWC$$

(1)

EBIT-Earnings Before Interests and Taxes

t- Corporate tax rate

NWC- Net Working Capital

Where operational Cash-Flow: $O.C.F = NOPLAT + Depreciations$

The operational cash flow reflects the cash flows generated by the business itself. In order to compute the operational cash-flow we add the depreciation, because it's not a cash cost. In the computation of the Net Operating Profit Less Adjusted Taxes (NOPLAT), depreciation is subtracted as it allows tax savings, so it should be added again to NOPLAT because in fact NOPLAT + DEPRECIATION will represent the economic flow that will be transformed into cash (Berk et al, 2014).

The capital expenditure (CAPEX) refers only to the investments made in the business, from the renovation and upgrading of capabilities to expansion of activities.

The investment in Working Capital represents the difference between the current assets needed to conduct the business, with items such as accounts receivable and

(2)

inventory, and the resources generated by the business in the form of current liabilities such as accounts payable, advances from customers, state and other public entities credits. The variation in net working capital in year t is defined as: $\Delta NWC_t = NWC_t - NWC_{t-1}$

NWC – Net Working Capital

T – Year t

T-1 – Year t-1

Now, we are able to compute the Enterprise Value,

$$Enterprise\ Value\ =\ PV\ of\ Free\ Cash-Flow\ to\ the\ Firm\ . \qquad (3)$$

In the valuation exercise of a Company we are going to assume its perpetual existence. The projection of its future cash-flows is typically carried out by dividing the future time horizon in two different periods:

- An initial period, typically ranging from 3 to 5 years, in which we will make specific annual projections for all main variables (EBITDA, Depreciation, Corporate Taxes, Changes in NWC, Investments and disposals). This period ends with a stabilization of cash flows to a steady state. The main question is how long shall be this initial period, and it depends on 3 key issues about the Company (Damadoran, 2001): the size of the firm; the existence of growth and excess returns; and the magnitude and sustainability of competitive advantages. Stable-Growth firms tends to have less exposure to market risk (and have lower betas), low returns on capital and earn small excess returns and finally use more debt than high-growth firms (Damadoran, 2001). In fact, it is very complex to make forecasts about the future performance of the Company, and so, the first period should not be higher than 5 years (Mota et al, 2015).

- In the second period, it will be assumed a perpetual constant annual growth for the free cash flow of the Company, because at some point in time projecting cash flows on a year-by-year basis becomes meaningless (Koller, 2015). This growth rate on the long run cannot be greater than the overall growth rate of the economy (Damadoran, 2001). Here, we identify the terminal value of the enterprise, assuming that the Company will operate forever by assuming a constant long-run growth rate for the free cash flows. The concept of the terminal value is simply the present value of a perpetuity, with an annual term growing at a constant rate g. This terminal value

represents the biggest portion of the Enterprise Value and therefore, it's advisable to take a very conservative view regarding the values of the cruising year; namely, we should consider a level of CAPEX similar to annual depreciation times one plus the g rate, in order to assure that from an investment point of view the Company can sustainably grow indefinitely at a g rate.

$$V_0 = \frac{FCF_1}{1 + r_{wacc}} + \frac{FCF_2}{(1 + r_{wacc})^2} + \cdots + \frac{FCF_N + V_N}{(1 + r_{wacc})^N}$$

$$V_N = \frac{FCF_{N+1}}{r_{wacc} - g} = \left(\frac{1 + g}{r_{wacc} - g}\right) * FCF_N$$

(4)

FCFn-Free Cash Flow of year N

R_{wacc}- Weighted average cost of capital

N- n.º of years

g- long-run growth rate

V_n- Terminal value

The main purpose is to find the Equity Value, and as mentioned before, the equity value is (Berk et al, 2014):

$$Equity\ Value = Enterprise\ Value + Non - Operating\ Assets \\ - Debt\ and\ Equivalents$$

(5)

Valuing a Company's equity using enterprise DCF is a four-part process (Koller, 2015):

1. Value the Company's current operations by discounting the identified cash flows using the weighted average cost of capital.

2. Identify non-business assets, such as excess cash, marketable securities, nonconsolidated subsidiaries, and other assets that do not contribute to the generation of the operational cash flow at their **market value**. Therefore, we are able to find the gross enterprise value.

3. Identify and value all debt and non-equity claims, which includes fixed and floating rate debt, bonds, debt equivalents such as pension liabilities and restructuring provisions, employee options, preferred stock, and others.

With this we can formally say that, the Equity Value is the Enterprise value, minus the debt and equivalents plus the non-business assets that can be sold at the market value.

(6)

$$Equity\ Value = Enterprise\ Value + Non - Business\ Assets$$
$$- Debt\ and\ Equivalents$$

In order to move from the Enterprise Value into to the Equity Value, it is essential to understand the most important components of the Non-Operating Assets and the Debt and Equivalents that are, most of them, reflected on the balance sheet and should be taken into account in the valuation process.

Below, these two issues are addressed in more detail:

Non-Operating Assets (Koller, 2015)

1. **Excess Cash and Marketable Securities**: companies often hold more cash and marketable securities than they need in order to perform their business. These redundant cash and marketable securities are treated as non-operating assets. Their book value can be used, unless we have a reason to believe they have meaningfully changed in value since the reporting date.

2. **Nonconsolidated Subsidiaries, Non-controlling Interest, and Equity Investments**: refers to Company holdings, where the Company's stake is below 50%. Because the Company does not control these subsidiaries, this should be valued independently from the current operations.

   a. Control between 20 to 50%: The equity holding is represented in the balance sheet at the investment's historical cost plus any reinvested income. The profit from that subsidiary is shown below operating profit on the parent's income statement.

   b. Control below 20%: The equity holdings are shown at the historical cost on the balance sheet, and the portion of the subsidiary's dividends are included below the operating profit on the income statement.

3. **Publicly traded subsidiaries**: Use the Market Capitalization to determine the value of this non-operating asset.

4. **Loans to other companies:** For loans to nonconsolidated subsidiaries and other companies, one should use the reported book value, because it is a reasonable approach to the market value if the borrower's credit risk and general interest rates have not changed too much since the creation of the debt.

5. **Discontinued Operations**: Businesses being sold or closed down, that are explicitly shown on the income statement. The most reasonable perspective is to use the most recent book value.

6. **Excess Real Estate**: any cash-flow that these assets generate should not be included in the DCF. For excess real estate, it should be used the most recent appraisal value when it is available or use a multiple for similar assets, such as value per square meter.

7. **Excess Pension Assets**: they generally appear on the balance sheet at their market value, and depends on management's plans. If they are expected to be dissolved soon, subtract liquidation taxes from the market value of excess pension assets. Otherwise, subtract taxes at the marginal rate (as it reflects the need for lower future contributions).

Valuing Debt and Debt Equivalents (Koller, 2015)

Investment-grade debt: for debt that is secure and actively traded, use the market value of debt which is the bond market price that already reflects the Company's stability and therefore its default probability. If the debt is not traded, in order to find the market value, it's necessary to discount the promised interest and principal payments at a rate that reflects the riskiness of the debt (generally based on the Company's bond rating). For fixed-rate debt and floating-rate debt, and if the default risk has not changed considerably, one can use the book value.

Operating Leases: Companies treat rental charges for so-called operating leases as an expense. If the Net Operating Profit Less Amortisations and Taxes (NOPLAT), invested capital, and the FCF are adjusted to operating leases, we should deduct the present value of operating leases from the enterprise value. However, if no adjustments were made, we should not subtract the value of these operating leases.

1. **Unfunded Pension and Other Retirement Liabilities**: They should be considered as debt equivalent, and be deducted from the Enterprise Value. This future contributions are tax deductible at the marginal tax rate, so we must multiply by 1 minus the marginal tax rate.

2. **Securitized Receivable:** This happens when the Company sells accounts receivable to a third party, and this sale generally includes a given interest. In this case, we should deduct the value of securitized receivables from the enterprise value.

3. **Provisions:**
   a. Should include: Long-term operating provisions and Non-operating provisions
   b. Should not include: Ongoing Operating provisions and Income-smoothing provisions.

4. **Contingent Liabilities:** Generally are on the notes of the balance sheet. Examples are pending litigations and loan guarantees. When possible, estimate the associated expected after-tax cash flows (if the costs are tax deductible), and discount these at the cost of debt.

The second approach to evaluate a business based on their capability to generate cash flows is the Free Cash Flow to Equity that reflects the cash flow available only to equity holders by contrast to the Free Cash to the Firm that includes the cash flow available creditors and shareholders.

In the Flow-to-Equity (FTE) valuation method, it's explicitly calculated the free cash flow available to equity holders after taking in account all flows to and from debt holders. (Berk et al, 2014). It's simply the cash flows that will be available to shareholders, which is to say, all cash flows that remain after all operating expenses, interests, and principal payments have been paid and necessary investments in working capital and CAPEX.

The main differences from the Free Cash flow to the Firm, is that now we deduct interest expenses in order to find the Net Income, instead of the NOPLAT and we also add the proceeds from the firm's net borrowing activity. These proceeds are positive when the firm increases its net debt, and negative when it decreases it by repaying principal (or retaining cash that will decrease the net debt).

In this method, we can follow two alternative paths that will lead to the same value. If we already have the FCFF, we can deduct the after-tax interest expense plus the net borrowing. The second path is to compute the Net income, deduct the working capital and capital expenditures, and then introduce the debt variation (Berk et al, 2014).

1. $FCFE = FCFF - (1 - t) * (Interest\ payments) + (Net\ Borrowing)$ (7)

2. $FCFE = Net\ income + Depreciation - Capital\ Expenditures - Increases\ in\ NWC + Net\ Borrowing$ (8)

The FCFE is obtained from the FCFF by subtracting after-tax interest expense and net debt repurchases. Those cash flows are then discounted at the equity rate (Bodie et al, 2014).

While the FCFF uses a two-stage approach to value, first it's computed the Enterprise Value and then the Equity Value by adding the non-business assets, and reducing by the amount of the financial debt, the FCFE approach leads directly to equity value, as we are discounting the cash flow available for the shareholders at the cost of equity.

This cost of equity should reflect the leverage of the Company, so it should be used, if obtained through the CAPM, the levered Beta, which reflects the capital structure of the Company.

2.2. Weighted Average Cost of Capital (WACC)

The free-cash flows to the firm should be discounted with a discount rate that reflects their riskiness, captured by the WACC that takes into account the two sources of funds: debt and equity.

The WACC is the weighted average of the after-tax cost of debt and the cost of equity in each year.

In order to identify the WACC, it is necessary to find the:

- Cost of Equity
- Debt to Equity Ratio
- Cost of Debt
- Tax rate

In order to estimate the cost of equity there can be used two methods:

1. Use the capital asset pricing model (CAPM) to estimate the expected return, that is one of the most common used models to assess risk and return of an asset.

2. Constant-growth dividend discount model, for mature and steady-growth companies (Brealey et al, 2001).

And through the CAPM, the formula is the following (Bodie et al, 2014):

$$r_e = rf + Bl * (Rm - rf) \qquad (9)$$

Wherein (i) r_e is the cost of equity; (ii) rf is the risk free rate; (iii) Bl is the levered beta; and (iv) Rm is the market return.

The different elements that compose the CAPM formula are:

1. **Risk free Rate**: The risk free rate means that the exact return is equal to the expected return, and so the variance is zero. The main characteristics of this component are: the probability of default is zero, and there's no   (10) reinvestment risk. Finally, the maturity of this risk free rate should match the maturity of the cash flows. Generally, the risk free investment should be the return provided by a Government Bond of triple A rating country. For countries, such as Portugal, that have low quality debt, a country risk premium (CRP) should be added to the risk free rate. This CRP can be represented by the difference between the rate of the Government Bonds of Portugal, and the rate of a EURO AAA rating country (in order to avoid the currency risk factor) such as the Government Bonds of Germany. So, for those countries with low credit quality one should add credit risk spread to the Government Bond of a AAA rating country (Mota et al, 2015), as follow:

$$risk\ free\ rate = Rate\ of\ Government\ Bond + Credit\ Spread \qquad (11)$$

2. **Levered Beta**: The Levered Beta can be obtained in two ways. The first one was mentioned above, and it consists on running a regression of the returns of a given stock and the market, and then divide the covariance between the Company and the market by the variance of the market. This is considered a backward looking process, and may not reflect the current market conditions of the Company (Mota et al, 2015). The second method, which is usually used for non-public companies, combines estimates of similar assets for multiple firms that operates in the same industry or line of business. This method enables us to reduce our estimation error and improve the accuracy in the estimation of the Beta for the firm. If we have the Beta Levered of many companies, it's necessary to compute the Unlevered Beta of each, because these companies may have different debt to equity targets, or different Debt rating. So, in order to find the Average Beta of the Peer Group that we chose, it's necessary to find the unlevered beta of each Company, taking in consideration their own characteristics, and then compute the average (Berk et al, 2014).

3. **Market Risk Premium**: The Market Risk Premium is the difference between the return of the market and the risk free rate, i.e. the reward demanded by the investors due to investing in riskier securities. This can be obtained in three ways: 1. Based on the past historical returns; 2. Through the market capitalization and the respective

future cash flows, obtaining an implicit remuneration rate that reflects the null difference between the market capitalization and the value of the discounted cash flows; 3. Through surveys to the main players on the market, professionally or academically (Mota et al, 2015).

The **second method to estimate the cost of equity** is based on the dividend model, which states that the return of a stock is: $R_e = \frac{DPS_1}{P_0} + \frac{P_1 - P_0}{P_0}$, where the first component is the dividend yield and the second the capital gain. (12)

The **cost of debt** is the market interest rate demanded by bondholders, and represents the average cost of debt of a Company (Brealey et al, 2001). In order to find the cost of debt, we can use the Company's after-tax yield to maturity (YTM) on its long-term debt. For companies whose debt trades infrequently, or for non-traded debt (not all companies have bonds), we can use the Company's debt rating to estimate the yield to maturity.

(Brealey et al, 2001) emphasizes that there are actually two costs of debt. The first one is the cost demanded by the bondholders, considered as an explicit cost. However, there's also an implicit cost, because borrowing increases the required return to equity. From the formula of the Beta leveraged, we can see that if the Company increases the level of debt, the Beta leveraged increases, so the required rate of return by the equity holders also increases. Nevertheless, increasing the level of debt, leads to a riskier Company, and higher probability of bankruptcy, so the cost of debt will actually increase.

To estimate the cost of debt (Mota et al, 2015):

1. For companies with bonds outstanding: the cost of debt is the risk free rate plus the credit spread risk that is obtained through the ratings. For companies without debt classified: There are two alternatives. First, use the yield to maturity of similar companies with outstanding debt with the same maturity. Berk et al (2014) suggests that one should adjust the yield maturity to incorporate on it the probability of default and the recovery rate and therefore capture the true expected return of a bond.

$$R_d = YTM - Prob. of\ Default * (1 - Recovery\ rate) \qquad (13)$$

   Second, based on the fundamental information of the Company compute the financial ratios of interest expenses, and then estimate the after tax cost of debt. Generally, the average cost of debt, for companies without public traded debt, equals:

(14)

$Rd = \frac{Interest\ Expenses}{Financial\ Debt}$.

Nevertheless, this is a backward locking process, which can be used, if the Company will keep the current capital structure in the future and if there are no concerns about changes in the overall conditions of financing in the economy.

The formula for the WACC is the following, assuming corporate taxes (Farber et al, 2006):

$$WACC = r_e * \frac{E}{D + E} + R_d * (1 - t) * \frac{D}{D + E} \qquad (15)$$

Wherein: (i) $WACC$ is the Weighted Average Cost of Capital; (ii) E is the value of Equity; (iii) D is the value of Debt; (iv) R_d is the cost of debt; and (v) t is the tax rate.

Using the WACC, it's assumed that the tax shield, the tax benefits from having debt in the capital structure, is discounted at the cost of debt.

However, there are two alternatives:

1. Rule 1: Constant level of debt in the framework of constant perpetuities (Modigliani and Miller, 1963)

   - The level of debt is constant
   - The Tax shield discount rate is equal to the cost of debt

2. Constant proportion of debt (Harris and Pringle, 1985)

The hypothesis is that the value of Debt is proportional to the Value of the unlevered firm. So, the tax shield has the same risk as the firm's assets and should be discounted at the opportunity cost of capital.

The **procedure to estimate the WACC** is the following, for non-listed companies:

Beta Leveraged of the Sector	→	Beta Unlevered of the Sector	→	Beta Leveraged of the company(with the Beta of debt through the CAPM)	→	Return on equity (using CAPM)	→	WACC
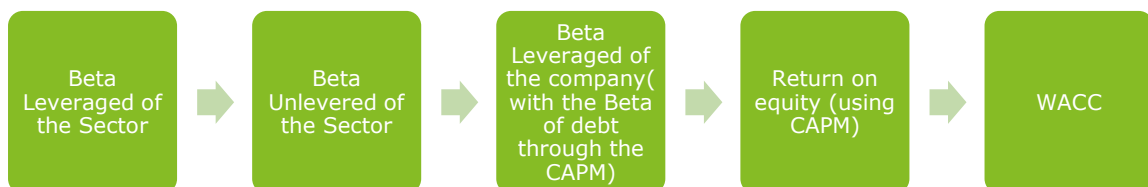
2.3. The Dividend-Discount Model

«Discounted cash flow model of today's stock price which states that share value equals the present value of all expected future dividends (Brealey et al, 2001) ».

As an equity holder, investing in stocks has two sources of income: the dividends that will be paid to each share while holding the share and the difference between the purchase price and the sell price. Note that the price difference can be negative, and then the gain from the dividends may not be enough to cover the losses caused by the decrease in price. (Berk et al, 2014).

The valuation of equity is assumed to be based on expected dividend payoffs, because there's a level of uncertainty regarding this future dividend (Penman, 1998).

«The valuation of all shares would be governed by the following fundamental principle: the price of each share must be such that the rate of return (dividends plus capital gains per dollar invested) on every share will be the same throughout the market over any given interval of time (Modigliani and Miller, 1961) ».

As mentioned before, the present value of a stock equals the present value of the future dividends and the capital gain. For a one-period investor, the valuation formula is the following:

$$P_0 = \frac{Div_1 + P_1}{1 + r}$$

For a two-year period investor:

$$P_0 = \frac{Div_1}{1 + r} + \frac{Div_2 + P_2}{(1 + r)^2} \tag{16}$$

For a n-year period investor:

$$P_0 = \frac{Div_1}{1 + r} + \frac{Div_2}{(1 + r)^2} + \cdots + \frac{Div_n + P_n}{(1 + r)^n}$$

In fact, stocks do not have a maturity, so, theoretically, an investor can keep the stock as far out into the future as he want, and then the value of the stock today will be a only a function of the future dividends, because the higher the investment horizon, the shorter the impact of the terminal price in the value per share. So if the horizon is infinitely far away, then we can ignore the Price at date n, because its value tends to zero , and say that the stock price is the present value of all future dividends per share (Brealey et al, 2001).

The method in the dividend discount model with non-constant growth is similar to the one used in the FCFF and FCFE, because the fair stock price is the present value of the future dividends per share, which comes from two different periods. The first period, in

$$\tag{17}$$

which the prediction is done on an year-by-year basis and then, a stable growth rate into the future.

$$Po = \frac{D_1}{(1+r)} + \frac{D_2}{(1+r)^2} + \cdots + \frac{\frac{D_n}{(r-g)}}{(1+r)^{(n-1)}}$$

D_1 – Dividend in year 1

D_2 – Dividend in year 2

D_n – Dividend in year n

r – Discount rate

g – Expected growth

n – Year

P_0 – Share price at moment zero

The dividend on the continuity year, and the growth rate are two critical variables in valuing a stock using the dividend discount model.

The key problems regarding the dividend discount model are that there's always a level of uncertainty regarding the expected dividend; the price of the share today depends crucially on the payout ratio of the Company that can change over time; additionally, the growth rate cannot be a high value, because no Company can keep a perpetual high growth ; and finally, this model does not tackle properly other issues such as the non-business assets of the Company, that other techniques take into account.

2.4. Multiples

The idea behind using multiples as a technique to evaluate a Company is that similar assets should sell for similar prices, whether they are houses or shares of stock (Koller, 2015). A valuation multiple is simply an expression of market value of a Company relative to a key statistic (generally a ratio) that is assumed to relate to that value. The multiples should have a logical relationship to the observed market value. The multiples method is commonly used as it requires less assumptions than does the discounted cash flow method (Damadoran, 2001). In the method of comparables, we estimate the value of a given firm based on the value of one or more comparable firms or investments that we expect that will generate similar cash flows in the future. In fact, identical companies does not exist. Firms, even though operate in the same sector and selling the same products, may have different size or

scale that could lead to misleading results (Berk et al, 2014). According to Koller (2015), there are five principles for correctly use multiples:

1. Value multi-business companies as a sum of their parts. Even companies that operate in the same sector, can compete in subindustries and then have different ROIC's and growth, leading to substantial variations in multiples

2. Use forward estimates of earnings: if possible, use a forward looking approach, because it reduces the variation across peers.

3. Use the right multiple: the most common ones are the Price to earnings ratio, the net Enterprise value to EBITDA and the net enterprise value to NOPLAT.

4. Adjust the multiple for non-operating items. The EBITA should be adjusted in order to reflect the current operations of the Company, as well as balance sheet items like excess cash and pension items, which may lead to large distortions of multiples

5. Use the right peer group. A good peer group must not only operate in the same industry, but also have similar prospects of ROIC and expected growth.

Multiples are a subjective valuation approach because it is necessary to identify the comparable firm or the peer group. If one is able to identify only one Company with similar characteristics to that one that is being valued in terms of industry, capital structure, ROIC and expected growth rate, we should use that Company as a comparable in spite of being a weak approach. The most common method used is to identify the peer group that is a set of similar companies with similar characteristics in terms of the Company's value drivers and underlying business characteristics or strategies (Koller, 2015). Even if we identify companies that compete head-to-head, differences in performance may justify differences in multiples. Remember that every multiple has some key assumptions beyond it, and if we only look to the final value of the multiple, we can be in a blind space, because that multiple depends on different variables, like the growth rate, the WACC and the tax rate. The most common approach is to compare a particular Company's multiple with an average multiple of other companies in the same industry. It's better to use a smaller subsample of peers with similar performance instead of using a large peer group with significant differences. It's crucial to eliminate the outliers from the peer group, in order to have a peer group that is as closed as possible to average of the sector (Koller, 2015). If comparable firms were identical, their multiples would match precisely. Obviously, firms are not identical, so the usefulness

of a valuation multiple will depend on the nature of the differences between firms and the sensitivity of the multiples to these differences. The differences in these multiples are most likely due to differences in their expected future growth rates, profitability (namely ROIC), risk (and therefore costs of capital). When we apply a valuation multiple, we ignore the facts that companies have different management skills, differences regarding the efficiency of the operations, or a secured patent on a new technology (Berk et al, 214).

