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CASE STUDY ON EQUITY VALUATION

"Equity Valuation of Mota-Engil S.G.P.S., S.A."

by

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ABSTRACT

The objective of this Dissertation is to obtain a price per share of the Portuguese construction company, Mota-Engil, SGPS, S.A. Equity valuation is important for a variety of reasons. One of the most important reasons is that equity valuation of a company provides an analysis that potential buyers or sellers of stocks of that respective company take into consideration.

The recent trend in the last years of mergers and acquisitions of companies also reinforces the importance of equity valuation in the current business environment. Inevitably, equity valuation of a company is subjective by nature, depending on the assumptions considered to perform the valuation. Despite that fact, this Dissertation's objective is to perform an equity valuation of Mota-Engil as accurate as possible.

A good valuation has to be technically correct, based on solid assumptions that translate the reality of the company and it has to take into consideration the different activities of the firm being evaluated, as well as the future operational targets of the company. In the particular case of Mota-Engil, it is essential to differentiate the different activities of the company and evaluating each one of them individually, otherwise the equity value of the company would be incorrect. Following this line of reasoning, the evaluation of Mota-Engil conducted in this Dissertation consisted in a sum of all the different activities of the company separately, using the Discounted Cash Flow approach.

The equity value of Mota-Engil estimated in this Dissertation tryies to reflect the reality of the company, despite considering that many variables might influence the correcteness of this valuation process. In the end, a comparison between this Dissertation and Millenium Investment Banking equity valuation of Mota-Engil was made.

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Introduction

The objective of this Dissertation is to provide a price per share for the leading construction company of Portugal, Mota-Engil, S.G.P.S., S.A. It is the price per share that reflects the equity value of a company and due to the recent focus that Equity Valuation has gained in the past years; this Dissertation also makes a comparison between its evaluation and an evaluation of an Investment Banking, Millenium Investment Banking.

Unfortunately, Portuguese companies are not facing appropriate economic conditions, but there are exceptions to that reality. Mota-Engil is one of those examples. It is a company with a very strong presence in all the markets where it operates and it was one of the first Portuguese companies to invest abroad with successful results. It is a fact that the company has been able to surpass its difficulties and most of all; it is interesting to see a company with such a variety of business segments as Mota-Engil. However, in the perspective of the analyst, it is true that evaluating Mota-Engil might be extremely tough due to the portfolio of activities of the company.

Mota-Engil has two main segments: Engineering and Construction and Environment and Services. The partnership with Banco Espírito Santo in Ascendi is also an important investment of the company. This Dissertation focused more on these three segments of Mota-Engil.

The structure of the Dissertation is divided in four major fields. The first is the Literature Review, which reflects the state of the art of Equity Valuation processes. Then an overview of the company and of its performance is conducted. The third division of this Dissertation is the market overview, both in Engineering and Environment, with a focus on the markets overviews, where Mota-Engil has businesses. Finally, the fourth part is the valuation process (mainly with the help of the Discounted Cash Flow models) and its results, not forgetting the comparison with one of the best Investment Banks of Portugal, Millenium Investment Banking.

1. Literature Review

1.1 Valuation Approaches

There is more than one method to value a company and it is important to use more than one method because that enables the comparison of values of each approach, but most important than that, firms use more than one method because different assets of a firm sometimes demand the use of more than one method of valuation, more appropriate for each situation. "According to Luehrman (1997), managers need to value operations, opportunities and ownership claims of the firm" and despite the FCFF/WACC approach being the most used model, Luehrman states that the "APV, Option pricing and FCFE are the best models to value each one of the three variables, respectively". Damodaran (2006) presents four approaches to estimate the value of a company: Discounted Cash Flow, Asset Based Valuation, Relative Valuation and Contingent Claim Models. Despite the existence of a variety of models to estimate the value of a company, Fernandez (2007) demonstrated by analyzing ten different methods of company valuation that the estimated values gave the exact same value for all the methods; the differences relied on the cash flows used in each method. Other factor that differs among the methods of valuation is the estimation of the tax shields; there are various approaches to calculate them (Fernandez, 2006).

Regarding the valuation of Mota-Engil, the two methods that are going to be used are: the Discounted Cash Flow Method and the Relative Valuation Method. The Discounted Cash Flow Model will be used because it is a mainstream model and fits well in the case of Mota-Engil and Relative Valuation will be used due to its simplicity, but also to complement the Discounted Cash Flow valuation. Despite that, this section will address some other methods of valuation.

Valuation Models referred in Literature Review			
Contingent Claim Valuation	**Asset-based Valuation**	**Discounted cash flow models**	**Relative Valuation**
• Black Scholes • Binomial Model	• Liquidation Value • Replacement Cost • Book Value	• Free Cash Flow to the Firm • Dividend Discount Model • Free Cash Flow to Equity • Adjusted Present Value • Economic Value Added	• EV/EBITDA • Price/Earnings (PER) • EV/Sales • Price to Book Value • Price to Cash Flow

Figure 1- Valuation Models referred in Literature Review

1.2 Contingent Claim Valuation

An option can be thought as a claim that can be exercised by its holder under certain circumstances and it can value assets. "Leslie and Michaels (1997) explain that a financial option can either be a right to buy or sell a given amount of a specific asset at a fixed price at or before the expiration of the option". The purpose of the method is to apply financial options in the valuation of opportunities in real markets. An option can be exercised or not and it is a call option, if it gives the owner the right to buy and a put option, if it gives the owner the right to sell the underlying asset. There are differences among options. For instance, American options can be exercised at any time, but the European options can only be exercised at the maturity of the option.

"According to Leslie and Michaels (1997), there are six variables that cause the option value to fluctuate, in relation to the underlying asset":

- **The stock price, which is the value of the underlying asset**
- **The uncertainty regarding the future stock price**
- **Time to expiration of the option**
- **The risk-free interest rate, which is the yield corresponding to a security with the same maturity of the option**
- **Dividends paid on the underlying asset**
- **The exercise price of the option**

Increases in the first four variables given above raise the option value. Increases in the exercise price of the option and in the dividends paid on the underlying asset lower the value of the option.

The underlying thought behind this approach is that financial options can be used to better estimate future payoffs of specific investments of the firm that can or cannot be made, like investments in R/D. Many authors defend the position that the DCF method is incomplete in the evaluation of investment opportunities and "Woolley and Canizzo (2005) recommend the use of the real option valuation to correctly determine the value of future possible investments", however, they recognize some difficulties in implementing the model among executives, especially due to the fact that executives are not used to it. "Leslie and Michaels (1997) state that real options valuation is a useful method, due to the fact of allowing some flexibility and recognizing the value of learning in the valuation of the company", contrasting with the static model of the Discounted Cash Flow Valuation. They also state that this model "seeks profits from the uncertainty and from the technological progresses", in contrast to the other approaches, that are generally more conservative in relation to future investments. There are two models of option pricing: the Black-Scholes model and the Binomial model.

In the specific case of Mota-Engil, the method will not be used in this paper because it is not a relatively easy model to apply for this specific valuation, since it will require difficult mathematical computations.

1.3 Asset Based Valuation

This method is not appropriate for the case of Mota-Engil because it "relies too much on accounting figures and does not focus on possible growth investments" (Damodaran, 2006). With this approach, the value of a business can be obtained through the analysis of the value that the market is willing to pay for the assets of the firm if they were liquidated today, which is called the Liquidation Value Method. Other option available in Asset Based Valuation to determine the value of a company is the Replacement Cost Method, which estimates the replacement value of the assets that the firm possesses at the moment. The Book Value Based Valuation that estimates the value of a business by examining the book values of the assets and of the equity on a balance sheet (Damodaran, 2006) is also an approach to estimate the value of a company within the Asset Based Valuation method. The Asset Based Valuation does not always correspond to the true value of a company and relying on accounting figures can be risky to properly evaluate a firm, especially in cases where the firms have good prospects of developing projects with good growth perspectives for the future.

1.4 Discounted Cash Flow Models

The mechanism behind the discounted cash flow models to determine the present value of a company is relatively simple. The process consists in determining the expected future cash flows of a firm and discounting them at a specific discount rate that reflects the level of risk of those cash flows and of the firm. Despite being somehow intuitive, the discounted cash flow models require a few sets of assumptions to determine the present value of a company, especially regarding the expectations of future possible growth rates. There are three main discounted cash flow models that are going to be analyzed in this paper:

- **Free Cash Flow to the Firm Model**
- **Free Cash Flow to Equity Model**
- **Adjusted Present Value Model**

1.4.1 Free Cash Flow to the Firm Model

The Free Cash Flow to the Firm can be defined as " after-tax earnings before deductible financing charges such as interest expense, lease rentals, and so forth plus all deductible non-cash charges (depreciation, deductible amortization, deferred taxes, etc.) and less new cash outlays for required capital expenditures and investment in net working capital" (Froot, 1997).