In order to use multiples appropriately it should only be considered in the peer group companies that have the same size, same risk, similar expected cash flows and growth (Damadoran, 2001).

This valuation method often uses several different multipliers and in the end, we take the average of the values produced by each multiplier or try to establish an interval for the value of the Company.

Multiples are also useful in a second stage of the valuation, because they should be used as a term of comparison after using the discounted cash flow method. In the end, a comparison with the multiples of comparable firms enables us to assess the valuation performed, and identify differences between the firm valued and the firms used as comparables (Fernandez, 2015).

The multiples can be divided into three groups (Fernandez cited by Morgan Stanley, 2015)

1. Multiples based on the Company's capitalization (Equity Value: E)

    a. Price Earnings Ratio(PER)

$$PER = \frac{Market\ Capitalization}{Total\ net\ Income} = \frac{Share\ Price}{Earnings\ per\ share} \qquad (18)$$

    b. Price to Book Value(P/BV)

$$\frac{P}{BV} = \frac{Market\ Capitalization}{Book\ value\ of\ shareholders\ equity} \qquad (19)$$

2. Multiples based on the Company's value (equity value and debt value: Enterprise Value)

    a. Enterprise Value to EBITDA $\qquad\qquad (20)$

$$\frac{EV}{EBITDA}$$

$$= \frac{Enterprise\ Value}{Earnings\ before\ interest, tax, depreciation\ and\ amortization}$$

The EBITDA has two significant limitations, including:

- It does not account for changes in the working capital
- It does not consider the capital expenditures: and that's why according to Koller (2015), we should use the EBIT, because in spite of the depreciation is not a cash cost, it represents the actual cost of replacing those assets that are needed by the firm to develop its activity.

b. **Enterprise Value to Unlevered Free Cash Flow(EV/FCF)**

$$(21)$$

$$\frac{EV}{FCF} = \frac{Enterprise\ Value}{Nolplat + Depreciation - Increases\ in\ NWC - CAPEX}$$

3. **Growth-referenced multiples**

a. **P/EG or PEG. PER to EPS growth**

$$(22)$$

$$\frac{PER}{G} = \frac{P}{EG} = \frac{PER}{Growth\ of\ earnings\ per\ share\ in\ the\ next\ few\ years}$$

2.5. Comparison between discounted cash-flows and multiples

In the previous sections, different tools to value equities were presented. Amongst those tools, two leading methodologies: the discounted cash-flow and multiples. The discounted cash-flow method is the most robust because the intrinsic value of the business is related with the cash flows that the Company is expected to generate in the future. This method requires a set of assumptions in terms of cost of capital, return on capital, competitive advantages, barriers to entry, reinvestment rates and growth rates. The DCF allows investors to incorporate business strategy changes into the valuation because they only need to make those realistic adjustments in the future estimates of the Company. The main argument against the DCF is that there's a need to forecast uncertain future business results, and so it is crucial to make different scenarios or some sort of sensitivity analysis. Other criticism about the DCF is that the terminal value represents a huge portion of the enterprise value, and we know that in fact, no Company can live forever (Havnaer, 2013).

On the other hand, the use of multiples is very easy to apply and require very simple math and excel skills. Furthermore, there is no need to make forecasts into the future, because multiples are typically projections of current year or the next year's Revenues, EPS or EBITDA. Therefore, the three main advantages of using multiples are: (i) usefulness - multiples provide a framework for making value judgments; (ii) simplicity - very simple and easy to apply and assess value; and (iii) relevance - because focuses on the key statistics that the main investors use and care (Suozzo, 2001). However, the main criticisms about multiples are (i) it is a subjective approach, because truly comparable companies rarely exist; and (iii) it assumes the market is correctly valuing the peer group, and there is no problem of undervaluing or overvaluing companies (Havnaer, 2013). Another problem when using multiples is their dispersion. When we look for a set of companies that operate in the same industry, with similar key drivers, they will likely have different values for the same multiple Therefore, it is important to identify and eliminate the outliers-comparables with values distant from the average of the group (Fernandez, 2015).

The use of multiples can be seen as a "shortcut" to the DCF and a complementary method. The true value driver of the Company is the ability to generate cash flows to its investors, so the DCF methods are more accurate and insightful that the use of a valuation multiple. Finally, multiples can be a great way to check if the DCF valuation was accurate and to identify a range of values (Koller, 2015).

2.6. Initial Public Offering

An IPO occurs when a Company intends to scatter its capital and become publicly traded which allows to assess more easily to further funds in the future if necessary. This happens because when going public, the Company has access to a large number of investors, and, thus, can obtain funds for their future investments more easily. An IPO is the process of selling stocks to the public for the first time- in the primary market (Berk et al, 2014).

Once the firm decides to go public, the first step is to select the underwriters. The underwriter is an investment bank that act as financial intermediary between the firm and the public investors. So, they buy an issue of securities from a Company and then resell it to the prospective investors. The underwriter receives the payment in the form of a spread, because they are allowed to increase slightly the sell price to the public relatively to the price that they bought. However, they become exposed to a relevant level of risk as they might not be

able to sell the stock at the agreed offering price, so they will have in inventory shares that weren't sold and then should try to sell at discount and deliver the established price to the firm (Brealey et al, 2001).

The firm must prepare and release the prospectus, which is a formal document that provides all the relevant information about the sale of the securities, offered to the public.

The main advantages of going public are greater liquidity and better access to capital, both in the IPO and in subsequent offerings. The biggest disadvantage of going public is that the equity holders of the corporation become more widely dispersed. This may be problematic as investors may feel that they don't have the control of the Company, so they may discount the price they are willing to pay to reflect that non-control (for minority holdings) (Berk et al, 2014).

The next step is to define the price, or the range price of the IPO. Generally, in most IPOs, there's the Underpricing phenomenon, which consists in issuing securities at an offer price below the true value of the security. Underpricing is seen as a cost to the existing owners, because the new investors are allowed to buy the shares at a discount price (Bhabra et al, 2000).

There are numerous costs involving an IPO, such as (Ritter et al, 1996):

- Gross spreads: managements fees, underwriting fees and selling concession
- Other expenses: registration fee and printing, legal, and auditing costs
- Cost of underpricing: first day return

  o $Cost\ of\ underpricing = 100 * (\frac{Closing\ price\ 1^{o}\ day}{Offering\ Price} - 1)$

In financial markets, we assume that the markets are efficient, so the market prices each security at their fair price, with all the information available at each moment (Bodie et al, 2014). Therefore, if stock's price is settled below fair price, at end of the first day, the stock is usually at a higher price so it can be seen as a cost for the Company since alternatively the first stock price could have been the one in the end of first day.

Given the existence of underpricing, it seems that investing in new IPOs would be an arbitrage opportunity. However, when an IPO goes well, the demand for the stock exceeds the supply, so the allocation to each investor is rationed (Berk et al, 2014). This happens

because if the IPO is underpriced, everybody will want to buy it and then underwriters will not have enough shares to sell (Brealey et al, 2001).

The main reasons for underpricing are:

1. **Information Asymmetry**: The degree of information asymmetry depends on the difficulty that the issuer faces in estimating the size of the information asymmetry between various classes of subscribers, i.e., informed and uninformed investors. Information asymmetry is faced in two different interfaces. The first one is between the issuer and the underwriter and the second one is between the underwriter and the investors. Generally, the underwriters are better informed about the market demand, so they take in advantage of this superior information by inducing the level of underpricing to reduce their distribution efforts. Furthermore, relevant information is difficult and expensive to obtain by the investors, so many investors are not willing to incur in those costs to obtain the information. On the other hand, informed investors incur in that cost to obtain relevant information, therefore their expectation on investment includes compensation for the information cost. The issuer is interested in attracting both classes of investors, informed and uninformed, because the uninformed investors are targeted for a long period holding. The issuer faces a problem when defining the offer price, as it has to price it in a way that it seems an attractive investment opportunity for both classes of investors, and also that ensures the success of the issue (Katti et al, 2016).

2. **Signalling**: this element relies on the fact that the issuer would like to "leave a good taste" in investors' mouth to guarantee the success of future equity offerings. The degree of underpricing is positively correlated with the firm quality and so the cost of signalling for a high quality firm is lower as compared to a low quality firm. Only good quality firms can follow this strategy, because of their capacity to compensate the loss of proceeds incurred with the underpricing. In fact, if it is a good quality Company, their performance will be good, and then will have a good expected dividend yield. For bad quality firms, if they try to adopt this strategy they have to incur in high imitation costs in the process of imitating the high quality firms. This happens because the market will be able to assess the true quality of a firm over a period of time, so the marginal cost of underpricing is higher for low quality firms.

There are two key reasons why low quality firms cannot adopt this strategy: 1. as mentioned before, the marginal cost of underpricing is quite high; 2. these firms are at risk of exposing their true quality to the investors over a period of time (Katti et al, 2016).

2.7. Profitability and Financial Analysis

There are a set of ratios that are commonly used by investors in order to analyse companies over time or to compare them with similar firms. These ratios cover the dimensions of profitability, liquidity, working capital, interest coverage, leverage, valuation and operating returns of the Company (Berk et al, 2014).

2.7.1. Profitability Ratios

$$Gross\ Margin = \frac{Gross\ Profit}{Sales}$$	Reflects its ability to sell a product for more than the cost of producing it.
$$Operating\ Margin = \frac{Operating\ Income}{Sales}$$	Reveals how much a firm earns before interest and taxes from each euro of sales.
$$Net\ Profit\ Margin = \frac{Net\ Income}{Sales}$$	Shows the fraction of each euro in revenues that is available to equity holders after the firm pays interest and taxes.

2.7.2. Liquidity Ratios

$$Current\ Ratio = \frac{Current\ Assets}{Current\ Liabilities}$$	Shows the coefficient t between the current assets of a firm, and their current liabilities.
$$Cash\ Ratio = \frac{Cash}{Current\ Liabilities}$$	Check the percentage of cash that the Company has according to their current liabilities.

2.7.3. Working Capital Ratios

$$Accounts\ Receivable\ Days = \frac{Accounts\ Receivable}{Average\ Daily\ Sales}$$	Evaluate the speed at which a Company turns sales into cash.

$Accounts\ Payable\ Days$ $= \dfrac{Accounts\ Payable}{Average\ Daily\ Cost\ of\ Sales}$	Evaluate the number of days of credit that the Company gets from its suppliers.
$Inventory\ Turnover = \dfrac{Annual\ Cost\ of\ Sales}{Inventory}$	Expresses annual revenues or costs as a multiple of the corresponding working capital account. Indicates the rate at which the Company is turning over its inventories. Efficient firms turn over their inventory rapidly and don't tie up more capital that they need in raw materials or finished goods.

2.7.4. Interest Coverage Ratios

$\dfrac{EBIT}{Interest\ Converage\ Ratio} = \dfrac{EBIT}{Interest\ Expense}$	This ratio check if the firm is earning enough money in order to meet its required interest payments, after depreciation.
$\dfrac{EBITDA}{Interest\ Converage\ Ratio} = \dfrac{EBITDA}{Interest\ Expense}$	Depreciation and amortization are not a cash expense for the firm, so this ratio can be computed using the EBITDA.

2.7.5. Leverage Ratios

	The portion of debt as a source of financing.

$$Debt-Equity\ Ratio$$ $$=\frac{Total\ Debt}{Book(or\ Market)\ Value\ of\ Equity}$$	
$$Debt-to-Capital\ Ratio$$ $$=\frac{Total\ Debt}{Total\ Equity+Total\ Debt}$$	Fraction of the firm that is financed through debt. Can be usedCan be used both book values and market values.
$$Debt-to-Enterprise\ Value\ \ Ratio$$ $$=\frac{Net\ Debt}{Enterprise\ Value}$$	Indicates the percentage of the firm's underlying business activity that is financed via debt.

2.7.6. Valuation Ratios

$$Price-Earnings\ Ratio=\frac{Share\ Price}{Earnings\ per\ Share}$$	Indicates the number of times that investors are willing to pay above the earnings to purchase a share. It's an indicator to check if the share is expensive or cheap.
$$Market-to-Book\ Ratio$$ $$=\frac{Market\ Value\ of\ Equity}{Book\ Value\ of\ Equity}$$	Indicates if the market value of equity, that corresponds to the market capitalization, is higher or lower than the book value of equity.
$$Enterprise\ Value\ Ratios$$ $$=\frac{Enterprise\ Value}{EBIT\ or\ EBITDA\ or\ SALES}$$	Relates the Enterprise Value, that is the value generated by the principal operations of the firm,

	in terms of the Cash generation (EBITDA), or the sales.

2.7.7. Operating Returns

$$Asset\ Turnover = \frac{Sales}{Total\ Assets}$$	Measures how efficiently the firm is utilizing its assets to generate sales.
$$Return\ on\ Equity = \frac{Net\ Income}{Book\ Value\ of\ Equity}$$	Provides a measure of the return that the firm has earned using the resources made available by its shareholders. A high ROE indicates that the firm has been able to find investment opportunities that are very profitable.
$$Return\ on\ Assets$$ $$= \frac{Net\ Income + Interest\ Expense}{Book\ Value\ of\ Assets}$$	The ROA includes interest expenses in the numerator because the assets in the denominator have been financed by both debt and equity.
$$Return\ on\ Invested\ Capital$$ $$= \frac{EBIT * (1 - Tax\ Rate)}{Book\ Value\ of\ Equity + Net\ Debt}$$	Measures the after-tax profit generated by the business itself, excluding any interest expenses, and compares it to the invested capital (both from equity and debt).

3. CTT- Correios de Portugal

3.1. Company overview

CTT – Correios de Portugal S.A. is the main postal services operator in Portugal. The Company has its origins in 1520 when Manuel I, King of Portugal, set up the office of Postmaster of the Kingdom of Portugal. In 1969, CTT became a Portuguese state Company (it was previously a government agency) under the name of CTT Correios e Telecomunicações de Portugal. Finally, in 1992 the Company ceased all its telecommunications activities and adopted the current name of CTT- Correios de Portugal [2].

Now a days, CTT offers a wide range of products and services through its three business segments covering three markets: (i) mail and business solutions, (ii) express and parcels, and (iii) financial services. In Portugal, CTT's services include mail (which includes business solutions and retail offer and other services), express and parcels and financial services (including payment services through Payshop's agent network). CTT also offers express and parcels services in Spain through its subsidiary, Tourline, and in Mozambique through its 50% owned subsidiary, CORRE, which is jointly owned with the national postal services provider, Correios de Moçambique.

CTT – Correios de Portugal is the leader in the Portuguese postal sector with c. 95% market share of the postal market, being the single designated provider of the Universal Service Obligations (USO) until 2020. A network of 2,557 post offices (743 are Company-owned) and 3,909 Payshop locations provides broad, national coverage and also supports the provision of financial services including savings / insurance products, national and international money transfers and bill payments services [2].

On October 4 of 2013, the CEO of CTT, Francisco Lacerda, announced the intention of going public, which represented an important step in the history of the Company.

3.2. Reasons for going public

The main reasons behind the decision of going public were the following [2]:

(i) In accordance with bailout and the respective austerity plan, the Portuguese Government (at the time, the shareholder of CTT) made a commitment with the European Union, the European Central Bank and the International Monetary Fund to resize the presence of the state in the economy which implied a set of privatizations, where CTT was included;

(ii) Since 2012, the postal market in Portugal is liberalized due to standards from the European Union. Those changes aimed to allow the competitiveness on the sector;

(iii) Allow the government to reduce the level of public debt through the sale of the participation, with an expected inflow of €497M, for 70% of equity.

4. Profitability and Financial Analysis

The profitability and financial analysis and subsequently valuation chapter, takes into account the most recent available information at IPO's date, where the Company published specially the financial report as of September of 2013 and the comparison with the same previous period.

4.1. Key performance indicators
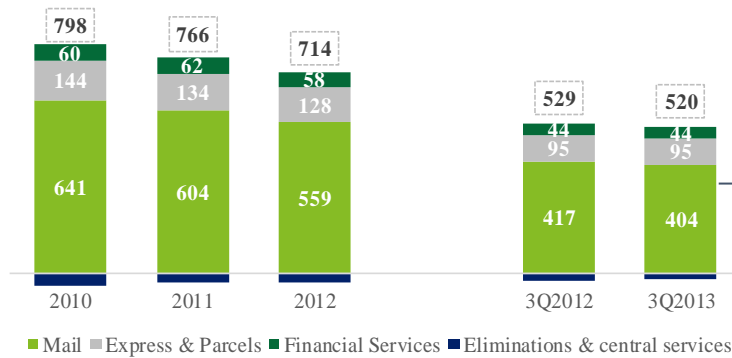
Chart 1 Total revenues evolution (€M), 2010-3Q2013 [3]
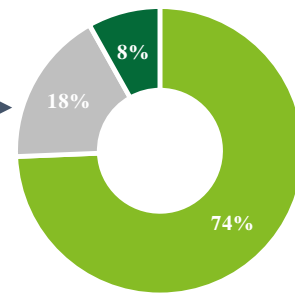
Chart 2 Revenues breakdown (%), 3Q2013

The Company's revenues fell consecutively between 2010 and the third quarter of 2013. The CTT core business (74% of revenues) faces a challenging scenario in which mail volumes have been decreasing in the past few years (c. -6.3% $CAGR_{09-12}$), due to three major issues: i) electronic substitution; ii) a poor macro environment; and iii) increasing competition. The express and parcels and the financial services business unit's recovered in the third quarter of 2013 in comparison with the same previous period, highlighting a turnaround in terms of revenues.

As the decrease on mail volumes became an irreversible trend, the management team made a commitment in 2011 with the shareholders to reduce external supplies and services and personnel costs in €103M (15%) until the end of 2012.
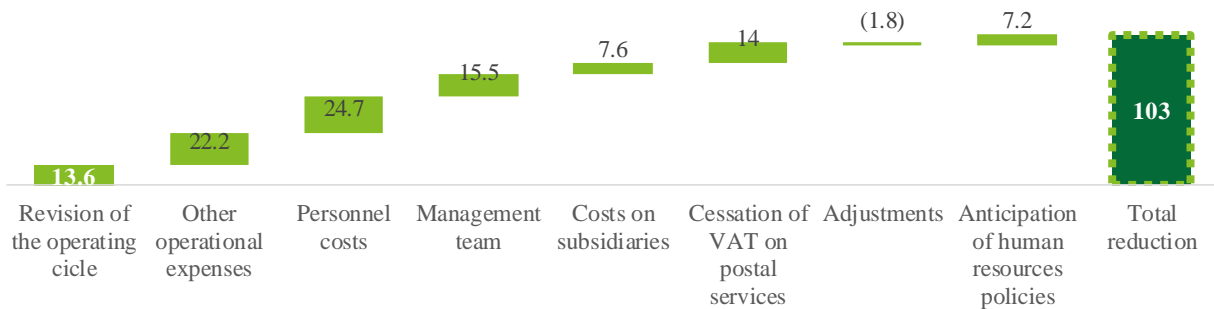
Chart 3 Breakdown of cost savings (€M) [3]

The Company achieved that goal through a set of efforts, namely: (i) revision of the operating cycle (€13.6M), (ii) reduction on other operational expenses (€22.2M); (iii) personnel costs (€24.7M); and (iv) among others, for more detail please observe chart 3.
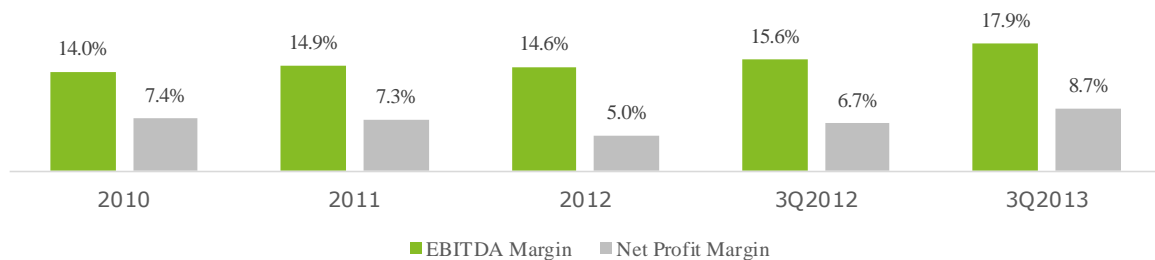
Chart 4 Profitability ratios evolution (%), 2010-3Q2013

In line with the cost reduction plan implemented by the management team in 2011, the overall efficiency of the Company increased significantly. The EBITDA margin, increased from 14.0% in 2010 to 17.9% in the 3º Quarter of 2013 which represents an absolute increase of €12.7M.

Chart 5 Evolution of external supplies and services and wages expenses, as % of sales, 2010-3Q2013

Overall costs have been reduced, presenting a CAGR: -5.7% between 2010 and 2012, supported by the decrease of expenses with external supplies and services and personnel costs as a percentage of sales. The reduction on: (i) personnel expenses has been mostly driven by

the reduction in the headcount: less 1,326 employees in the 2010-3Q2013 period; and (ii) the reduction in own branches in the retail network: less 268 in the mail segment. On top of that, there has also been a sharp fall in external supplies and services as the Company has completed the in-sourcing of some critical external processes and, thus, reduced the idle capacity of some of its own workforce. In the same period, the Company has in-sourced bulk mail pre-sorting, while the delivery and video coding activities were in-sourced in 2013, with significant associated reduction in the cost of External Supplies and Services. With the purpose of increase operational efficiency, costs rationalization initiatives were expected to continue in the following years.
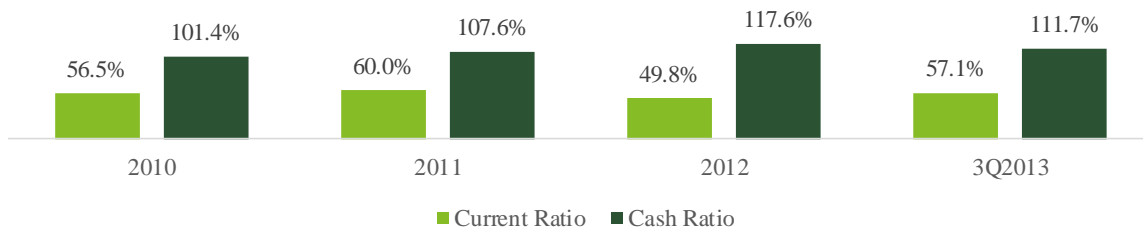
Chart 6 Evolution of liquidity ratios (%), 2010-3Q2013

In terms of liquidity, the current ratio only stands for current accounts attributable to the Company's activity, and the current ratio points for more liabilities than resources in terms of working capital which means that the Company has permanent working capital needs. However, considering the total current assets and liabilities (operating and non-operating), the Company's current assets have been increasing in terms of the current liabilities, explained by a high amount's of excess cash. Furthermore, the cash ratio, that measures the available cash in terms of current liabilities, increased 1,026 basis points. Since 2010, the Company has been piling enough cash to offset all the current liabilities, highlighting a solid balance sheet due to a high amount of excess cash (€464M on the third quarter of 2013).
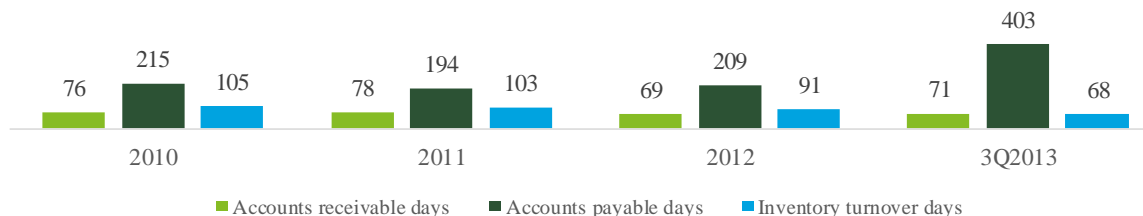
Chart 7 Evolution of working capital ratios, in days, 2010-3Q2013

In order to guarantee a stable cash flow generation, the firm needs to manage closely the working capital resources and needs. The credit given by the Company to their clients,

decreased from 76 to 71 days of sales (2010-3Q2013), which represents an increase of funds in the working capital, meaning that the Company receives sooner. On the top of that, the credit obtained from their suppliers also increased, indicating that the Company pays to their suppliers later, representing less needs of funds. The inventory turnover also decreased meaning that the Company is turning faster their costs of products into sales.
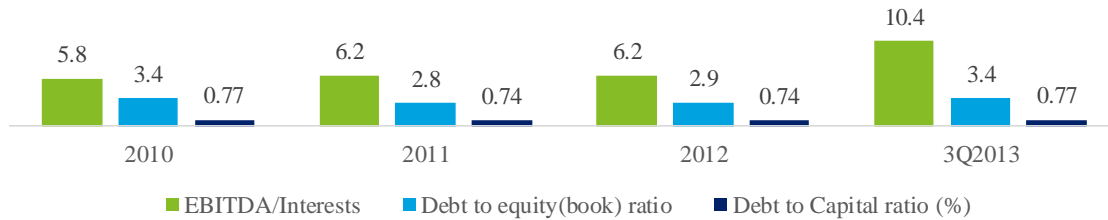
Chart 8 Evolution of interest coverage and leverage ratios, multiple and %, 2010-3Q2013

Since 2010, the firm is increasing the EBITDA/Interests ratio. This stronger position is driven by two factors: (i) the increase on EBITDA margin through the several efforts to increase operational efficiency; and (ii) the interest expenses have been decreasing modestly among all the other years, both in absolute and relative terms (average interest rate of 3.0% in the third quarter of 2013).

The Debt to Equity ratio is around 3, meaning that the total liabilities are 3 times higher than equity. The Company's healthcare plan is the most significant long-term liability, but should not be seen as cause of concern due to a strong net cash position. Furthermore, the percentage of debt in terms of the both source of funds (financial solvability), equity and debt, is stabilized roughly at 75%.
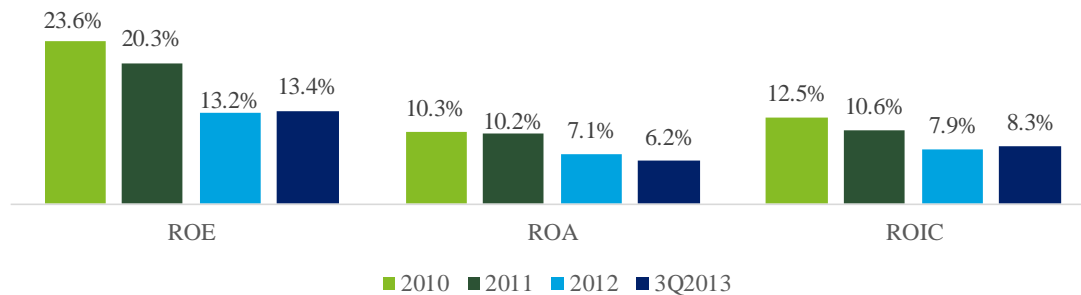
Chart 9 Operating returns evolution (%), 2010-3Q2013

The net income in absolute terms fell consecutively between 2010 and the third quarter of 2012. In addition, the "size" and structure of the balance sheet has not changed meaningfully between 2010 and the third quarter of 2013, which explains why the returns in terms both of equity and assets fell, due to a decrease on net profit. However, in the third quarter of 2013,

both the Return on Equity and Return on Assets increased, indicating an increase of profitability due to the several actions deployed to decrease operational expenses and increase Company's efficiency. Furthermore, the Return on Invested Capital, which measures the operation result after taxes in terms of the resources invested on Company's operation, followed the same path and recovered slightly in the third quarter of 2013.

4.2. Industry landscape and Company's operational performance

4.2.1. Postal

4.2.1.1. Industry landscape

The post mail market in Portugal can be divided into four main segments [2]:

- Transaction mail (79%): comprises mail items sent by companies and individuals for transaction purposes (e.g., bills and invoices, government and banking communications, receipts, legal documents and notifications). This type of mail is the most impacted by the effect of electronic substitution.

- Social mail (7%): comprises social communications between individuals, in the form of letters, cards or postcards. This segment is very small due to increased reliance on text messages (SMS) and e-mails.

- Press mail (9%): comprises the distribution of newspapers, magazines and other periodicals mainly to households. During the past few years, consumers have been increasingly switching to the electronic delivery of magazines and newspapers.

- Advertising mail (5%): includes addressed direct mail, unaddressed mail and *Geocontacto* (i.e. segmented unaddressed mail delivered to all mailboxes according to socioeconomic and consumption behaviour criteria).
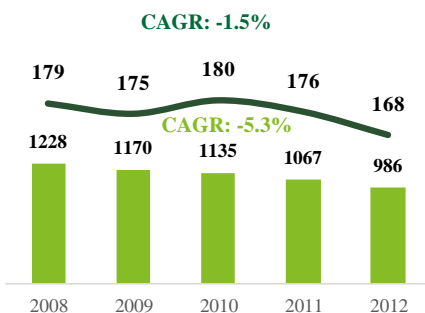
Chart 10 Total postal traffic (M) and GDP evolution, in Portugal, 2008-2012 [3] [7]
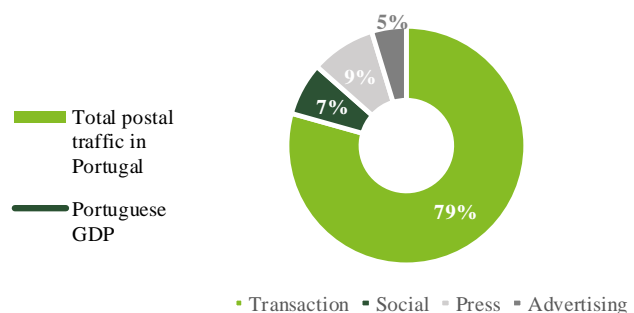
Chart 11 Postal traffic breakdown in Portugal (%), per type of mail, 2012 [3]

Like most postal markets in the EU, the Portuguese mail market has experienced a decline in volumes over the past few years. The economic situation has accelerated this phenomenon, as well as the electronic substitution. In 2012, around 986M postal items were distributed in Portugal which corresponds to an annual decrease of postal traffic of 5.3% since 2008. The decrease on mail volumes is a global trend due to the e-substitution and in Portugal case, also due to a weak economic cycle (correlation between Portuguese GDP and postal traffic between 2008 and 2012 was around 80%).
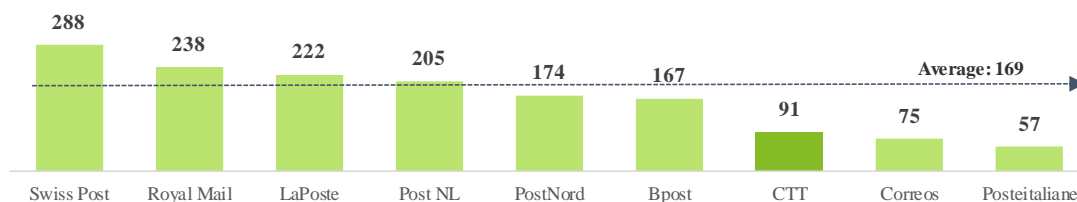
Chart 12 Addressed mail volume per capita in the main European postal operators, 2012 [2]

As of 2012, the level of mail volumes per capita in Portugal was below the European average (less 78), which indicates that the addressed mail volume Portuguese market may be less exposed to the trend in declining mail volumes.
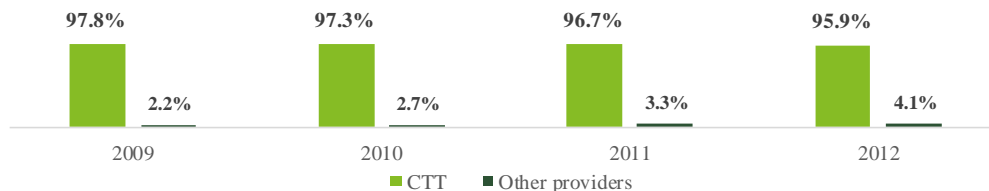
Chart 13 Market share evolution in the postal market in Portugal (%), 2009-2012 [3]

Although Portugal operates as a liberalized market since 2012 in accordance with the European Union (EU) law, CTT is the dominant player in the addressed letter mail segment. Being the only operator focused on the addressed mail market, the Company's market share was 97.8% in 2009 and even though it fells to 95.9% in 2012, the Company still holds a solid position in a market under pressure. Despite being liberalised since April 2012, CTT's main activities in Portugal are regulated activities as the concessionaire of the Universal Postal Service (granted until 2020). Under this concession, CTT provides universal access to postal services under tariffs proposed by CTT and approved by ANACOM (the Portuguese regulatory body) throughout the Portuguese territory.

The postal prices in Portugal were about 15% below the average price in the European Union (28), exhibiting the upside potential on future charged prices.

4.2.1.2. Business unit developments

In accordance with the Portuguese postal market, CTT's main activity faces a challenging scenario where mail volumes have been falling in recent years ($CAGR_{10-12}$: -6.6%).
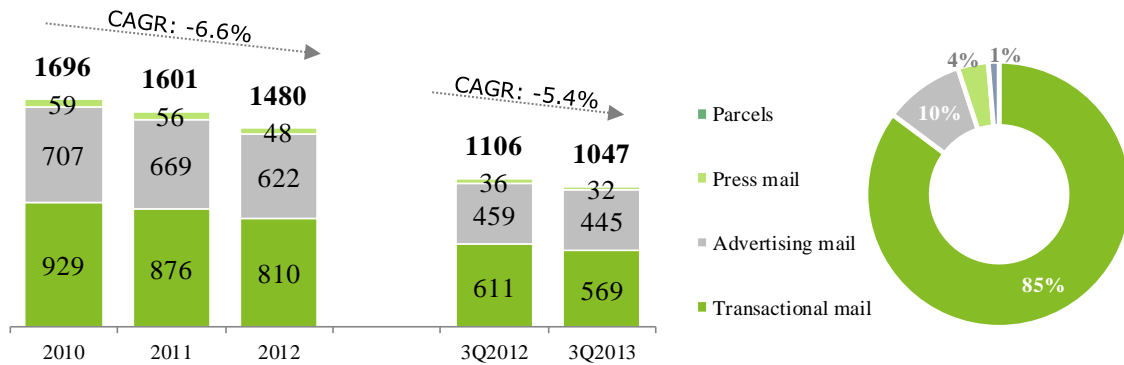
Chart 15 Company's total postal traffic evolution (M of units), by segment, 2010-3Q2013 [2]

Chart 16 Revenues breakdown (%), by segment 2012 [2]

The transaction mail accounts for 85% (chart 16) of the mail business unit revenues and also fell 6.6% between 2010 and 2012, in accordance with the total postal traffic (chart 15).
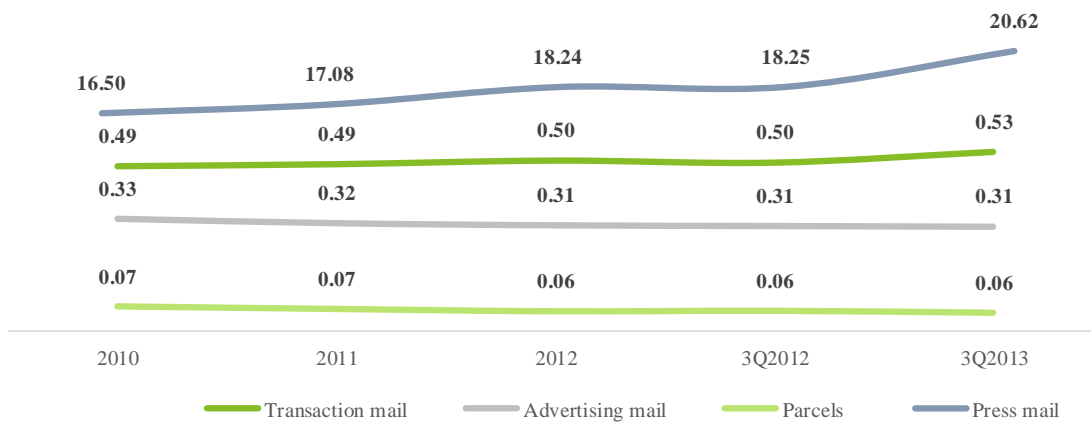
Chart 17 Company's average postal prices charged, per segment, 2010-3Q2013 [3]

On November 1st of 2013 and following an initial increase in April, the Company increased the price of the national regular mail in a standardized format up to 20 grams for the occasional segment (non-corporate clients) from €0.36 to €0.40, which implied and increase of the average price for the overall transaction mail from €0.50 to €0.53 cents. By contrast, the advertising mail and parcels did not faced any price changes.
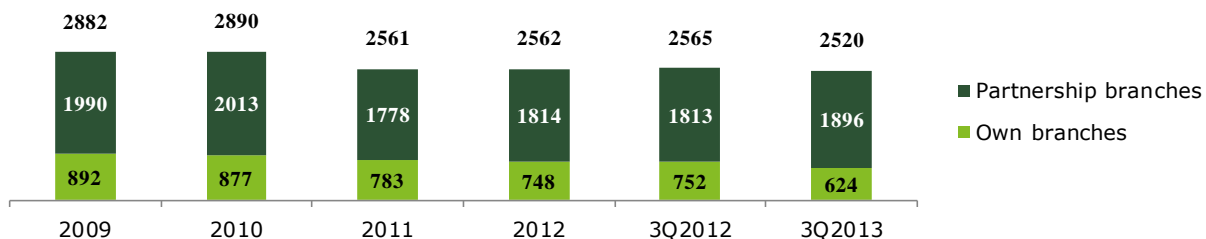
Chart 18 Total branches, by type of owner, 2009-3Q2013 [2]

With mail volumes under pressure, CTT started decreasing the total number of own branches (less 268 in the third quarter of 2013 in comparison with 2009) and increased the number partnership branches in order to increase operations efficiency.

4.2.1.3. Business solutions

Business solutions segment provides global solutions, covering upstream and downstream mail value-added services. This segment provides the following services:

- Printing & finishing: (i) data processing; and (ii) formatting and dispatching of documents (e.g., invoices and advertisements) for distribution by the mail business unit;

- Document management: (i) incoming mail management, which includes scanning, classifying, indexing and distribution of digital content; and (ii) archiving (physical

and digital), which consists of collection, transfer, destruction of documents and various other consulting services;

- Other business solutions: geographic solutions, digital communications, proximity solutions and applications.
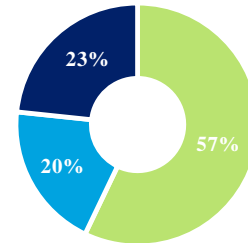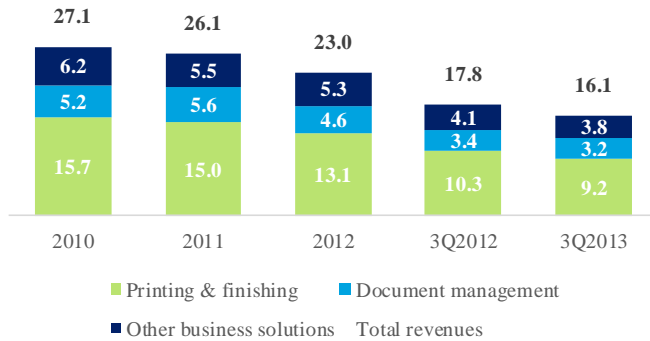
Chart 19 Total revenues evolution, by service line, 2010-3Q2013 [2]   Chart 20 Total revenues breakdown, 3Q2013 [2]

This business unit with €16.1M of sales in the third quarter of 2013 accounts only for 3.1% of Company's revenues. Since this segment provides auxiliary services to the mail segment, it will be considered from now on as part of mail business unit.

4.2.2.   Express and parcels

4.2.2.1.   Industry landscape

The express and parcels market can be divided into B2B (parcels sent by businesses to other businesses), B2C (parcels sent by businesses to consumers, primarily related to e-commerce purchasers and mail order catalogues) and C2X (parcels sent by consumers).
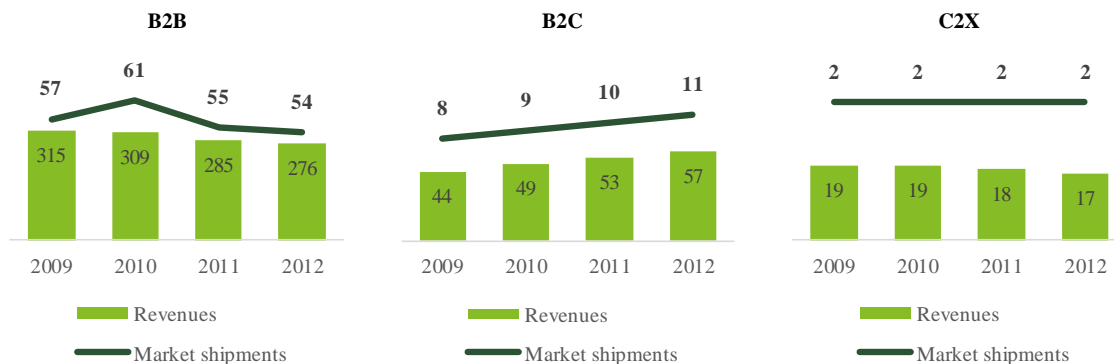
Chart 21 Revenues (€M) and market shipments (M) evolution in Portugal, 2009-2012 [2]

The graphs above (chart 21) shows the performance of the different segments of the express and parcels market from 2009 to 2012 in Portugal. The express market has declined over the last three years in terms of revenues from €378M in 2009 to €330M in 2012 (CAGR: -4.4%). Within this, Business to Business (B2B) and Consumer to Consumer (C2X) revenues have

fallen at a CAGR$_{09-12}$ of 4.3% and 3.6% due to lower shipments at least some part due to the weak economy. However, despite this weak backdrop, B2C volumes and revenues have grown rapidly at a CAGR of 11% and 9% respectively from 2009-2012. Furthermore, the average revenue per shipment (ARPS) has declined modestly in each category at a three-year CAGR$_{09-12}$ of c. 2.5%.
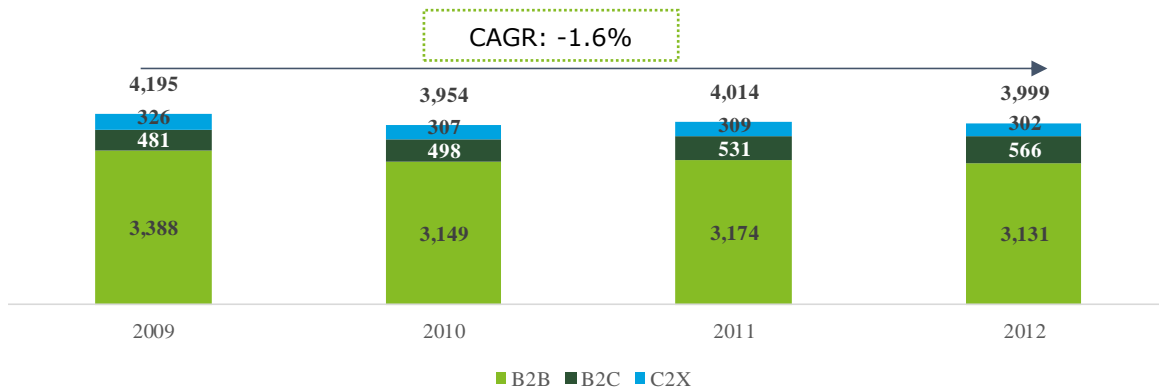
Chart 22 Revenues evolution in the Spanish market (€M), 2009-2012 [2]

The Spanish market which stands for 41% of Company's revenues in this business line faced similar developments in the express and parcels market than in Portugal. The revenues in the B2B and C2X fell at an annual compound rate of 2.6% unlike the B2B which grew 5.6% annually.
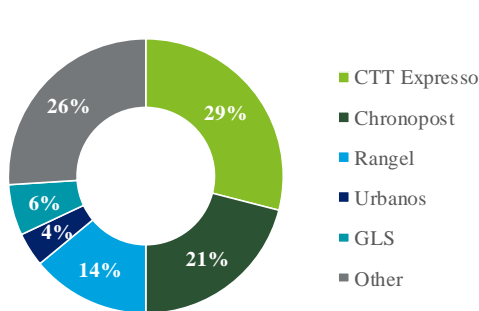
Chart 23 Market shares in Portugal (%), 2012 [2]
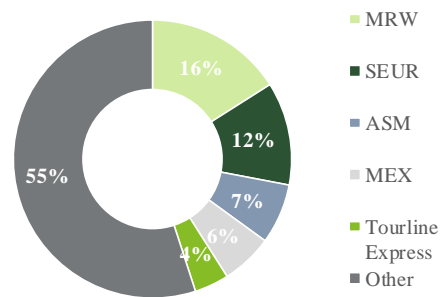
Chart 24 Market shares in Spain (%), 2012 [2]

In Portugal, throughout CTT Expresso the Company displays the biggest market share (29%) being closely followed by Chronopost with 21% (2012). In Spain, the market is much more fragmented highlighted by the fact that exists 14 players with a market share bigger than 4%. CTT, which operates in the Spanish market through Tourline Express, exhibited a market share of 3.8% in 2012.