FCFF= EBIT (1-Tax rate) + Depreciation – Capital expenditure- ΔWorking Capital

1.4.1.1 Variables of the FCFF

- **EBIT**

In order to perform the valuation of a company, this variable has to be estimated for future time periods. This process involves forecasting revenues and operating expenditures based on future perspectives of the economies and of the industries or markets, where the firm operates.

- **Tax Rate**

The tax rate used in the FCFF formula can be a marginal tax rate or an effective tax rate, being the marginal rate the most commonly used tax rate.

- **Depreciation**

"According to Koller et. al (2005), there are three ways to estimate depreciations". The first option is to estimate depreciation based on the reports of the company and using their method of depreciating assets. The second option is to estimate it as a percentage of revenues and the last one is to calculate depreciation as a percentage of tangible assets.

- **Capital Expenditures**

Capital expenditures can be forecasted with the help of the historical accounting values in the balance sheet of a company. The other method used to estimate capital expenditures is to rely on the average reinvestment rate of a peer group of similar companies and use that rate to calculate the capital expenditures of the company that is being evaluated.

- **Working Capital**

It is given by the difference between current assets and current liabilities. If it is bigger than one, it means that the company is able to meet its short-term liabilities. As any variable in this formula, it has to be forecasted in the future and those predictions would be inevitably better if the current situation and future strategies of the company are transparent and reliable. The working capital definition will not be used in this dissertation. It will be used the definition of Non-cash working capital, which is basically the working capital, but "netting out all the interest bearing debt (long-term and short-term) debt, as well as cash and investments marketable securities from current assets" (Damodaran, 2002).

1.4.1.2 Value of the Firm

"The FCFF approach of estimating the value of a company is given by the discount of the expected future free cash flows of the firm by the weighted average cost of capital (Luehrman 1997)". This method requires special attention in respect to the future growth rate used to estimate the future cash flows of the firm and in perpetuity; the growth rate of the future cash flows should not be bigger than the growth rate of the economy. The growth rate used shall depend on the characteristics of the firm, namely, "the company's size, the historical growth rates or the competitive position in its industry" (Damodaran, 2005). Other important factor in this model is the number of different stages of growth

that are used in the valuation of the company, not forgetting that in perpetuity the reinvestment needs of the company have to be in accordance with the assumption of growth stability of the firm.

Non-equity claims are not included in the equity value of a company. Debt like bonds, short-term and long-term-debt, but also pensions of workers, operating leases or minority interests are examples of non equity claims and consequently, should be subtracted from the enterprise value, when performing the equity valuation of the company with this approach. The same happens with non-operating assets such as marketable securities, excess cash or subsidies to the company. Operating assets must also be subtracted.

After subtracting non-equity claims and non-operating assets from the enterprise value estimated with the FCFF approach, the equity valuation of the company is obtained.

1.4.1.3 Terminal Value

The terminal value component usually represents the majority of a company's value and in the estimation of the terminal value; the most sensible factor to take into consideration is the choice of the correct growth rate to use in perpetuity to calculate the terminal value. It is assumed that the "company in perpetuity will grow at a constant growth rate and that the capital expenditures of the firm should equal its depreciations in perpetuity (Kaplan and Ruback, 1995)". Having an accurate growth rate can be problematic and as a rule, this "growth rate should not be bigger than the expected growth rate of the economy where the company operates (Damodaran, 2008)". In order to have a terminal value of a company, predictions should be made regarding the future expected cash flows for a given time period, never exceeding 15 years (Ohlson and Xiao-Jun Zhang, 1999). The major drawback in the terminal value estimation is related to the impossibility of determining with complete certainty that technological changes will not influence the growth rates of the firm in the future.

1.4.2 Weighted Average Cost of Capital (WACC)

The cost of capital is an important variable in the Discounted Cash Flow approach. It varies depending on the free cash flows used in the valuation process. A company has two sources of financing. One source is to resort on debt; the other one is to use equity. The value of tax shields is generally included on the cost of capital because the cash flows do not incorporate those values and the "cost of capital must be computed with the market values of both sources of financing (Goedhart et al. 2005)".