United Kingdom 82%
Denmark 79%
Germany 77%
Finland 72%
Czech Republic 43%
Spain 42%
Portugal 35%
Italy 29%
59%

■ 2012   – – – EU (28) 2012
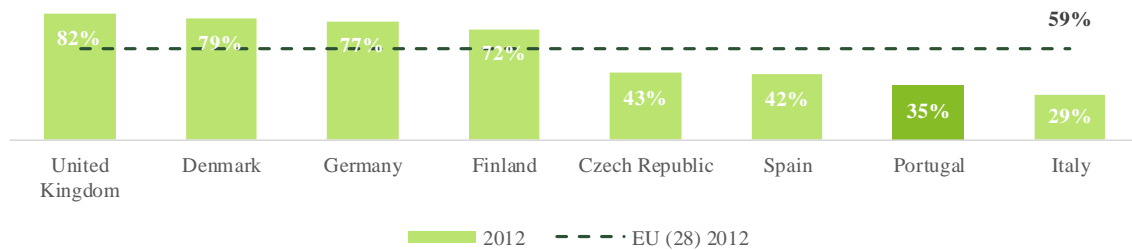
Chart 25 Internet users who bought or ordered goods over the internet in the previous 12 months, 2012 (% of internet users) [5]

The B2C exhibits the biggest future source of growth since the number of internet users who bought or ordered goods or services in the internet in the previous 12 month of 2012 was 35% in Portugal and 42% in Spain, which were both below the average of the 28 European Union countries of 59%.

4.2.2.2.   Business unit developments

CTT operates in the domestic, European and international express and parcels market. Express and parcels services enable any customer to send documents and parcels to anywhere in the world within a very short period of time. This market comprises the following segments [2]:

- Courier: typically concentrate on single item consignments which are usually transported directly via the shortest and fastest route from sender to recipient. Usually, the courier services for national shipments are delivered on the same day;

- Express: comprises the guaranteed delivery of parcels the following day within a specific time slot;

- Parcels: covers the delivery of parcels on a specified daily basis and are the least urgent method of delivery.

CTT provides this services in Portugal, Spain and Mozambique.

	2010	2011	2012	3Q2012	3Q2013
Total	24.4	23.1	22.9	16.9	18.4
Mozambique	0.0	0.1	0.1	0.1	0.1
Spain	11.1	11.1	11.2	8.2	9.6
Portugal	13.2	11.9	11.6	8.7	8.7

■ Portugal ■ Spain ■ Mozambique
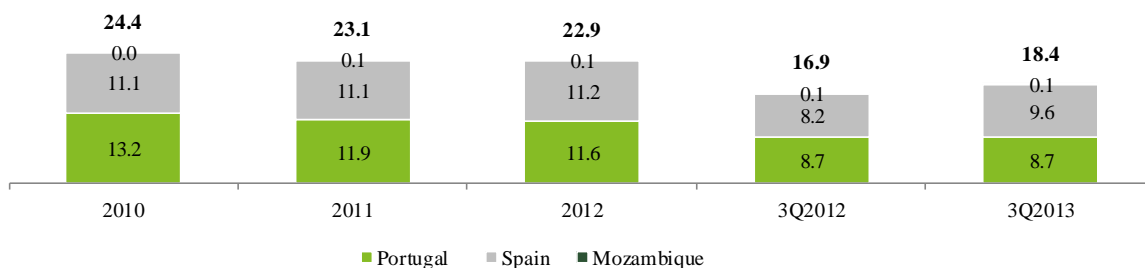
Chart 26 Evolution of the total items delivered in the Express and Parcels segment, by region, 2010-3Q2013 [2]

The chart above illustrates the declining trend of the total item processed between 2010 and 2012, especially in Portugal due to the economic crisis. However, from the 3Q2012 to the

3Q2013, there's an indication of recovery of this market since the total items processed increased. This turnaround is mainly explained by the increase of 1.4M of the total items processed in the Spanish market.
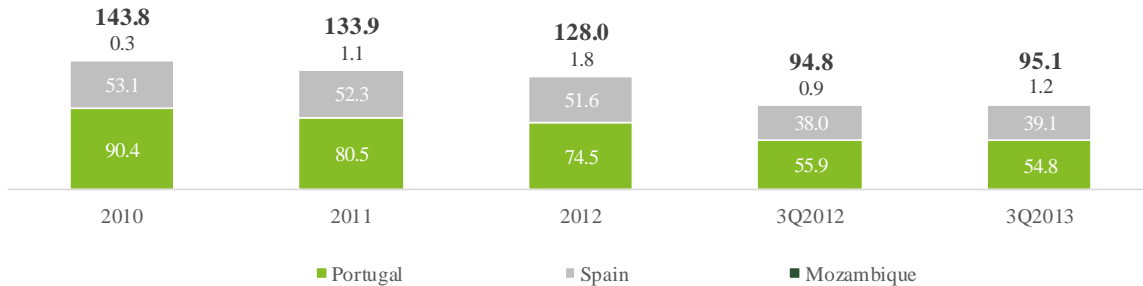
Chart 27 Evolution of the revenues on the Express and Parcels segment, by region, 2010-3Q2013 [2]

The revenues on the express and parcels segment fell ($CAGR_{10-12}$: -9.2%) and the total processed items followed the same path but with a slower pace, pointing for a general decrease on charged prices. In the third quarter of 2013, total revenues increased 0.3% in relation to the same previous period boosted by the increase on revenues in Spain and Mozambique, pointing for an upturn on this segment as the economy recovers.
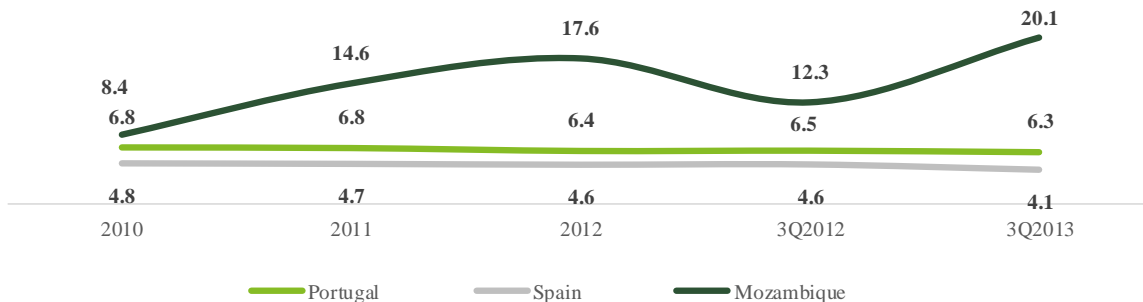
Chart 28 Evolution of the average revenue per item delivered, by region, 2010-3Q2013 [2]

This segments outlines significant differences on charged prices by region. The average price per item processed fell 8.3% in Portugal and 14.8% in Spain pointing out the competitiveness of this segment (2010-3Q2013).

Chart 29 Evolution of the number of branches of the express and parcels business, per region, 2010-3Q2013 [2]

As part of the costs reduction plan and in accordance with the branches optimization in the mail business unit, the number of branches in the express and parcels business unit fell consecutively between 2010 and the third quarter of 2013. The total branches owned by CTT in Portugal is decreasing consecutively as an operational efficiency measure to reduce fixed expenses.

In conclusion, the development of the express and parcels market is a function of: (i) economic and domestic consumption growth, (ii) individual preferences and habits, namely adoption of e-commerce and e-billing; (iii) and the quality of service offered.

4.2.3. Financial services

4.2.3.1. Business unit developments

CTT offers a range of financial solutions, including transactional and savings products, through the CTT's retail network. Financial services can be divided in three main product lines:

- Savings and insurance: brokerage of third party saving and insurance products.
- Payments and collections: ''face to face'' payment services, including payments through CTT's network and the Payshop network.
- Money orders and transfers: national and international money orders and transfers.

These services are marketed and sold through a combination of the retail network (2,557 locations, 743 of which Company-owned) and 3,909 Payshop locations which support face-to-face payment services transactions. Regarding the Financial Services business unit, payment solutions represent the biggest portion (30.4%), followed by the Payshop (26.1%) and saving and insurance (19.6%). CTT offers a vast array of services through partnerships, thus having a very competitive offer with no risk for CTT, acting solely as an intermediary.
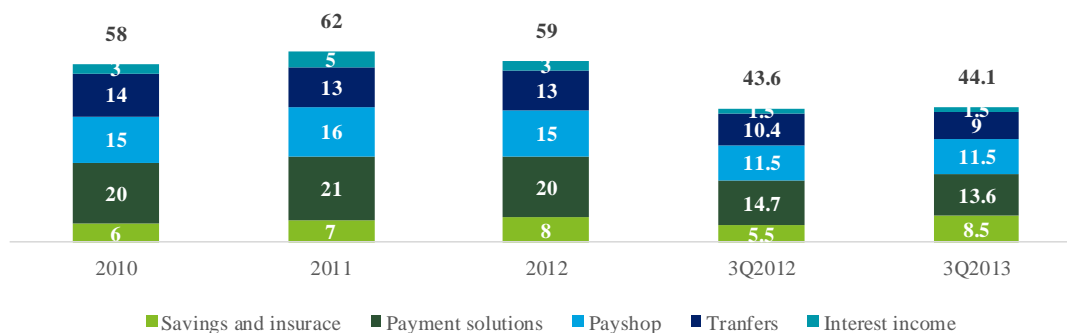
Chart 30 Evolution of revenues in the financial services business unit, by service line, 2010-3Q2013 [2]

Since at the time CTT (2013) was a public Company, the Company was the only vehicle which sold public saving certificates in Portugal through a partnership with *Instituto de Gestão de Tesouraria e do Crédito Público* (IGCP). In October of 2013, the Company signed a new contract with IGCP for the following 5 years to sell treasury certificates, with nominal value and increasing interest rates among the maturity of the contract, with higher interest rates than the other similar products provided by the major banks. Additionally, in 2013 the Company entered in a new five years contract with *Fidelidade* to offer life insurance products at its wide post offices which improved the commission structure and increased the competitiveness of the products offered.

The payment solutions, which represents 30% of the business unit revenues, provides bill and other payment options, including utility bills, taxes, fines, toll payment, social security payments, licensing, mobile top-ups and donations. This services allow public or private entities to outsource their payment management operations to CTT. On the other hand, the Company defined a transaction fee with the provider of the service which is charged on every payment which allow individuals to settle the bills without having a bank account. Furthermore, the Company took several initiatives together with the Bank of Portugal and SIBS Forward Payment Solutions, which allowed CTT to expand its product and services portfolio.

The Payshop network allows customers to make payment for everyday services using a national coverage network of approximately 3,909 agents as of September 2013, located at newsstands, supermarkets, coffee shops and gas stations. Payshop agents receive a fixed fee for each transaction processed based on the contract signed between CTT and individual agent. In 2012, the total collections represented €421,2M in Portugal and 18.6% were made by CTT (including payshop). This service line faces tough challenges ($CAGR_{10-12}$: -3.2%) since ATM and direct debit payments proliferate through the population with the technological development.

2010	2011	2012	3Q2012	3Q2013
107	105	100	76	69

Chart 31 Number of transactions (both CTT network or Payshop) (M), 2010-3Q2013 [2]

CTT offers worldwide money transfer services and has agreements with Western Union, UPU and Eurogiro. CTT provides secure and fast global remittance service to over 200 countries. In 2013, CTT and Western Union amended the partnership agreement for a five-year term.

The financial services business unit faces some challenges, namely: (i) consumer trend towards online payments and ''convenience''; (ii) companies pushing for e-billings to reduce costs; (ii) new payments of social benefits and pensions only issued by the banks; (iii) Western Union increased competition; (iv) savings market growing due to deleveraging economy and banks are increasingly focused on capturing savings; and (v) government bonds offering attractive remunerations.

4.2.3.2.   Industry landscape

The financial services industry comprises a variety of services rendered by banks, insurance companies, brokers, payments institutions and many others. In addition, there are several companies that provide financial services, such as major retailers in the consumer credit offering.
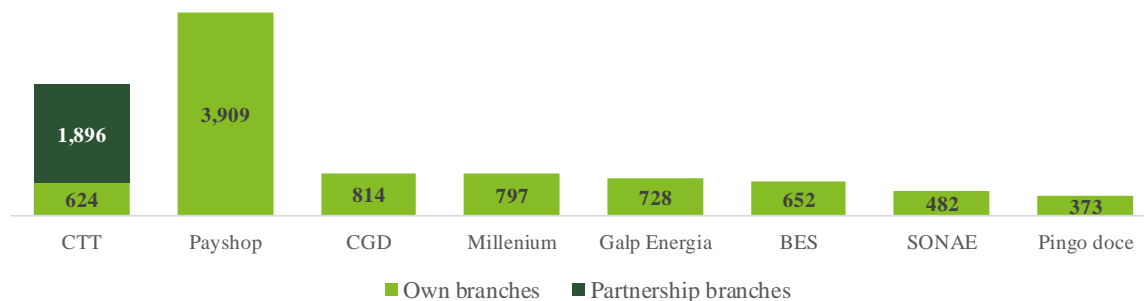
Chart 32 Comparison of key financial services networks in Portugal, June 2013 [2]

CTT offers financial services that are supported by CTT's high density retail network (2,520), including owned and partnership branches. CTT financial services are also supported by the Payshop network that were represented by 3,909 entities, as June of 2013. CTT has a solid network when compared with many other players in the market with large networks, namely banks and food chains.

CTT offers a vast array of services through partnerships, thus having a very competitive offer with no risk for CTT, acting solely as an intermediary. For CTT, the financial services create

opportunities of cross selling and allows for an increase use of existing structure costs currently associated with mail segment.
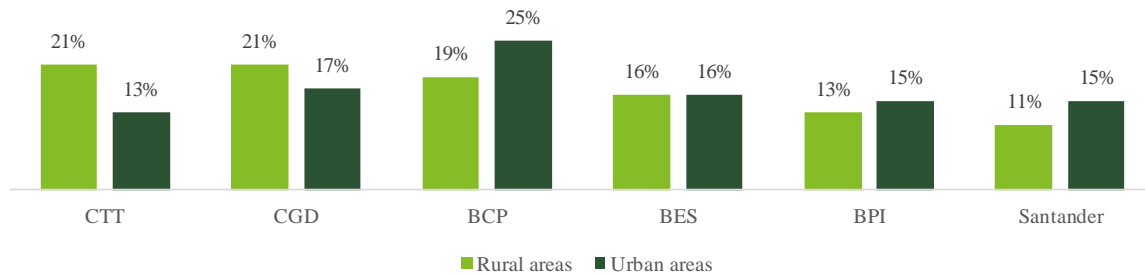
Chart 33 Share-of-presence' of CTT versus main Portuguese banks (%) 2012 [2]

The financial services network is characterized by a high share-of-presence of the major banks, especially in urban areas. In contrast, the Company and CGD exhibits the bigger share of presence in rural areas. CTT's large retail network and share-of-presence in rural areas is fundamental for the financial services segment since the level of the competitiveness is lower and the Company can levered this network by building a culture of proximity and trust with their customers.
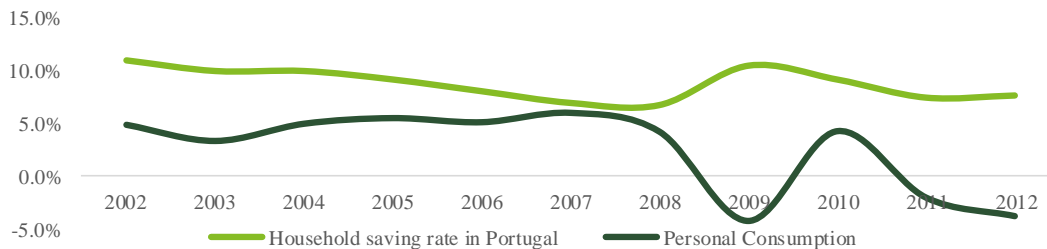
Chart 34 Evolution of household saving rate and personal consumption in Portugal evolution, (%), 2002-2012 [6] and [7]

The savings rate in Portugal decreased between 2002 and 2008 as the economy grew and the consumption increased consecutively, since these two variables co-move in an inverse way. With the recession, the consumption decreased and families became increasing their savings and started looking for safe deposits (such as treasury certificates) which happens in periods of higher uncertainty.
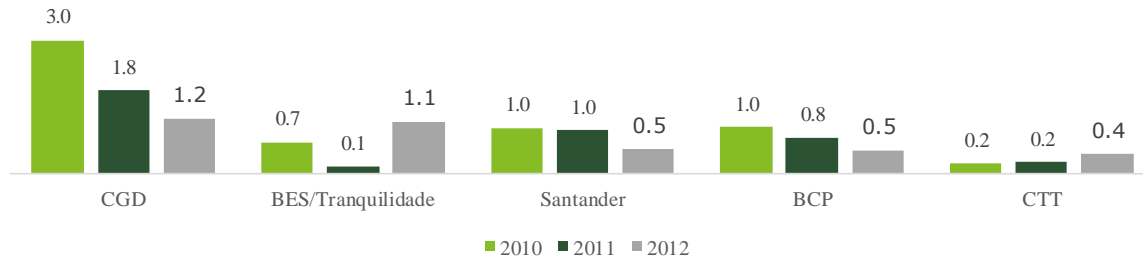
Chart 35 Evolution of issued premiums by the major insurance operators in Portugal, (€M), 2010-2012 [2]

CTT stood in the fifth position in terms of issued premiums, on a market controlled by the major banks, highlighted by the notable increase on issued premiums in this market with an annual compound growth rate of 37% between 2010 and 2012 (chart 35).

5. Estimating the Cost of Capital

In order to discount the forecasted cash flows or earnings, it is necessary to find the appropriate discount rate, which is the Weighted Average Cost of Capital (WACC) for the Free Cash Flow to the Firm (FCFF) and the Levered Cost of Equity (Ke) for the Free Cash Flow to Equity (FCFE) and the Dividend Discount Model (DDM).

5.1. Capital Structure

The first step to define the target capital structure is to identify a set of comparable firms that are publicly traded and operate in the same sectors as CTT. The companies used to determine the target capital structure should be identical to the group used in the valuation through multiples, in order to guarantee the consistency of results. Additionally, the median is chosen instead of the average in order to remove possible outliers from the sample and get a more unbiased proxy.

Therefore, the target debt to equity (D/E) based on the established peer group is 0.2 meaning that the target capital structure has 84% of equity and 16% of debt[A] [9].

5.2. Cost of Equity

The Cost of Equity will be estimated using the International CAPM model, in detriment of the simple CAPM model, since in 2013 the level of instability and uncertainty in Portugal was very high (yields of 10 year Portuguese Bonds up to 7%) [9].

In order to determine the cost of equity, it is necessary to estimate the following items: (i) risk-free rate; (ii) country risk premium; (iii) market risk premium; and (iv) levered beta.

Risk-free rate

In order to define the risk free rate it must be considered:

(i) The most common time structure used for valuation purposes are the 10-year emissions, because reflect a long term expectation and are considered the most liquid instruments in the market;

(ii) The risk-free rate means that the probability of default is zero, or close to zero, considering that currency risk does not exist. In Europe, it is generally considered the German government bonds (high credit rating AAA);

[A] Peer group: Unlevered Beta and Target Debt to Equity

(iii)   As CTT operates mainly in Portugal and Spain, there is no need for adjustments in terms of currency risk.

Thereby, the yield of the German 10-y maturity government bonds as 30 of September of 2013 was roughly 2.0% [9].

Country risk premium

Since almost 90% of the Company's activity is in Portugal, the developments in the Portuguese economy have an impact on CTT's activity. The onset of the sovereign debt crisis in the Eurozone and concerns regarding high levels of budget deficits and public debt prompted the Portuguese Government to request international financial assistance from the International Monetary Fund (IMF), the European Commission (EC), and the European Central Bank, in April of 2011.

Thereby, due do this country specific risk, investor's demands higher returns. This excess returns of the specific risk of Portugal can be measured between the difference of the 10-years Portuguese Bonds and the German bonds for the same period, because as mentioned before, this is considered the safest investment in the Eurozone. Therefore, the difference between the yield of the 10-y Portuguese Government Bonds (7.1%) and the 10-y German Government Bonds (2.0%) points for a country risk premium of 510 basis points [9].

Nevertheless, as the economy recovers and the confidence in Portugal retrieves, reflected by 10 years government bonds according with historical evidences (3/4%), the country risk premium should be withdrawn from the cost of equity estimation.

Market risk premium

The market risk premium reflects the expected excess return demanded by investors in order to accept to hold riskier securities. Since does not exist a market portfolio which covers all the securities, a proxy is necessary and for U.S. stocks the most common benchmark is the S&P 500 and in Europe its generally used MSCI World index. Therefore, it was performed the annualized return of MSCI World in Euros, through daily returns (1 September 2003 and 30 September of 2013) and disregarding dividends effects, resulting in proxy of a market return of 7.93% which represents to a MRP of 5.93% [9]. This result is consistent with the fact that most researchers, analysts and investment firms believe that the MRP with the current market conditions may range between 4-6% (Berk et al, 2014).

Beta estimation

To make an unbiased estimation of betas, the companies in the peer group must operate in the same industry (or sub-industry) because companies that operates in the same industry face similar operating risk, so they should have similar operating betas. Since beta measures the security's sensitivity to market risk, different security's which act in distinct industries must have different betas. Therefore, as CTT operates in three segments (two of them more related), the beta estimation may be done through the identification of natural peers for each business unit and therefore make a weighted average of each industry beta to estimate the Company's beta.
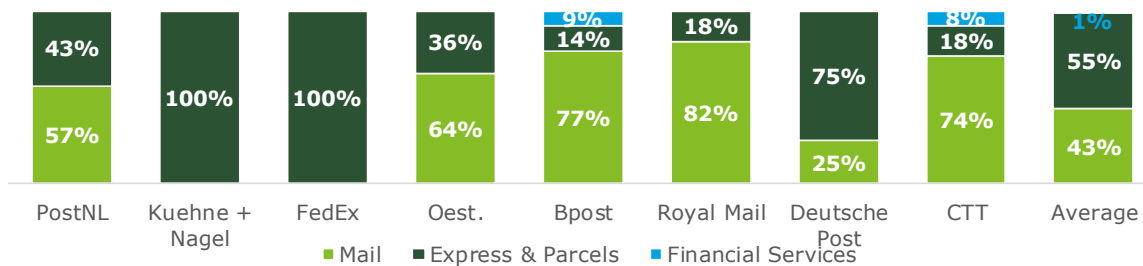
Chart 36 Peer group revenues breakdown (€M), 2012 [9]

All selected peers operates in the Express and Parcels segment which corresponds to an average of 55% of total peer group revenues. Additionally, and as exception of Kuehne + Nahel and FedEx which only operate in the Express segment, the remaining peers operate in the Mail segment. However, in spite of Bpost being the only peer that operates meaningfully in the financial services segment, purely and naturally peers does not exist and they must be as much similar as possible in order to get unbiased estimates. Since Financial Services business unit only represents 8% of CTT's revenues and taking in consideration that mail and express are the core activities, this peer group seems to reflect widely the Company's operation.

The levered beta is a function of not only Company's operating risk, but also financial risk it takes (which is measured through the level of indebtedness), so it is necessary to strip out the effect of leverage and deleverage the beta by the Company's current capital structure and tax rate. Therefore, the unlevered beta for the peer group considered is 0.8.

Additionally, we are able to leverage the Beta which equals to 0,92 , having the following features as inputs: (i) Beta unlevered of 0.8; (ii) target capital structure (D/E: 0.2); (iii) Beta of debt is considered zero, since the target capital structure considers a low level of debt and so the probability of bankruptcy is unlikely (never mind that the Company holds a

considerable amount of excess cash and that the majority of the debt is related with future employees benefits); (iv) and a nominal tax rate of 25%.

<u>Cost of Equity Conclusions</u>

The levered cost of equity, which is estimated in the light of the International CAPM model, is as follows:

$$R_e = R_f + B_l * MRP + Country\ risk\ premium \tag{24}$$
$$R_e = 2\% + 0.92 * 5.93\% + 5.12\% <=> R_e = 12.5$$

The cost of equity in addition of being an input to the WACC in order to discount cash flows in the FCFF approach is also used as the opportunity cost for the FCFE and DDM methods.

5.3. Cost of Debt

The cost of debt should reflect the long term cost of debt of a Company. As CTT has any publicly traded bond it is not possible to access the yield to maturity of Company's long term debt. Therefore, for companies without debt classified can be used the yield to maturity (YTM) of bonds from similar companies, with similar capital structures, because if a Company has a higher degree of leverage then return demanded by bond holders would be higher since the Company would be riskier (higher financial risk). The PostNL Company, in the end of the third quarter of 2013 has two bonds outstanding with time to maturity up to 4 years. In order to guarantee the adequacy of this bonds to the case of CTT, the companies must have similar capital structure. In 2012, the financial autonomy of CTT was 25.7% and PostNL 23.2% (in book values) which ensure the comparability. Hereafter, through Bloomberg platform, it is possible to find the YTM with the settlement date of September 30 of 2013 which was 6.48% for the first issue and 4.83% for the second issue, pointing for a weighted average YTM of 5.8%[B] [9].

In December of 2011, Moody's launched a methodology to assess the rating of companies which operates in the Postal and Express Delivery segment[C]. According to this methodology,

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[B] Rating Factors and Aggregated Weighted Factor Score for companies in the Postal and Express and Delivery segments
[C] Implementation of the methodology suggested by Moody's to assess the credit rating of companies in the Postal and Express and Delivery segments

there are four elements that should be considered when measuring the credit risk of post mail companies, namely [10]:

(i) Scale and business diversification (28%): scale in term of revenues (12%), business stability (8%) and diversification and geographic diversity (8%);

(ii) Efficiency and profitability (14%): EBIT margin (7%) and Return on Assets (7%);

(iii) Financial policy (20%): financial policy (15%) and debt to capitalisation (5%);

(iv) Financial metrics (38%): financial debt/EBITDA (10%), FCFF/financial debt (10%), FCFE/financial debt (8%), FCFE/ Net debt and Operational Cash-flow plus interests/ interest expenses (10%).

This factor grid procedure[D], led to a rating of Baa1. Nevertheless, companies rating should not diverge considerably from home country rating (Portugal), which was updated in March of 2013 to Ba3 by Moody's, meaning that the Company's rating is four notches above the home country rating [11]. However, in 2013 the economy was in recession and in spite of the decrease on volumes, CTT holds a solid position in the Portuguese market (largest market share in the mail and express and parcels segments) and highlighted in the third quarter of 2013 by several improvements in terms of profitability, which explains the gap between both ratings. This credit rating allow now to access the probability of default and the recovery rate in order to achieve the debt expected return. According to Moody's standards[E], debt with maturity of 5 years and a rating Baa1 has a probability of default and recovery rate (in the case of default) of 1.33% and 42.9%, respectively [12].

$$R_d = YTM - Prob.of\ Default * (1 - Recovery\ rate) \qquad (25)$$

$$R_d = 5.8\% - 1.33\% * (1 - 42.9\%) <=>\ R_d = 5.04\%$$

A YTM of 5.8%, a probability of default of 1.33% and a recovery rate of 42.9% lead as to cost of debt of roughly 5%, which is in line with the historical cost of debt (average $Rd_{10-3Q2013}$: +5.2%). Generally, if there is little risk the firm will default, the YTM can be used as investor's expected return. However, in recession periods as the one witnessed in 2013 and for companies with ratings below level A, one should incorporate in the expected return the

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[D] Probability of Default and Recovery Rates according to Moody's
[E] Balance sheet detail (€M)

default probability, since only the YTM would overestimate the true promised return of a bond. It should be noted that this promised yield does not consider the country specific risk between Portugal and Netherlands since this cost of debt should represent a long term expectation and therefore a cost of debt of 7% (plus ~2% of premium between Portugal and Netherlands) does not reflects a long term expectation and the company's historical cost of borrowing funds.

5.4. Conclusions about Cost of Capital

Finally, we are able to compute the WACC: (26)

$$WACC = 12.56\% * 0.84 + 5.94\% * (1 - 25\%) * 0.16 <=> WACC = 11.2\%$$

The WACC is heavily augmented by the low target of debt to equity which considers a financial autonomy of 84% (usually equity is more expensive than debt).

6. CTT's Business Forecasting

CTT's business forecasting has two key assumptions: (i) the Company will maintain their three main activities in the future: Mail, Express & Parcels and Financial Services; and (ii) there will not exist any changes regarding Company's subsidiaries.

The Company's business forecasting includes: (i) revenues performance by business unit, by type of product offered; (ii) operational expenses by business unit; (iii) estimation of financial statements, namely income statement and balance sheet; (iv) invested capital evolution; and (v) cash flow and return on invested capital (ROIC) evolution.

CTT's revenues estimation takes into account the historical performance of each business unit, with special attention to the development's on the third quarter of 2013. Furthermore, the forecasts of each business unit is as much detailed as possible (only access to public information). On the other hand, the estimation of operating costs is based on historical margins as a percentage of revenues.

In order to perform a proper analysis of historical performance, financial statements are split between operating and non-operating assets and liabilities, namely between working capital items and fixed assets, being removed non-operating accounts which are not directly related with the Company's activity or although arise from its activity are not recurrent[F] (e.g. provisions, deferrals, investment in properties and associates).

After forecasting revenues, operational expenses and split business and non-business items, it is necessary to estimate other items in order to develop detailed financial statements, wherein the main considerations are the following:

1. There were elaborated maps of fixed assets (tangible and intangible) and depreciations which considered the stabilisation of fixed assets and takes into account the capital expenditures of the previous years;

2. Interest expenses are estimated by considering the average cost of debt (+5.04%) employed in WACC (explained previously in section 5.3) and interest gains considers the interest rate on deposits accomplished in the third quarter of 2013 (+1.5%);

[F] Working capital breakdown (€M)

3. CTT's effective tax rate is considered the average of the previous 3 periods, which is 30% (versus a nominal tax rate of 25%);

4. Other profit and expenses are considered as a non-recurrent item and so the forecasted value is null, namely impairments with inventories;

5. As the Company registered consecutive increases in provisions, mainly due to litigations plugged by employees and considering the high level of unionization in the Company , it is forecasted an annual increase/expense of €10M (1.4% of revenues) in provisions;

6. Working capital estimates are linked to revenues, with the exception of inventories, trade payables and other current liabilities which are linked to the costs of goods sold (COGS)[F];

7. Minority interests are based on the previous percentage of the income of the period not available to common shareholders (0.5%);

8. In the Company's revenues forecast exist a caption linked with central structure costs and eliminations, which are: (i) structural costs which are common to the global Company and are attributable to each business unit; and (ii) intra-group transactions which have a null effect in the consolidated EBITDA.

6.1. Mail and Business Solutions

The segment has an essential importance on Company's performance since it represents 74% of total revenues. The total mail volumes are expected to follow the historical path and thereby, the Company's primary focus should be cost-efficiency gains, which was already seen in the third quarter of 2013.
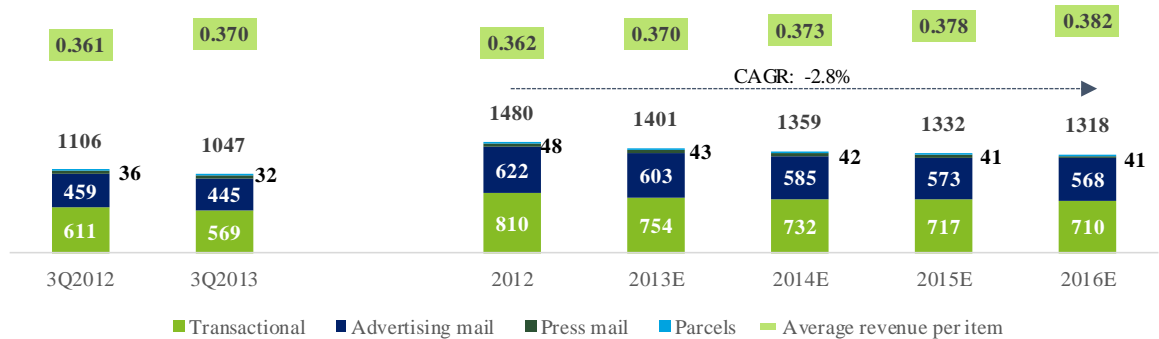
Chart 37 Forecast of the total items processed, by type of mail (M) and average prices charged per unit, 3Q2012-2016E

The total postal traffic in Portugal fell between 2008 and 2012 at an annual average compound rate of 5.3% and it is projected that the volumes would fall at a CAGR. of 2.8%

until 2016 based on a moderating pace of core postal volume decline given gradual GDP recovery (from -1.50% in 2013E, 0.80% in 2014E, 1.30% in 2015E and 1.70% in 2016E [7]), generally consistent with the correlation between GDP and volume trends amongst peers. On the other hand, pricing should enable the Company to partially mitigate the impact of the reduction in volume demand, since addressed mail revenue per item increased 2.6% in the 3Q of 2013 in comparison to the same previous period. In the forecasting period, it was projected the evolution of prices according to expected inflation since prices of the addressed mail were already updated (never mind that the price changes are subjected to approval from ANACOM). Thus, the average price per item processed is expected to grow 1.4% annually which would mitigates partially the decrease on volumes.

The revenues on the business solutions segment were estimated in 2013 as the percentage decrease between the third quarter of 2012 until de third quarter of 2013 (-9.4%) and then evolves in accordance with the expected decrease on mail volumes ($CAGR_{13-16E}$: -2.0%), since this business unit provides complementary services to the mail business unit.
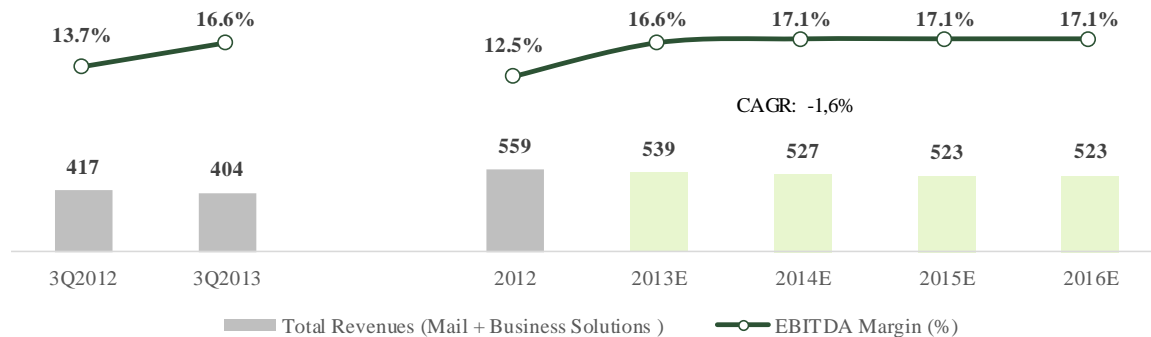
Chart 38 Forecast of total revenues and (€M) and EBITDA Margin (%) in the Mail and Business solutions segment, 3Q2012-2016E

The total revenues in the Mail and Business solutions segments are expected to fall ($CAGR_{12-16E}$: -1.6%) which is mainly explained by: (i) the expected recovery of the Portuguese economy which would partially mitigate the decrease on volumes; (ii) the slight evolution of charged prices.

In terms of efficiency, the Company already made a relevant effort to decrease operational expenses (less €103M between 2011 and 2012) and achieved an EBITDA Margin of 16.6% in the third quarter of 2013 (+294 basis points vs. 3Q12), through the decrease of total headcount and increase the number of branches under a partnership mechanism. Thus, further

efforts should be carried out in order to compensate the decrease on mail volumes, resulting on a forecasted EBITDA Margin of 17.1% for this segment up to 2013[G].

6.2. Express & Parcels

The Express & Parcels division is expected to be one of the principal sources of growth, particularly in B2C as levels of internet penetration and e-commerce rise in Spain and Portugal towards the European average. As shown in the sector analysis, the average portion of internet users that bought online in 2012 was 45% in Europe against 22% in Portugal, highlighting the serious growth opportunity in this market. Express is also highly correlated to consumer spending and GDP and therefore a cyclical recovery in both should drive volumes and revenues upwards, most likely leading to a substantial increase in EBITDA given high levels of operation gearing. Thus, this division must be capable of consolidating the turnaround already shown in 3Q13, and then begin a sustained pattern of growth, primarily benefiting from the expected recover on the Portuguese economy and secondly, through the increase in volume of e-commerce business both in Portugal and Spain.
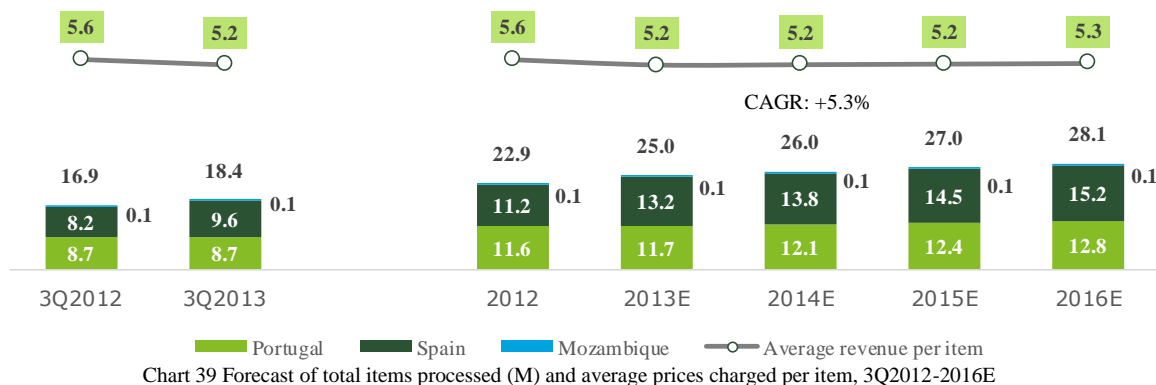
Chart 39 Forecast of total items processed (M) and average prices charged per item, 3Q2012-2016E

The total items processed is expected to: (i) increase in Portugal ($CAGR_{13-16E}$: 2.5%) and Spain ($CAGR_{13-16E}$: 8.0%) in accordance with the upturn verified in the third quarter of 2013; and (ii) decrease in Mozambique ($CAGR_{13-16E}$: -6.5%) due to the sharp decrease of 16.4% verified in the third quarter of 2013.

In terms of pricing, the average price per item processed fell from €5.9 in 2010 to €5,16 in the third quarter of 2013 which explains mostly the decrease on revenues in this segment. The Company competes with major global players and have a market share of 29% in Portugal and 4% in Spain which highlights the higher level of competition preventing the

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[G] Detail of Mail Business Unit estimates (€M)

Company to rise prices. Furthermore, between 2010 and the third quarter of 2013, CTT's large customers significantly decreased their spending on express and parcels services and also switched to lower cost products, with extended delivery times, indicating that customers favoured lower prices rather than speed [2]. Thereby, the prices are expected to follow in accordance with the charged prices in the third quarter of 2013 and only grow in line with the expected inflation.
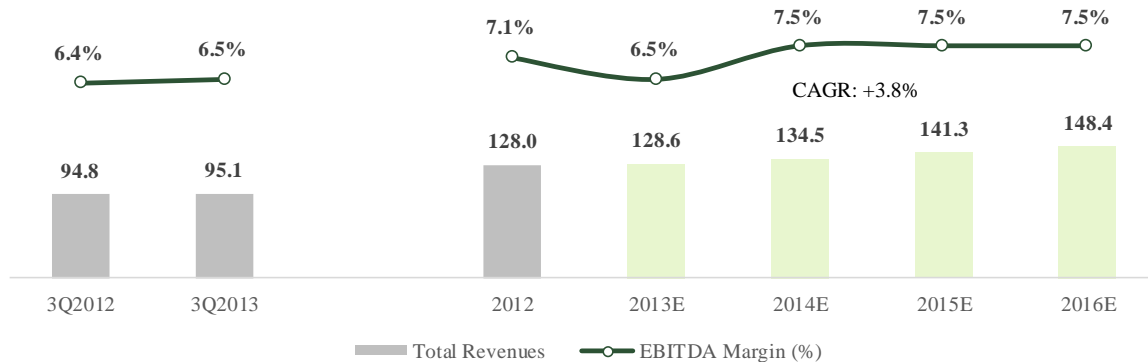
Chart 40 Forecast of total revenues (€M) and EBITDA Margin (%) in the Express and Parcels segment, 3Q2012-2016E

The total revenues are expected to increase (CAGR$_{12\text{-}16E}$: +3.8%) mostly due to: (i) the economy recover; and (ii) the upside potential on the B2C segment, especially regarding the e-commerce.

The Company implemented a set of measures in order to offset the decline on demand (which implied a decrease on EBITDA margin of 600bps between 2010 and the third quarter of 2013), namely [2]: (i) renegotiation of major outsourcing agreements, adapting to new trends and demand conditions, (ii) creating greater operational synergies within the postal distribution network and (iii) greater growth and centralization of Tourline's (Spain) own operations. Furthermore, the Company defined a set of measures to implement in the short run in order to guarantee the future growth in this segment, namely [2]: (i) revision of the franchisee model; (ii) upgrade on synergies between the postal segment and the retail networks; (iii) implementation of convenience networks for the collection and delivery of parcels for the B2C market; (iv) implementation of sales strategy for large corporate accounts; and (v) introduction of cost efficiency improvements through centralization of IT platforms and other shared services. Due to all this efforts and opportunities, EBITDA margin

is expected to increase meaningfully[H], being estimated an EBITDA Margin of 6.5% for 2013 in accordance with the margin achieved in the third quarter of 2013 and 7.5% from then on.

6.3. Financial services
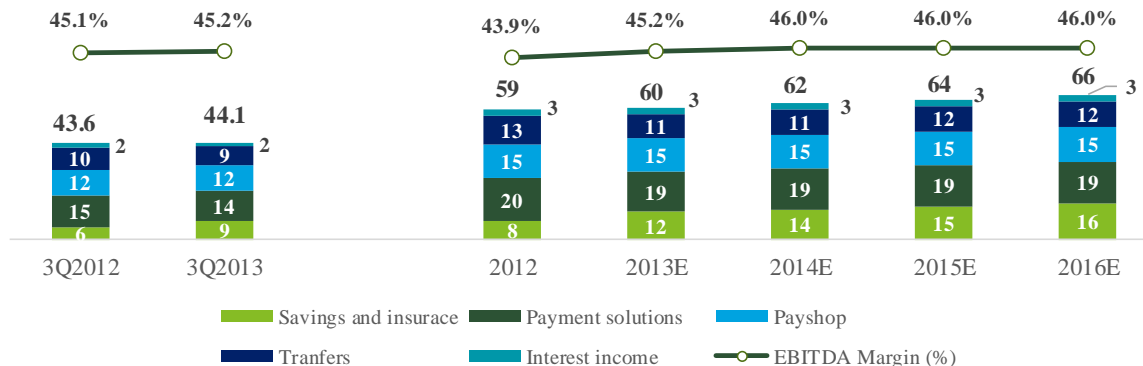
Chart 41 Forecast of total revenues (€M) and EBITDA Margin (%), by type of product 3Q2012-2016E

In the third quarter of 2013 revenues in the Financial Services business unit rose 1.1% to €44.1M (vs. 3Q2012), mainly due to: (i) introduction of more value-added services in the placement of savings products; (ii) the increase of inflows from saving products (+112.2% vs. 3Q2012); (iii) offer of public certificates with appealing returns (EURIBOR + 2.75%) which will last until 2016; and (iv) increase of inflows from capitalization insurances and retirement savings plans (PPR) by €114M to €414M (3Q2012 vs. 3Q2013). Most of these results come from the improvement made on contractual terms, namely the renegotiated insurance redistribution agreement with Fidelidade and an improved fee structure agreement for the distribution of IGCP's (*Instituto de Gestão da Tesouraria e do Crédito Público)* products [2].

Additionally, the management team defined a set of measures to be implemented in order to boost the revenues in this business unit, namely: an integrated payment management; more credit and additional savings products; extension of offering to all CTT postal points and new products to be paid in the payment solution / Payshop such as e-commerce.

So there's the expectation of stable growth levels in this division (CAGR$_{13\text{-}16E}$: +3.5%) as competitive conditions improve, following the introduction of new product offerings with a better fee structure.

[H] Detail of Express and Parcels Business Unit estimates (€M)
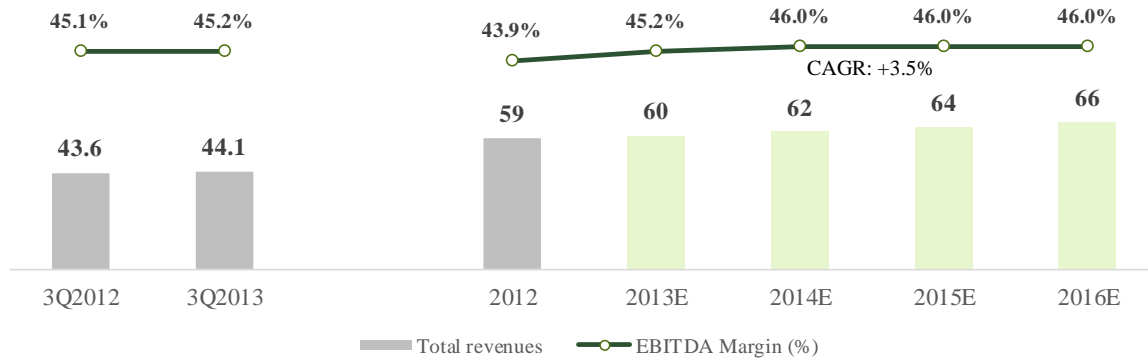
Chart 42 Forecast of total revenues (€M) and EBITDA Margin (%) in the Express and Parcels segment, 3Q2012-2016E

This business unit represented 8% of revenues in the third quarter of 2013 but stands for 21% of the total EBITDA of the group, highlighting the significance of this business unit for the Company. In the third quarter of 2013, EBITDA's margin achieved 45.2% and additional improvements may be made in accordance the overall policy of the Company of costs structure optimization and so, an EBITDA margin of 46% is forecasted up to 2014[I].

6.4.   Company's performance

The results, although affected by lower mail volumes, are to be partially offset by both increasing prices and potential growth of the Company's other activities. The estimates are a clear reflection of the operating trends of the business: declining mail volumes, particularly caused by digital substitution, mitigated by higher prices and improving cost efficiencies.
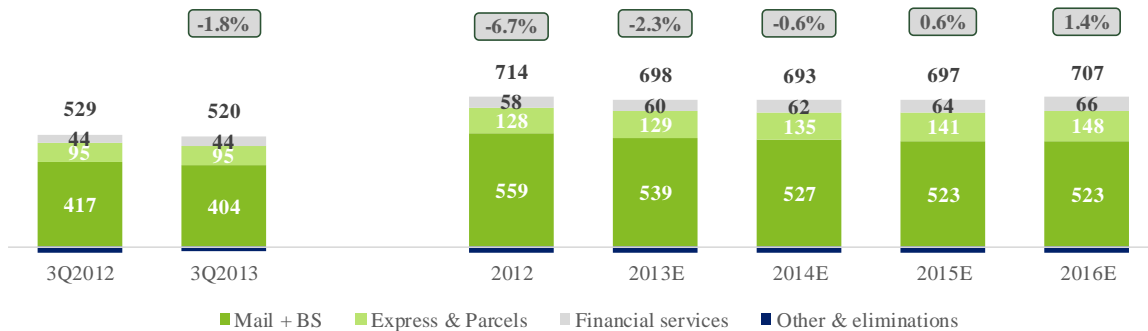
Chart 43 Forecast of Company's revenues (€M), total and by business unit, 3Q2012-2016E

A slight reduction of revenues in the short run is expected (-2.3% in 2013 and -0.6% in 2014), as weak Portuguese GDP will continue to have a negative influence on sales, with recovery

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[I] Detail of Financial Services Business Unit estimates (€M)

coming only when the domestic economy returns to a stable pattern of growth, resulting in an annual average decrease of total revenues until 2016 of 0.3%.

In conclusion, the main developments of expected revenues are the following:

- Volumes in the mail business will continue to suffer;

- Pricing should enable the Company to partially mitigate the impact of the reduction in volume;

- The remainder of the Company's activities will have a beneficial effect on the group's results, as it's expected both Express & Parcels and Financial Services to expand.
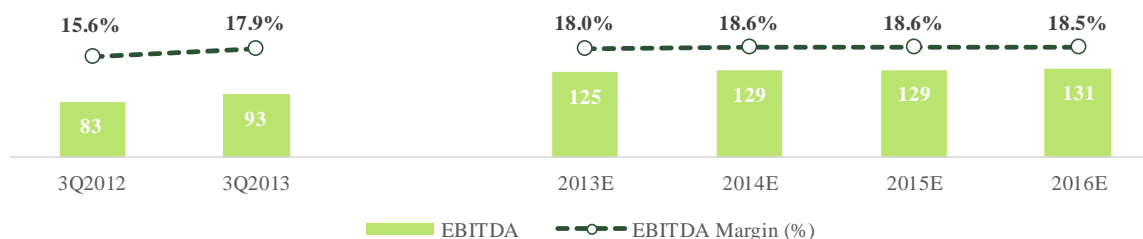
Chart 44 Forecast of Company's EBITDA (€M) and EBITDA Margin (%), 3Q2012-2016E

The estimates project's continuing cost-cutting initiatives in the following years, but at a slower pace than seen until 2012. In 3Q13, the Company has shown an astonishing margin improvement at EBITDA level (+229bps vs 3Q12) driven by the strong recovery in EBITDA margins in the mail activities (+310bps vs. 3Q12). Thereby, it is expected a reduction on overall costs at a $CAGR_{12-16E}$ of 1.4% which represents an expected EBITDA margin between 18.6 and 18.5% for the explicit period.

The combination of flattish revenues and the decisive measures being taken towards controlling costs should enable CTT to produce strong EBITDA growth. Thus, it is expected a $CAGR_{12-16E}$ for the EBITDA of 5.9%, with the substantial recovery expected in 2013[J].

[J] Income Statement estimates by Business Unit and Total (€M)

7.   Company Valuation

7.1. Overview

After forecasting revenues, operational expenses, depreciations, working capital and capital expenditures, it is possible to forecast the Company's cash-flow generation which would be the foundation for the determination of CTT's Enterprise Value and, afterwards, the Equity Value per share.
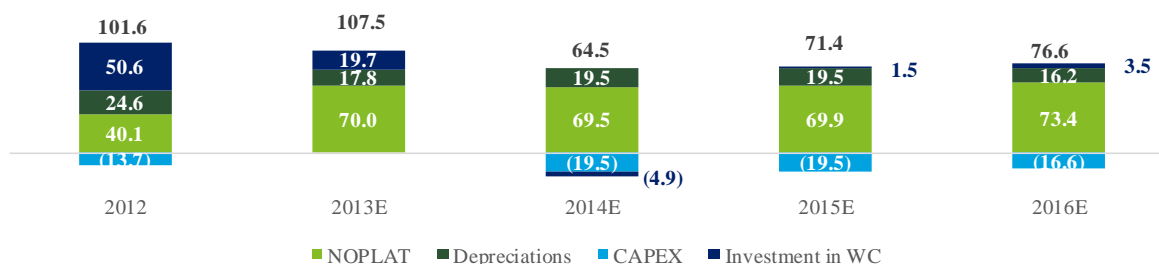
Chart 45 Breakdown of Company's FCFF evolution (€M), 2012-2016E

In 2012, the FCFF is considerably above the FCFF forecasted from 2014 to 2015, since there's a significant disinvestment in WC of €51M derived mostly from the: (i) decrease of accounts receivable days (less 9 days vs. 2011) which corresponds to less €29M; and (ii) increase on the total current liabilities (+€20M) as a result of an increase of payable days (+24 vs. 2011). Furthermore, the FCFF in 2013 is still above the normal levels since in the third quarter the Company had €146M in operational cash which goes against the historical needs and therefore it is considered a disinvestment in WC (which means the transfer of this amount from operational cash to excess cash). Additionally, in 2016, the capital expenditures equals the depreciations plus the expected long term growth (+2.5%) in order to keep the current level of operational fixed assets in the perpetuity[K].
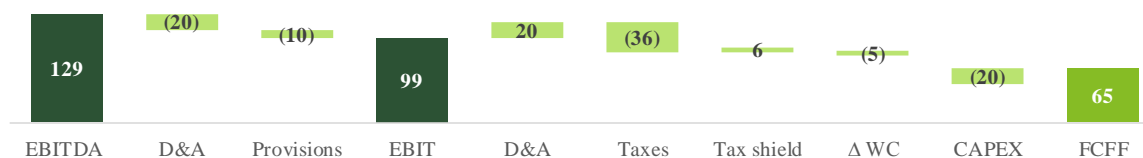
Chart 46 Breakdown of Company's FCFF (€M), 2014E

Finally, in 2014 the FCFF normalized and is expected to be roughly €65M and achieve €77M in 2016 (CAGR$_{14\text{-}16E}$: +9.2%) as the economy recovers and the Company's revenues move into a steady state where the working capital needs also stabilise[K].

[K] Cash-flow statement detail (€M)
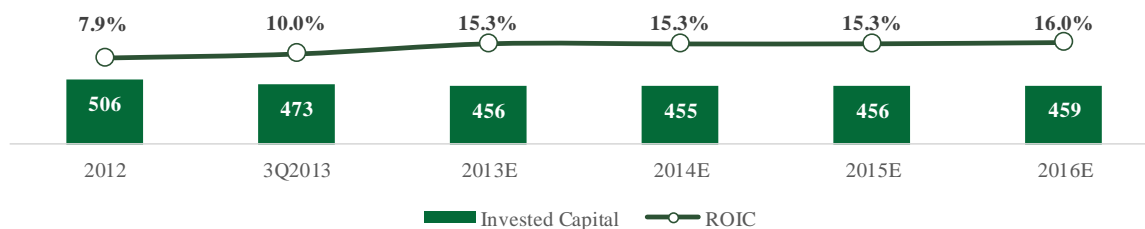
Chart 47 Evolution of Company's invested capital (€M) and ROIC (%), 2012-2016E

As mentioned before, in the third quarter of 2013 the invested capital increases substantially due to an increase of operational cash. Beyond that adjustment in the next period, the level of invested capital stabilises until 2016. Additionally, in a scenario in which the invested capital in the third quarter of 2013 didn't had this extreme increase, ROIC would have achieved 10%. Thereafter, the return in terms of invested capital increases considerably due to efficiency increases bearing the NOPLAT in 2013 to levels of 2010 (€72M in 2010 vs. €68M in 2013). Thus, ROIC is expected to achieve 15.3% in 2014 and 2015 and 16% in 2016, highlighting in one hand the increases in terms of profitability and, in other hand, the optimum level of invested capital needed.

7.2. Free Cash Flow to the Firm

The expected FCFF equals €320M (explicit period 2013-2016E) which discounted using a WACC of 11.2% and taking into account a long term growth of 2.5% in the perpetuity (expected GDP plus consumer prices for Portugal [7]) generates an Enterprise Value of €841M (implicit EV/EBITDA of 6.7x).
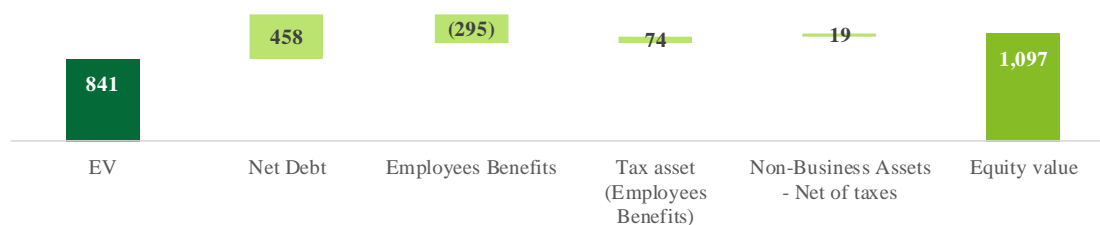
Chart 48 Breakdown of adjustments to EV (€M)

In order to move from the Enterprise Value to the Equity Value, it is necessary to identify and value those items which are included in Company's balance sheet but are not part of its operating activity, namely non- operating assets and debt and equivalents. Thereby, these are the necessary adjustments in order to identify the value of the business for shareholders, as the end of third quarter of 2013:

(i)   Short term and long term debt comprises only €6.5M and excess cash of €464M, which provides a net debt of €458M;

(ii)   The companies included in investment in subsidiaries and associates are owned by more than 20%, meaning that the profit/loss from this properties are included in the income statement and does not need to be added to the EV;

(iii)   The Company holds €130k in equity investments which does not have a market value since it is not possible to determine its fair price;

(iv)   In the account investment properties, the Company has lands and buildings which are not related with its activities, with a total book value of €25.4M which was valued recently by and independent entity and an impairment of €1M was already registered [3];

(v)   Furthermore, with the sale of these assets, the Company would have a tax liability which is estimated with a nominal tax rate of 25% and therefore it is considered only the value of the asset after taxes. Additionally, in order to sell these assets the Company would have other selling costs (namely commissions for the real estate agent), which are not considered since it cannot be measured with reliability;

(vi)   CTT is responsible for financing the healthcare plan (83% of its long-term liabilities) applicable to current and retired employees, as well as certain other long-term benefits. Additionally, workers hired by the Company after 31 December 2009 are only entitled to healthcare benefits while they remain employed by CTT, and do not receive post-retirement healthcare benefits. In order to obtain the estimate of the liabilities and costs to be recognised for each period, an actuarial study is made by an independent entity every year, based on the Projected Unit Credit method, which considers a discount rate of 4%, where the present value of employee's benefits totalizes €295M. As this is a future tax deductible expense, it is necessary to determine the tax asset related with this liability (€74M with a nominal tax rate of 25%).

This adjustment's to the Enterprise Value lead us to an Equity Value of €1,097M and taking in account that the future shares outstanding offered in the IPO mechanism would be 150M, lead to an Equity Value per share of €7.3.

7.3.   Free Cash Flow to Equity

Chart 49 Evolution of FCFE (€M), 2012-2016E

Since CTT's is not a leverage firm in terms of interest bearing debt, the future debt variation does not exist and therefore the unique adjustment needed to the FCFF are the net financial results. The accumulated cash flow available to Equity holders of the explicit period equals €292M[K] (differ only €28M from the FCFF) and discounted at the expected return on equity (12.6%) and considering the same long term growth as the FCFF (+2.5%), lead us to an Equity Value of €673M (4.5 per share). Additionally, any further adjustments to this value are needed since this is already the cash-flow available to remunerate equity holders discounted at the expected return demanded by them.

7.4.   Dividend Discount Model
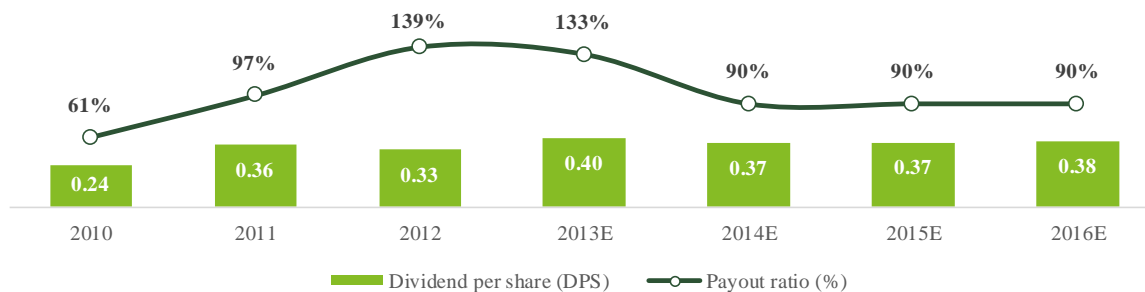
Chart 50 Evolution of the DPS (€) and payout ratio (%), 2012-2016E

The dividend discount model has the same foundation as the FCFE with the difference that Equity holder's remuneration depends on the Company's payout ratio, which adds another assumption to the model.

The Company is characterised by high payout ratios (average between 2010 and 2012 above 90%) and intends to keep this policy in the future. In 2013, the Company projected to deliver as dividends €60M which represents a payout ratio of 133% with the expected net income[L]

[K]Cash-flow statement detail (€M)

[L] Dividend Discount Model (DDM) detail

[2]. Additionally, up to 2013 the Company intends to keep a minimum payout ratio of 90%. In the forecasted period, the dividend per share is around €0.4 per share, which lead us to a value per share of €3.6 (discounted through the cost of equity and projected in perpetuity with the same long term growth as the FCFF).

7.5.   Multiples

Market multiples

CTT, as the national mail operator in Portugal, has a natural peer group of other European postal companies such as Oesterreichische Post, Deutsche Post, Royal Mail Group (RMG), Bpost and PostNL. Although other Express and Logistics companies such as Kuehne & Nagel and FedEx could also be useful peers, because even though Company's main activity is the postal sector, Express and Parcels business unit stands for a significant portion of total revenues and it is also one the main sources of future growth being the nature of the services provided very similar.

Company	Country	FX	2014E	2015E	2014E	2015E
			EV/EBITDA(x)		PER(x)	
Bpost	Belgium	EUR	5.5x	5.4x	10.5x	10.3x
Deutsche Post	Germany	EUR	7.3x	6.6x	15.8x	14.0x
PostNL	Netherlands	EUR	6.4x	5.8x	8.3x	7.0x
Royal Mail	England	GBP	7.2x	6.8x	16.0x	12.8x
Kuehne + Nagel	Switzerland	CHF	12.8x	11.9x	21.8x	20.1x
FedEx Corp	United States	USD	6.6x	5.8x	19.4x	15.3x
Oesterreichische Post AG	Austria	EUR	7.4x	7.3x	14.9x	14.9x
Average			**7.6x**	**7.1x**	**15.2x**	**13.5x**
Median			**7.2x**	**6.6x**	**15.8x**	**14.0x**

Chart 51 Peer group: expected EV/EBITDA and PE multiples, 2014E and 2015E [9]

An overall analysis of the median of the peer group underline that the expected multiple for 2015 is lower than the one for 2014, which is directly related with the general decrease on volumes across Europe.

In order to access the value per share through a relative approach there will be used the Enterprise Value to EBITDA and Price to Earnings (PER) multiples.

The expected EV/EBITDA multiple for 2014 is 7.2x and for 6.6x for 2015 is, which lead us to an Enterprise Value of €927M and €854M in 2014 and 2015, respectively. After the same adjustments in the Enterprise value as in the method of the FCFF in terms of non-business assets and debt, the expected price per share for 2014 and 2015 is €7.9 and 7.4€, respectively.

The Price to Earnings multiple lead directly to the value per share which is €6.5 and €5.8 in 2014 and 2015, respectively [9].

Transaction multiples

Other approach of using multiples to access the value of a Company is to use transaction multiples, which are the multiples of past transactions for the same industry. The biggest downside of this method is that it is a backward looking approach but it can be useful since enables to verify the multiples of previous transactions for a given segment. In order to guarantee the adequacy of this approach is should be used the most recent deals as possible and compare them with the actual market multiples for public companies in the sector in analysis.

Thereby, there were 16 selected transactions of companies which operate in the transportation sector (postal, express and logistic services) between 2011 and the third quarter of 2013, in the Eurozone^M [13].

These 16 transactions have an implicit EV/EBITDA and PER (median) multiple of 7.1x and 14.2x, respectively. Applying the same procedure as in the market multiples, leads to value per share of: (i) EV/EBITDA – €7.8; and (ii) PER – €5.8.

7.6. Sensitivity and Scenario Analysis

Every valuation model is based in particular assumptions which can be more or less accurate. Therefore, it is necessary to assess the uncertainty of the estimates and determine the potential impact on the price per share by changing one or more critical variables. This procedure allows to highlight which drivers have the most or least impact on value creation.

The first step is to identify the key inputs which may affect widely the price per share.

In the case of CTT, the most critical value drivers are: (i) growth, since postal mail volumes are under pressure and the other two business units are expected to grow; and (ii) EBITDA margin, since is the most recent source of cash-flow generation and must be under a close control from the management team.

The sensitivity analysis will be focused on the FCFF considering its link with the ability of the business to generate cash itself.

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^{M} Detail of listed transactions in Europe in the Logistics sector

Sensitivity Analysis

The sensitivity analysis considers a stand-alone approach, since it includes the consequences of varying only one parameter at a time.

16.0%	18.5%	20%
6.1	7.3	8.1
Pessimistic	Forecasted	Optimistic
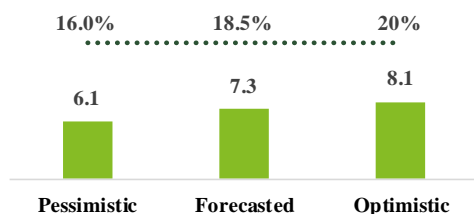
Chart 52 Price per share changes (€) – EBITDA

0.0%	2.5%	4.0%
6.4	7.3	8.2
Pessimistic	Forecasted	Optimistic
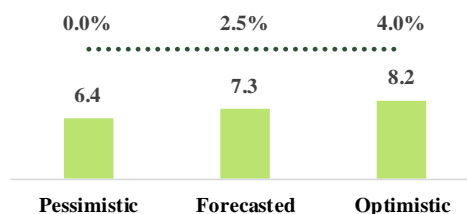
Chart 53 Price per share changes (€) – Long term growth

The pessimistic scenario for the EBITDA Margin considers a margin of 16.0%, which is 197 basis points below the margin already achieved in the 3Q2013 and leads to a value per share of €6.1. Moreover, the optimistic scenario on operational profitability (EBITDA Margin: 20%) leads to a value per share of €8.1 which is not unreasonable due to the consecutive efforts to reduce operational expenses and increases Company's efficiency. Additionally, in a scenario without growth, the fair price is €6.4.

Scenarios Analysis

The scenarios analysis provides more insightful inputs since it allows to assess the sensitivity of the price per share by changing more than one variable.

		EBITDA Margin (%)							
		16.0%	16.5%	17.0%	17.5%	18.0%	18.5%	19.0%	19.5%
	-2.00%	5.2	5.3	5.5	5.6	5.7	5.9	6.0	6.1
	-1.00%	5.4	5.5	5.7	5.8	5.9	6.1	6.2	6.4
Long term	0.00%	5.6	5.7	5.9	6.1	6.2	6.4	6.5	6.7
growth (%)	1.00%	5.8	6.0	6.2	6.4	6.5	6.7	6.9	7.0
	1.50%	6.0	6.2	6.3	6.5	6.7	6.9	7.1	7.2
	2.50%	6.3	6.5	6.7	6.9	7.1	7.3	7.5	7.7
	3.00%	6.5	6.7	6.9	7.2	7.4	7.6	7.8	8.0
	3.50%	6.8	7.0	7.2	7.4	7.6	7.9	8.1	8.3
	4.00%	7.0	7.3	7.5	7.7	8.0	8.2	8.4	8.7

Chart 54 Price per share (€) due to changes on EBITDA Margin and long term growth

The scenarios analysis exhibits the likelihood in which the price should be above the average price settled €6.2. Therefore, the worst case scenario in analysis, with a negative long term growth of 2% and an EBITDA margin of 16%, leads to price per share is €5.2, consequently 8% above the average price settled by Company in the IPO mechanism.

7.7. Comparison of metrics
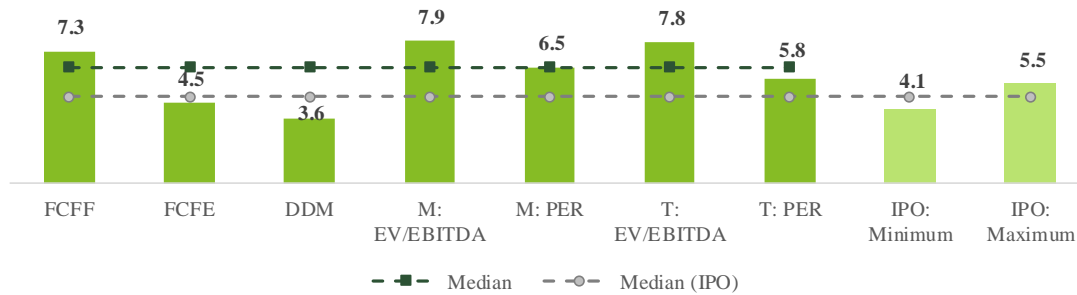
Chart 55 Price per share estimated by the different approaches and Price share offered in the IPO (€)

The median among the all approaches applied in this appraisal lead to an estimated price per share of €7.1. Since it is necessary to define the range price that should be indicated in the IPO mechanism, it may vary between €7.9 (EV/EBITDA of the market) and €4.5 (FCFE) which corresponds to an average price of €6.2 (since the DDM price is not considered).

7.8. IPO underpricing and stock performance

We are now able to identify a hypothetical degree of underpricing since our estimated average price is available and the offered price in the IPO by the Company is known. Therefore, the range price defined by CTT and their advisors was €4.1 and €5.5 which compares with the range price of €7.9 and €4.5. The average bid price settled by the Company is 29% below the price estimated in this project.
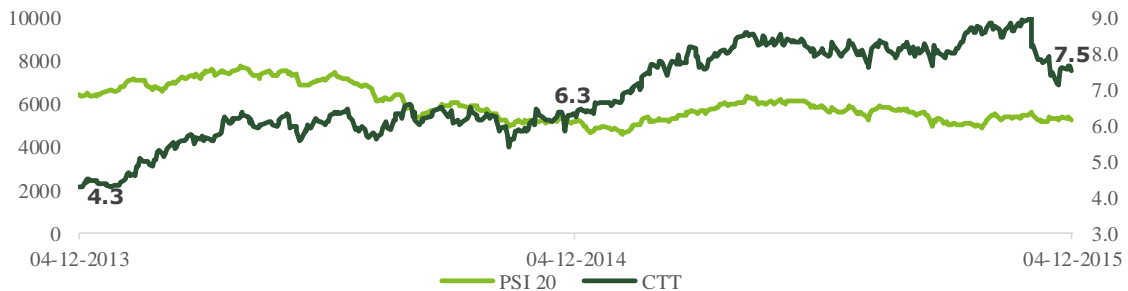
Chart 56 CTT stock price and PSI20 Index evolution, 4/12/2013 – 4/12/2015 [9]

However, the true degree of underpricing can only be seen through the stock price evolution. Therefore, the first day of the stock in the Portuguese market (PSI20) was in December 4 of 2013. After three months in the market, the stock price achieved the price estimated on this project (6.3€), having finished the first year on the market with the same price. Furthermore,

two years after the issue, the stock price increased €3.3, which corresponds to an annualized return around 75%.

Since the stock price only three months after the issue achieved €6.3, there is a strong evidence that the IPO underpricing phenomenon have occurred for CTT.

8. Conclusion

The current project "CTT – Correios de Portugal S.A.: an analysis before the IPO and subsequent stock price evolution" evaluated the fair share price of the Company before the entry on the stock market in 2013, the stock price evolution on the market and finally assess if the range price settled by the Company and their financial advisers was conservative (below fair price), as suggested by several literature.

The different valuation tools employed led to different prices per share, where in: (i) FCFF – €7.3; (ii) FCFE - €4.5; (iii) DDM – €3.6; (iv) Market Multiples: EV/EBITDA – €7.9 and PER - €6.5; and (v) Transaction Multiples: EV/EBITDA - €7.8 and PER – €5.8. Therefore, the range price defined is [€7.9; €4.5] which compares with the range price settled on the Prospectus of [€5.5; €4.1]. Therefore, the average price estimated in this project (€6.3) is 29% above the average share price defined on the Prospectus (€4,8). The Company's stock price, three months after the issue, achieved the fair price suggested on this project (€6.3) which indicates that true stock price was heavily above the one offered in the IPO.

Nevertheless, every valuation model has its own assumptions and in order to assess the sensitivity of the share price to changes on the Company's key value drivers, a sensitivity and scenarios analysis is mandatory. Therefore, this analysis evidence the upside potential since even in the worst scenario (EBITDA margin: 16% and long term growth: -2.0%) the share price is €5.2, slightly above the average share price proposed by the Company and its Financial Advisers in the Prospectus.

Last but not least, the current project has its own limitations. Firstly, the business performance forecasting may have a considerable margin of error due to the occlusion of inside information which is not available to the common public. Therefore, in order to define the real price offered, the Financial Adviser firm has access to the Company's business plan which outlines the performance of each business unit, the future investment needs and the future projects. Indeed, only the access to complete inside information would guarantee the full robustness of the results presented.

9.   Bibliography

Ang, A., 2014. *Asset management : a systematic approach to factor investing.* (1st ed.). Oxford New York: Oxford University Press.

Bhabra, H. & Pettway, R., 2000. IPO Prospectus Information and Subsequent Performance. *The Financial Review*, 2-3.

Berk, J. & Demarzo, P., 2014. *CORPORATE FINANCE* (3rd ed.). United States of America: Pearson Education, Inc.

Bodie, Z., et al. 2014. **Investments** (10th ed.**). New York: McGraw-Hill Education.

Brealey, M., 2001. *Fundamentals of Corporate Finance* (3rd ed.). United States of America: The McGraw-Hill Companies, Inc.

Damadoran, A., 2001. *Corporate Finance: Theory and Practice* (2nd ed.). United States of America: John Wiley & Sons, Inc.

Farber, A., 2007. A General Formula for the WACC. *International Journal of Business,* 12 (3): 2-6.

Fernandez, P., 2015. *Valuation using multiples. How do analysts reach their conclusions?*, Working paper November 2015, IESE Business School, Madrid.

Havnaer, K., 2013. *DCF vs. Multiples*, Working Paper August 2013, Advisor perspectives, Lexington.

Katti, S., et al., 2016. Underpricing of Initial Public Offerings: A Literature Review. *Universal Journal of Accounting and Finance 4(2)*, 35-52.

Lee, I., et al. 1996. The costs of raising capital. *The Journal of Financial Research,* 19 (1): 59-74.

Kiev, V., 2013. Theoretical and practical aspects of business valuation based on DCF-method (discounted cash-flow). *Vadym Hetman Kiev national economic university,* 8: 78-79.

Koller, T., et al. (Mckinsey Company.) 2015, *Valuation: Measuring and managing the value of companies* (6th ed.). New Jersey: JohnWiley & Sons.

Miller, M. & Modigliani, F., 1961. Dividend Policy, Growth, and the Valuation of Shares. *The Journal of Business*, 34 (4): 411-433.

Mota, A. G., et al., 2014. *Introdução às Finanças- Fundamentos de Finanças com Casos Práticos Resolvidos e Propostos.* **(2ª Ed.).** Lisboa: EDIÇÕES SÍLABO, LDA.

Mota, A. G., et al., 2015. *Finanças da Empresa- Teoria e Prática* (5º ed.). Lisboa: Edições Sílabo, Lda.

Penman, S., 1998. A Synthesis of Equity Valuation Techniques and the Terminal Value Calculation for the Dividend Discount Model. *Review of Accounting Studies*, 2: 303-323

Sharpe, W., 1964. Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk. *The Jornal of Finance,* 19 (3): 425-442.

Suozzo, P., 2001. **Valuation Multiples : A Primer Global Equity**, Working paper November 2001, *UBS Warburg*, London.

Sources

[1]   Universal Postal Union - Mail volumes on Europe,
        http://pls.upu.int/pls/ap/ssp_report.CreateReport), 25/06/2017

[2]   The CTT Company. 2013. Prospeto de Oferta Pública de Venda e de Admissão à
        Negociação no Euronext Lisbon – Sociedade Gestora de Mercados
        Regulamentados, S.A., http://web3.cmvm.pt/sdi2004/emitentes/docs/fsd28946.
        pdf, 20/06/2017

[3]   The CTT Company. 2010-2013. *Relatório & Contas*. https://www.ctt.pt/ctt-e-
        investidores/informacao-financeira/contas-consolidadas, 20/06/2017

[4]   Anacom, Serviços postais – 2016, https://www.anacom.pt/render.jsp?contentId=
        1406743, 20/06/2017

[5]   Eurostat. E-commerce statistics for individuals,
        http://ec.europa.eu/eurostat/statistics-explained/index.php/Ecommerce_statistics_
        for_individuals, 20/06/2017

[6]   Pordata. 2017. Consumo das famílias no território económico: total, duradouro e
        não duradouro.(base=2011), http://www.pordata.pt/Portugal/Consumo+das+f
        am%C3%ADlias+no+territ%C3%B3rio+econ%C3%B3mico+total++duradouro+
        e+n%C3%A3o+duradouro+(base+2011)-2825, 20/06/2017

[7]   Pordata. 2017. Taxa de Inflação (Taxa de Variação do Índice de Preços no
        Consumidor): total e por consumo individual por objectivo – Portugal,
        http://www.pordata.pt/Portugal/Taxa+de+Infla%C3%A7%C3%A3o+(Taxa+de+
        Varia%C3%A7%C3%A3o+do+%C3%8Dndice+de+Pre%C3%A7os+no+Consu
        midor)+total+e+por+consumo+individual+por+objectivo-2315, 20/06/2017

[8]   Banco de Portugal. 2013. Boletim Económico – Verão 2013: Projeções para a
        economia portuguesa, https://www.bportugal.pt/comunicado/boletim-economico-
        verao-2013-projecoes-para-economia-portuguesa-2013-2014, 20/06/2017

[9]   Bloomberg Platform/Portal

[10]   Moody's Investors Service, Rating Methodology: Global Postal and Express
        Delivery Methodology, https://www.moodys.com/research/Moodys-updates-

rating-methodology-for-global-postal-and-express-delivery--PR_232323, 20/06/2017

[11]   Moody's, Country's credit rating, https://www.moodys.com/credit-ratings/Portugal-Government-of-credit-rating-614650, 22/06/2017

[12]   Moody's, Moody's Investors Service, Annual Default Study: Corporate Default and Recovery Rates, 1920-2013, https://www.moodys.com/researchdocumentcontentpage.aspx?docid=PBC_165331, 20/06/2017

[13]   MergerMarket Platform

10. Annexes

A. Peer group: Unlevered Beta and Target Debt to Equity

Company	Unlevered Beta	D/E
PostNL NV	0.75	0.52
Kuehne + Nagel International AG	0.92	0.01
FedEx Corp	0.95	0.30
Oesterreichische Post AG	0.51	0.00
bpost SA	0.80	0.01
Royal Mail PLC	0.51	0.25
Deutsche Post AG	0.91	0.19
Average D/E	**0.76**	**0.18**
Median D/E	**0.80**	**0.19**

B. Bonds detail

Name	YTM at 30-09-2013	Amount	Coupon	Issue Date	Maturity Date	Settlement Date
Post NL	6.48%	650M	5.38%	14-11-2007	14-11-2017	30-09-2013
Post NL 2	4.83%	450M	7.50%	14-08-2008	14-08-2018	30-09-2013

Cont.	Time to Maturity	Currency	Current Rating	Seniority	Type
Post NL	4.13	Eur	Baa2-Moody's	Senior Unsecured	Fixed:Plain Vanilla Fixed Coupon / Annually / Bullet
Post NL 2	4.87	Eur	Baa2-Moody's	Senior Unsecured	Fixed:Plain Vanilla Fixed Coupon / Annually / Bullet
Weighted Average YTM	**5.80%**				

C. Rating Factors and Aggregated Weighted Factor Score for companies in the Postal and Express and Delivery segments

EXHIBIT 2

Rating Factor	Factor Weighting	Relative Sub-Factors	Sub-Factors Weighting
1. Scale and Business Diversification	28%	a) Scale - Revenues (US$ million)	12%
		b) Business Stability and Diversification	8%
		c) Geographic Diversity	8%
2 - Efficiency and Profitability	14%	a) EBIT Margins	7%
		b) ROA (EBITA / Avg. Assets)	7%
3 - Financial Policy	20%	a) Financial Policy	15%
		b) Debt to Capitalisation	5%
4 - Financial Metrics	38%	a) Debt / EBITDA	10%
		b) RCF / Debt	10%
		c) FCF / Net Debt	8%
		d) (FFO + Interest) / Interest Expense	10%

GRID-Indicated Rating	Aggregated Weighted Factor Score
Aaa	$x < 1.5$
Aa1	$1.5 \le x < 2.5$
Aa2	$2.5 \le x < 3.5$
Aa3	$3.5 \le x < 4.5$
A1	$4.5 \le x < 5.5$
A2	$5.5 \le x < 6.5$
A3	$6.5 \le x < 7.5$
Baa1	$7.5 \le x < 8.5$
Baa2	$8.5 \le x < 9.5$
Baa3	$9.5 \le x < 10.5$
Ba1	$10.5 \le x < 11.5$
Ba2	$11.5 \le x < 12.5$
Ba3	$12.5 \le x < 13.5$
B1	$13.5 \le x < 14.5$
B2	$13.5 \le x < 14.5$
B3	$15.5 \le x < 16.5$
Caa1	$16.5 \le x < 17.5$
Caa2	$17.5 \le x$

D. Implementation of the methodology suggested by Moody's to assess the credit rating of companies in the Postal and Express and Delivery segments

Rating			Aaa	Aa	A	Baa	Ba	B	Caa	
Score to apply			1	3	6	9	12	15	18	
Factor	**Rating Category**	**Sub-Factor Weighting**	**Aaa**	**Aa**	**A**	**Baa**	**Ba**	**B**	**Caa**	**Score**
1. Scale and business diversification	Scale - Revenues (US$ mil)	12%						x		1.80
	Business Stability and Diversification	8%		x						0.24
	Geographic Diversity	8%				x				0.72
2. Efficiency and Profitability	EBIT Margin (%)	7%	x							0.07
	ROA (%)	7%				x				0.63
3. Financial Policy	Financial Policy	15%			x					0.90
	Debt to Capitalisation	5%					x			0.60
4. Financial Metrics	Financial Debt/EBITDA	10%				x				0.90
	RCF/financial Debt	10%			x					0.60
	FCF/Net Debt	8%								0.00
	(FFO+Interests)/Interests	10%			x					0.60
Final Score										**7.67**

E. Probability of Default and Recovery Rates according to Moody's

Average Cumulative Issuer-Weighted Global Default Rates by Alphanumeric Rating, 1983-2013*

Rating	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Aaa	0.000	0.016	0.016	0.048	0.085	0.130	0.179	0.183	0.183	0.183	0.183	0.183	0.183	0.183	0.183	0.183	0.183	0.183	0.183	0.183
Aa1	0.000	0.000	0.000	0.087	0.161	0.243	0.249	0.249	0.249	0.249	0.249	0.249	0.394	0.572	0.774	0.847	0.847	0.847	0.847	0.847
Aa2	0.000	0.017	0.152	0.329	0.496	0.623	0.765	0.923	1.100	1.298	1.517	1.761	1.978	2.078	2.189	2.397	2.675	2.986	3.426	3.703
Aa3	0.051	0.148	0.222	0.353	0.545	0.675	0.784	0.864	0.942	1.075	1.265	1.551	1.814	2.000	2.144	2.281	2.477	2.894	3.522	4.155
A1	0.081	0.252	0.548	0.851	1.160	1.442	1.676	1.878	2.090	2.330	2.596	2.869	3.174	3.567	3.998	4.476	4.970	5.438	5.694	5.967
A2	0.068	0.212	0.433	0.691	0.991	1.415	1.908	2.447	2.952	3.421	3.800	4.085	4.396	4.790	5.277	5.834	6.658	7.532	8.171	8.802
A3	0.060	0.219	0.533	0.819	1.174	1.521	1.937	2.426	2.910	3.272	3.601	4.001	4.414	4.847	5.453	6.047	6.554	7.367	8.177	9.010
Baa1	0.156	0.426	0.704	0.995	1.332	1.667	1.987	2.223	2.417	2.661	2.989	3.463	4.012	4.548	5.222	6.114	6.864	7.327	7.480	7.697
Baa2	0.169	0.488	0.860	1.382	1.843	2.370	2.852	3.298	3.838	4.501	5.336	6.210	7.014	7.773	8.523	9.216	10.024	10.963	11.961	12.519
Baa3	0.257	0.764	1.374	1.985	2.762	3.505	4.240	5.138	5.996	6.871	7.586	8.085	9.005	10.062	10.869	11.930	13.069	14.116	15.177	16.125
Ba1	0.674	2.012	3.704	5.575	7.352	9.238	10.698	11.768	12.747	13.873	15.179	16.696	17.756	18.636	20.045	21.203	22.475	24.077	26.420	27.943
Ba2	0.754	2.113	3.796	5.634	7.287	8.577	9.936	11.433	12.793	14.010	15.565	17.348	19.256	21.039	23.249	24.834	26.231	26.704	26.901	26.901
Ba3	1.733	4.967	8.819	12.835	16.037	18.978	21.599	24.294	26.881	29.486	31.597	33.462	35.568	38.465	40.474	42.427	44.027	45.488	47.041	48.470

Average Sr. Unsecured Bond Recovery Rates by Year Prior to Default, 1982-2013*

	Year 1	Year 2	Year 3	Year 4	Year 5
Aaa**	n.a.	3.33%	3.33%	61.88%	75.58%
Aa	37.24%	39.02%	38.08%	43.95%	42.27%
A	31.77%	42.68%	44.49%	43.92%	44.29%
Baa	40.04%	41.44%	42.11%	42.74%	42.90%
Ba	45.70%	44.23%	43.25%	42.53%	42.10%
B	38.19%	37.26%	37.40%	37.69%	38.33%
Caa-C	36.90%	36.93%	36.70%	36.88%	36.87%
Investment Grade	38.07%	41.46%	42.60%	43.28%	43.64%
Speculative Grade	37.99%	37.79%	37.81%	38.06%	38.40%
All Rated	37.99%	38.04%	38.23%	38.60%	39.02%

F. Balance sheet detail (€M)

Balance sheet (€M)	2010	2011	2012	Q32013	2013E	2014E	2015E	2016E
Net tangible assets	265	269	259	223	209	209	209	209
Net intangible assets (incl.Goodwill)	42	41	40	38	35	35	35	35
Total fixed assets	**307**	**310**	**299**	**262**	**244**	**244**	**244**	**244**
Inventory	7	6	7	7	9	9	9	9
Trade receivables	166	164	135	136	136	136	136	138
Other current assets	22	27	21	24	24	24	24	24
Operational cash	72	40	44	146	43	43	43	44
Trade payables	(404)	(347)	(349)	(472)	(400)	(395)	(397)	(403)
Other current liabilities	(69)	(49)	(67)	(75)	(66)	(65)	(65)	(66)
Working capital	**(206)**	**(158)**	**(209)**	**(234)**	**(254)**	**(249)**	**(251)**	**(254)**
Financial debt	(323)	(333)	(315)	(301)	(301)	(301)	(301)	(301)
Short term interest bearing debt	7	5	7	2,8	2,8	3	3	3
Long term interest bearing debt	7	6	5	3,6	3,6	4	4	4
Employees benefits	308	321	303	295	295	295	295	295
Cash and equivalents	408	386	445	464	563	620	685	756
Net financial debt	**85**	**54**	**130**	**163**	**262**	**319**	**384**	**455**
Non operational assets	113	117	112	134	134	134	134	134
Investment properties	4	3	1	25				
Investment in associates	1	1	1	1				
Other investments	0	0	0	0				
Deferrals assets	99	102	102	100				
Other non current assets	1	6	2	2				
Current assets	8	5	6	6				
Non operational liabilities	(48)	(48)	(59)	(59)	(59)	(59)	(59)	(59)
Provisions	(15)	(16)	(37)	(38)				
Deferrals	(26)	(18)	(16)	(13)				
Liabialities for deferred taxed	(6)	(6)	(6)	(5)				
Due taxes	-	(7)	(1)	(3)				
Non operational assets & liabilities	**65**	**69**	**53**	**74**	**74**	**74**	**74**	**74**
Equity	192	219	238	220	265	326	388	452
Net income	59	55	36	45	61	62	63	68
Members' equity	**251**	**274**	**273**	**265**	**326**	**388**	**452**	**519**
Invested Capital	**574**	**548**	**506**	**573**	**456**	**455**	**456**	**459**

G. Working capital breakdown (€M)

Working Capital	2010	2011	2012	Q32013	2013E	2014E	2015E	2016E
Inventory	7	6	7	7	9	9	9	9
% of sales	0.9%	1.0%	1.1%	1.5%	1.5%	1.5%	1.5%	1.5%
Days of sales	3.5	3.5	4.0	5.6	5.6	5.6	5.6	5.6
Trade receivables	166	164	135	136	136	136	136	138
% of sales	20.9%	21.5%	18.9%	26.1%	26.1%	26.1%	26.1%	26.1%
Days of sales	76	78	69	71	71	71	71	71
Other current assets	22	27	21	24	24	24	24	24
% of sales	2.7%	3.6%	2.9%	4.5%	4.5%	4.5%	4.5%	4.5%
Days of sales	10	13	11	12	12	12	12	12
Cash	72	40	44	146	43	43	43	44
% of sales	9.1%	5.2%	6.2%	28.1%	6.2%	6.2%	6.2%	6.2%
Days of sales	33	19	23	77	23	23	23	23
Total current assets	**267**	**238**	**207**	**312**	**212**	**211**	**212**	**215**
% of sales	33.5%	31.1%	29.0%	60.0%	30.4%	30.4%	30.4%	30.4%
Days of sales	122	113	106	164	83	83	83	83
Trade payables	404	347	349	472	400	395	397	403
% of COGS	58.9%	53.2%	57.3%	110.5%	57.3%	57.3%	57.3%	57.3%
Days of COGS	215	194	209	403	255	255	255	255
Other current liabilities	69	49	67	75	66	65	65	66
% of COGS	10.1%	7.5%	11.0%	17.5%	17.5%	17.5%	17.5%	17.5%
Days of COGS	37	28	40	64	42	42	42	42
Total current liabilities	**473**	**396**	**416**	**546**	**466**	**460**	**463**	**469**
% of COGS	69.0%	60.8%	68.2%	128.0%	81.5%	81.5%	81.5%	81.5%
Days of COGS	216	189	213	288	183	182	182	182
Total Working Capital	**(206)**	**(158)**	**(209)**	**(234)**	**(254)**	**(249)**	**(251)**	**(254)**
Days of sales (-)	25.8%	20.7%	29.2%	45.1%	36.4%	35.9%	35.9%	36.0%
Δ WC	n.a.	48	(51)	(25)	(20)	5	(1)	(4)

H. Detail of Mail Business Unit estimates (€M)

Mail	2010	2011	2012	3Q2012	3Q2013	2013E	2014E	2015E	2016E
Revenues	614	578	536	399	387	519	507	503	504
Items processed ('000):									
Transactional mail	**929**	**876**	**810**	**611**	**569**	**754**	**732**	**717**	**710**
% Growth	*n.a*	*-5.7%*	*-7.6%*	*n.a.*	*-6.8%*	*-6.8%*	*-3.0%*	*-2.0%*	*-1.0%*
Press mail	**59**	**56**	**48**	**36**	**32**	**43**	**42**	**41**	**41**
% Growth	*n.a*	*-6.5%*	*-13.6%*	*n.a.*	*-9.8%*	*-9.8%*	*-3.0%*	*-2.0%*	*-1.0%*
Parcels	**0.42**	**0.41**	**0.41**	**0.28**	**0.25**	**0.36**	**0.35**	**0.34**	**0.34**
% Growth	*n.a*	*-3.8%*	*0.0%*	*n.a.*	*-11.3%*	*-11.3%*	*-3.0%*	*-2.0%*	*-1.0%*
Advertising mail	**707**	**669**	**622**	**459**	**445**	**603**	**585**	**573**	**568**
% Growth	*n.a*	*-5.4%*	*-7.0%*	*n.a.*	*-3.1%*	*-3.1%*	*-2.0%*	*-2.0%*	*-1.0%*
Total items processed ('000)	**1,696**	**1,601**	**1,480**	**1,106**	**1,047**	**1,401**	**1,359**	**1,332**	**1,318**
% Growth	*n.a*	*-5.6%*	*-7.5%*	*n.a.*	*-5.4%*	*-5.3%*	*-5.3%*	*-5.3%*	*-5.3%*
Average price	*0.362*	*0.361*	*0.362*	*0.361*	*0.370*	*0.370*	*0.373*	*0.378*	*0.382*
Total Revenues	**614**	**578**	**536**	**399**	**387**	**519**	**507**	**503**	**504**
% Growth	*n.a*	*-5.9%*	*-7.2%*	*n.a.*	*-2.9%*	*-3.2%*	*-2.2%*	*-0.8%*	*0.2%*
Operational expenses	**543**	**506**	**468**	**344**	**322**	**431**	**419**	**415**	**416**
ESS	130.0	117.8	106.3	80.7	73.8	98.8	96.6	95.8	95.9
% of sales	*21.2%*	*20.4%*	*19.8%*	*20.2%*	*19.0%*	*19.0%*	*19.0%*	*19.0%*	*19.0%*
Wages	282.6	251.0	236.7	180.1	173.8	232.7	225.6	223.8	224.2
% of sales	*46.0%*	*43.5%*	*44.2%*	*45.1%*	*44.9%*	*44.9%*	*44.5%*	*44.5%*	*44.5%*
Other	18.5	21.7	20.7	13.7	13.9	18.6	17.7	17.6	17.6
% of sales	*3.0%*	*3.8%*	*3.9%*	*3.4%*	*3.6%*	*3.6%*	*3.5%*	*3.5%*	*3.5%*
Internal services	56.5	47.6	44.0	33.1	52.1	69.8	68.2	67.7	67.8
% of sales	*9.2%*	*8.2%*	*8.2%*	*8.3%*	*13.5%*	*13.5%*	*13.5%*	*13.5%*	*13.5%*
Central structure of CTT	55.3	67.7	60.1	36.0	8.0	10.7	10.5	10.4	10.4
% of sales	*9.0%*	*11.7%*	*11.2%*	*9.0%*	*2.1%*	*2.1%*	*2.1%*	*2.1%*	*2.1%*
EBITDA	**71**	**72**	**68**	**55**	**66**	**88**	**88**	**88**	**88**
Margin (%)	11.5%	12.4%	12.7%	13.9%	17.0%	17.0%	17.4%	17.4%	17.4%

I. Detail of Express and Parcels Business Unit estimates (€M)

Express and Parcels	2010	2011	2012	3Q2012	3Q2013	2013E	2014E	2015E	2016E
Revenues	143.8	133.9	128.0	94.8	95.1	128.6	134.5	141.3	148.4
Items processed ('000):									
Portugal	**13.21**	**11.90**	**11.61**	**8.66**	**8.73**	**11.7**	**12.1**	**12.4**	**12.8**
% Growth	*n.a.*	*-10.0%*	*-2.4%*	*n.a.*	*0.8%*	*0.8%*	*3.0%*	*3.0%*	*3.0%*
Spain	**11.1**	**11.1**	**11.2**	**8.2**	**9.6**	**13.2**	**13.8**	**14.5**	**15.2**
% Growth	*n.a.*	*-0.4%*	*0.8%*	*n.a.*	*17.7%*	*17.7%*	*5.0%*	*5.0%*	*5.0%*
Mozambique	**0.030**	**0.077**	**0.103**	**0.073**	**0.061**	**0.1**	**0.1**	**0.1**	**0.1**
% Growth	*n.a.*	*156.7%*	*33.8%*	*n.a.*	*-16.4%*	*-16.4%*	*-3.0%*	*-3.0%*	*-3.0%*
Total items processed ('000)	24.4	23.1	22.9	16.9	18.4	25.0	26.0	27.0	28.1
% Growth	*n.a*	*-5.4%*	*-0.7%*	*n.a.*	*8.9%*	*9.0%*	*4.0%*	*4.0%*	*4.1%*
Average revenue per item	5.90	5.81	5.59	5.61	5.16	5.16	5.18	5.23	5.28
Revenues:									
Portugal	**90**	**81**	**75**	**56**	**55**	**73.4**	**76.2**	**79.5**	**82.8**
Average revenue per item	*6.8*	*6.8*	*6.4*	*6.5*	*6.3*	*6.3*	*6.3*	*6.4*	*6.5*
Spain	**53.1**	**52.3**	**51.6**	**38.0**	**39.1**	**53.5**	**56.6**	**60.2**	**63.9**
Average revenue per item	*4.8*	*4.7*	*4.6*	*4.6*	*4.1*	*4.1*	*4.1*	*4.1*	*4.2*
Mozambique	**0.3**	**1.1**	**1.8**	**0.9**	**1.2**	**1.7**	**1.7**	**1.7**	**1.6**
Average revenue per item	*8.4*	*14.6*	*17.6*	*12.3*	*20.1*	*20.1*	*20.3*	*20.5*	*20.8*
Operational expenses	**126**	**120**	**119**	**89**	**89**	**120**	**124**	**131**	**137**
ESS	99.3	94.1	92.7	69.4	70.0	94.7	98.2	103.1	108.3
% of sales	*69.1%*	*70.2%*	*72.4%*	*73.2%*	*73.6%*	*73.6%*	*73.0%*	*73.0%*	*73.0%*
Wages	24.5	23.9	23.9	18.0	17.4	23.5	24.2	25.4	26.7
% of sales	*17.0%*	*17.9%*	*18.7%*	*19.0%*	*18.3%*	*18.3%*	*18.0%*	*18.0%*	*18.0%*
Per employee	0	0	0	0	0				
Other	2.0	1.8	2.2	1.3	1.5	2.1	2.0	2.1	2.2
% of sales	*1.4%*	*1.3%*	*1.7%*	*1.4%*	*1.6%*	*1.6%*	*1.5%*	*1.5%*	*1.5%*
Internal services	-	-	-	-	-				
Central structure of CTT	-	-	-	-	-				
EBITDA	**17.9**	**14.2**	**9.1**	**6.1**	**6.2**	**8.4**	**10.1**	**10.6**	**11.1**
Margin (%)	12.5%	10.6%	7.1%	6.4%	6.5%	6.5%	7.5%	7.5%	7.5%

J. Detail of Financial Services Business Unit estimates (€M)

Financial Services	2010	2011	2012	3Q2012	3Q2013	2013E	2014E	2015E	2016E
Revenues	60.1	61.7	57.7	43.6	44.1	60.1	61.9	63.9	66.1
% Growth	n.a.	2.7%	-6.5%	n.a.	1.1%	4.2%	2.9%	3.3%	3.4%
Savings and insurace	**6**	**7**	**8**	**6**	**9**	**12**	**14**	**15**	**16**
% Growth	*n.a.*	*17%*	*14%*	*n.a.*	*55%*	54.5%	10.00%	10.00%	10.00%
Payment solutions	**20**	**21**	**20**	**15**	**14**	**19**	**19**	**19**	**19**
% Growth	*n.a.*	*5%*	*-5%*	*n.a.*	*-7%*	-7.5%	0.8%	1.2%	1.2%
Payshop	**15**	**16**	**15**	**12**	**12**	**15**	**15**	**15**	**15**
% Growth	*n.a.*	*7%*	*-6%*	*n.a.*	*0%*	0.0%	0.8%	1.2%	1.2%
Tranfers	**14**	**13**	**13**	**10**	**9**	**11**	**11**	**12**	**12**
% Growth	*n.a.*	*-7%*	*0%*	*n.a.*	*-13%*	-13.5%	2%	2%	2%
Interest income	**3**	**5**	**3**	**2**	**2**	**3**	**3**	**3**	**3**
% Growth	*n.a.*	*67%*	*-40%*	*n.a.*	*0%*	0.0%	1%	1%	1%
Operational expenses	**40**	**37**	**32**	**24**	**24**	**33**	**33**	**35**	**36**
ESS	9.5	9.7	9.2	6.6	7.8	10.7	10.5	10.9	11.2
% of sales	15.9%	15.7%	15.9%	15.2%	17.7%	17.7%	17.0%	17.0%	17.0%
Wages	3.95	3.31	3.19	2.37	2.32	3.2	3.3	3.4	3.5
% of sales	6.6%	5.4%	5.5%	5.4%	5.3%	5.3%	5.3%	5.3%	5.3%
Other	0.4	0.5	0.4	0.3	0.3	0.4	0.4	0.4	0.4
% of sales	0.7%	0.7%	0.7%	0.7%	0.6%	0.6%	0.6%	0.6%	0.6%
Internal services	25.4	22.7	19.1	14.4	13.7	18.7	19.2	19.8	20.5
% of sales	42.4%	36.8%	33.2%	32.9%	31.0%	31.0%	31.0%	31.0%	31.0%
Central structure of CTT	0.4	0.5	0.5	0.3	0.1	0.1	0.1	0.1	0.1
% of sales	0.7%	0.8%	0.8%	0.6%	0.1%	0.1%	0.1%	0.1%	0.1%
EBITDA	**20**	**25**	**25**	**20**	**20**	**27**	**28**	**29**	**30**
Margin (%)	33.8%	40.6%	43.9%	45.1%	45.2%	45.2%	46.0%	46.0%	46.0%

K. Income Statement estimates by Business Unit and Total (€M)

Total	2010	2011	2012	3Q2012	3Q2013	2013E	2014E	2015E	2016E
Revenues	**798**	**766**	**714**	**529**	**520**	**698**	**693**	**697**	**707**
% Growth	n.a.	-4.0%	-6.7%	n.a.	-1.8%	-2.3%	-0.6%	0.6%	1.4%
Mail + BS	641	604	559	417	404	539	527	523	523
% Growth	*n.a.*	*-5.8%*	*-7.4%*	*n.a.*	*-3.2%*	*-3.5%*	*-2.3%*	*-0.9%*	*0.1%*
Express & Parcels	144	134	128	95	95	129	135	141	148
% Growth	*n.a.*	*-6.9%*	*-4.4%*	*n.a.*	*0.3%*	*0.5%*	*4.6%*	*5.0%*	*5.0%*
Financial services	60	62	58	44	44	60	62	64	66
% Growth	*n.a.*	*2.7%*	*-6.5%*	*n.a.*	*1.1%*	*4.2%*	*2.9%*	*3.3%*	*3.4%*
Other & eliminations	(47)	(33)	(30)	(26)	(23)	(31)	(30)	(31)	(31)
% Growth	*n.a.*	*-28.7%*	*-8.9%*	*n.a.*	*-11.8%*	*0.5%*	*-0.6%*	*0.6%*	*1.4%*
Operational expenses	**686**	**652**	**610**	**446**	**427**	**572**	**565**	**568**	**576**
ESS	273	256	246	183	176	237	237	242	248
% of sales	34.3%	33.5%	34.5%	34.7%	33.9%	33.9%	34.3%	34.7%	35.1%
Wages	382	358	333	243	232	310	303	303	305
% of sales	47.9%	46.8%	46.7%	45.9%	44.5%	44.5%	43.8%	43.5%	43.2%
Per employee	29,653	29,263	28,668	26,225	26,718	35,779	35,006	34,957	35,228
Other	31	37	30	20	19	25	24	24	24
% of sales	3.9%	4.9%	4.2%	3.8%	3.6%	3.6%	3.5%	3.5%	3.4%
Internal services	0	0	-	(0)	(0)	0	(0)	(1)	(1)
Central structure of CTT	-	(0)	0	(0)	0	(0)	(0)	(0)	(0)
EBITDA	**111.7**	**113.9**	**104.3**	**82.8**	**93.3**	**125.3**	**128.7**	**129.4**	**131.1**
% Margin	14.0%	14.9%	14.6%	15.6%	17.9%	18.0%	18.6%	18.6%	18.5%
D&A + imp. of investments	(24)	(22)	(25)	(17)	(20)	(18)	(20)	(20)	(16)
Impairments of inventory	(3)	(5)	(1)	(0.1)	(1.9)	(2)	-	-	-
Provisions	(6)	(6)	(22)	(12.3)	(4.8)	(5)	(10)	(10)	(10)
EBIT	**78.7**	**80.3**	**57.0**	**52.9**	**67.0**	**100.8**	**99.2**	**99.9**	**104.9**
% Margin	20.6%	22.4%	17.1%	21.8%	28.9%	32.5%	32.7%	33.0%	34.4%
Interest expenses	(19.2)	(18.4)	(16.8)	(12.1)	(9.0)	(15.2)	(15.2)	(15.2)	(15.2)
Interest gains	6.6	16.1	12.4	9.6	6.7	6.7	8.2	9.0	10.0
Profit/losses in associeties	0.0	0.1	0.2	0.2	0.0	-	-	-	-
EBT	**66.1**	**78.1**	**52.8**	**50.6**	**64.9**	**92.4**	**92.2**	**93.7**	**99.7**
% Margin	17.3%	21.8%	15.9%	20.8%	28.0%	29.8%	30.4%	30.9%	32.6%
Taxes	(6.9)	(22.5)	(16.9)	(15.1)	(19.6)	(30.8)	(29.8)	(30.0)	(31.5)
Implicit tax rate (%)	10.4%	28.7%	31.9%	29.8%	30.2%	30%	30%	30%	30%
Net income	**59.3**	**55.7**	**36.0**	**35.5**	**45.3**	**61.6**	**62.5**	**63.8**	**68.2**
% Margin	15.5%	15.5%	10.8%	14.6%	19.5%	19.9%	20.6%	21.0%	22.3%
Non-controlling interests	(0.3)	(0.4)	(0.2)	(0.2)	(0.1)	(0.3)	(0.3)	(0.3)	(0.3)
%	-0.5%	-0.8%	-0.6%	-0.5%	-0.2%	-0.5%	-0.5%	-0.5%	-0.5%
Net income available	59.0	55.3	35.7	35.4	45.2	61.3	62.1	63.4	67.9

L. Cash-flow statement detail (€M)

Cash-flow statement	2010	2011	2012	Q32013	2013E	2014E	2015E	2016E
EBITDA	**112**	**114**	**104**	**93**	**125**	**129**	**129**	**131**
D&A	(24)	(22)	(25)	(20)	(18)	(20)	(20)	(16)
Provisions	(9)	(11)	(23)	(7)	(7)	(10)	(10)	(10)
EBIT	**79**	**80**	**57**	**67**	**101**	**99**	**100**	**105**
Taxes	(7)	(22)	(17)	(20)	(31)	(30)	(30)	(31)
Tax rate (%)	*10.4%*	*28.7%*	*31.9%*	*30.2%*	*30%*	*30%*	*30%*	*30%*
NOPLAT	**72**	**58**	**40**	**47**	**70**	**69**	**70**	**73**
Operational Cash-flow	**96**	**80**	**65**	**67**	**88**	**89**	**89**	**90**
Δ WC	n.a.	(48)	51	25	20	(5)	1	4
-CAPEX	n.a.	(25)	(14)	18		(20)	(20)	(16)
Free Cash-Flow to the Firm	**n.a.**	**7**	**102**	**110**	**108**	**65**	**71**	**77**
(+) Net financial results	(13)	(2)	(4)	(2)	(8)	(7)	(6)	(5)
(+) Other profit/expenses	-	-	-	-	-	-	-	-
(-) *Tax shield*	-	-	-	-	-	-	-	-
(-) Financial debt	-	10	(18)	(14)	-	-	-	-
(-) Other assets less liab. Non-operati	-	(4)	16	(21)	-	-	-	-
(-) Non controlling interests	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Free Cash-Flow to Equity	**n.a.**	**11**	**95**	**73**	**99**	**57**	**65**	**71**
(+) ΔEquity		(32)	(37)	(54)	-	-	-	-
Δ Cash and equivalents		(21.3)	58.6	19.0	98.8	57.2	64.9	71.4
Beggining cash	n.a.	408	386	445	464	563	620	685
Ending cash	408	386	445	464	563	620	685	756

M. Dividend Discount Model (DDM) detail

Valorização DDM (€M)	2010	2011	2012	Q32013	2013	2014	2015	2016
Net-income available to sharehold	**59.0**	**55.3**	**35.7**	**35.4**	**45.2**	**61.3**	**62.1**	**63.4**
# Shares (M)	150	150	150	150	150	150	150	150
Earning per share (EPS)	**0.39**	**0.37**	**0.24**	**0.24**	**0.30**	**0.41**	**0.41**	**0.42**
Payout ratio (%)	61%	97%	139%		133%	90%	90%	90%
Dividend per share (DPS)	**0.24**	**0.36**	**0.33**		**0.40**	**0.37**	**0.37**	**0.38**
Free Cash Flow to Equity (discounted)					0.36	0.29	0.26	0.24
Discount factor					0.89	0.79	0.70	0.62

N. Detail of listed transactions in Europe in the Logistics sector

Completed Date	Target Company	Target Description	Target Sector	Target Country	EV/EBITDA	PER	Deal Value M€
03/07/2013	San Jose Lopez, S.A.	Spain-based provider of road freight transportation services	Transportation	Spain	14.5x	84.6x	16
19/04/2013	Addison Lee Limited	UK-based minicab company providing courier and passenger transportation services	Services (other),Transportation	United Kingdom	21.6x	59.0x	236
11/12/2012	EvrazTrans OOO	Russia based provider of air and rail freight transportation services	Transportation	Russia	2.1x	4.7x	236
28/11/2012	Global Ports Investments Plc	Cyprus based company engaged in providing container and oil products terminal operator services	Transportation	Cyprus	8.4x	50.6x	675
01/10/2012	Apreo Logistics SA	Poland based company engaged in providing forwarding and logistic services	Transportation	Poland	7.8x		21
16/05/2012	Metalloinvesttrans OJSC	Russia based captive freight rail transportation operator	Transportation	Russia	3.9x		407
24/02/2012	Wilgo Freight Holdings Limited	UK based freight and logistics services provider	Transportation	United Kingdom	17.8x	34.8x	4
13/06/2012	OPEK Przesylki Kurierskie	Poland based company engaged in courier services	Services (other),Transportation	Poland	17.2x		41
09/11/2011	Translinc Limited	UK based supplier of transport solutions to local authorities	Transportation	United Kingdom	6.5x	10.7x	38
02/01/2012	Lehnkering GmbH	Germany based provider of logistics and transportation services	Transportation	Germany	6.1x		270
16/06/2011	SpetsTransServis OOO	Russia based company providing transportation services	Transportation	Russia	2.9x	14.2x	9
30/09/2011	Crude Carriers Corp.	Greece based transportation company	Transportation	Greece	16.5x	23.1x	278
03/04/2011	Wim Bosman Holding B.V.	Netherlands based logistics company providing warehousing, transport, and distribution solutions	Transportation	Netherlands	4.4x	9.3x	86
25/05/2011	TNT Express N.V.	Netherlands-based provider of express business to business delivery services	Transportation	Netherlands	16.2x		4824
30/03/2011	TDG Ltd	UK based provider of contract logistics and supply chain management services	Services (other),Transportation	United Kingdom	3.8x	9.2x	233
04/02/2011	Le Groupe La Poste	France-based company engaged in providing postal services	Financial Services,Transportation	France	6.4x	10.6x	1500
Average					9.7x	28.2x	
Median					7.1x	14.2x	