The objective of every firm is to find the optimal mix between both sources of financing, so that a company could maximize its value. The WACC formula estimates the cost of capital that a firm has, when it uses both equity and debt. In order to estimate the WACC of a company, three variables have to be computed. The three variables are: the cost of equity, the after-tax cost of debt and the weights of debt and equity used in the funding process (Damodaran, 2002). Miles and Ezzel (1980) criticize the common WACC formula because it assumes a stable capital structure, which is something that does not

always hold. "Luehrman (1997) also states that it is unrealistic that both the cost of equity and debt are stable". Furthermore, he points out that the "estimation of the interest tax shields relies on weak assumptions and consequently, companies with more complex tax positions will be miss valued with the WACC approach". "Damodaran (2005) counter argues by saying that the WACC formula allows the change of debt levels over time and in those circumstances, continues to be an appropriate discount rate for the cash flows of the firm".

1.4.2.1 Cost of Equity

Cost of Equity= Risk-free rate + Beta × Market Premium

The Capital Asset Pricing Model (CAPM) is the most commonly used approach to determine the cost of equity of a firm, which is no more than the "appropriate rate of return of a given asset, assuming that the securities market is efficient and that the investors are risk-averse, always expecting a premium for the risk they take (Mullins, 1982)". The theory behind this model is that the only factor that can affect equity investments in the long term is the risk inherent to the market. This systematic risk is measured by a beta that can vary, depending on the risk of a particular asset in comparison with a specific market or portfolio of stocks.

According to the formula of the CAPM, a stock with a higher beta will have a higher expected return than the market. This formula is not one hundred per cent accurate and sometimes the returns are lower or higher than expected.

"One of the main problems of the CAPM is the negative correlation between market capitalization and systematic risk (Roll 1981)". Moreover, the assumptions behind the CAPM like perfect information in the markets, lack of transaction costs and the inexistence of a limit to both borrowing and lending are too unrealistic. Despite those limitations, Ang & Chen (2005) proved that CAPM was more than able to correctly estimate returns and even for a relatively long period of time. Other problem of the CAPM model is that "the model is not appropriate for companies with higher growth rates than the cost of equity and with irregular dividend payments (Mullins, 1982)". "Fama and French (1996) consider that the problem of the CAPM model is the lack of reliability considering the composition of the market portfolio". Despite these problems, the CAPM still is the most used model to predict stock returns and it is effective in "estimating opportunity costs of risky capital by the firms, identifying attractive stocks, evaluating performance (Zou, 2006)".

1.4.2.2 Risk-free rate

"According to Fernandez (2003), the appropriate risk-free rate for valuation purposes has to be the rate of the long-term default-free government bonds and the maturity of those bonds should be the same as the period of time used in the cash flows forecasts". Furthermore, it is important that "the risk free rate is expressed in the same currency as the market risk premium, in order to avoid inflation problems (Damodaran 2008)".

1.4.2.3 Equity Beta

The beta of a security is a parameter that measures the level of systematic risk, which is the "risk that cannot be eliminated by having a diversified portfolio (Rosenberg, 1995)". It is one of the variables included in the CAPM and "according to Rosenberg (1995) is determined by the uncertainty of future economic events and the response of the security to those events".

There are three alternatives to estimate the beta (Damodaran, 1999): the historical market beta, the fundamental beta and the accounting beta. Damodaran (1999) considers that there are three factors that might affect the estimation of the historical beta, namely, "the period of time, the return interval and the market index used". According to the author, "the beta of a firm depends on three factors: the type of business where a firm operates, the level of operating leverage of the firm and finally, it depends on the level of financial leverage of the firm".

The common practice to estimate a beta is to rely on the regression of a stock return against the return of a market portfolio, or the historical market approach to estimate the beta, but this result is dependent of the market index and of its composition, which might be dominated by some stocks. The second flaw of using the regression to estimate the beta concerns the fact of the beta being affected by the standard error of the regression and the final problem is the use of historical data to compute the regression and consequently, contributing to a biased beta, that does not take into consideration possible modifications of capital structure of differences in growth rates.

An alternative approach is to use the average beta of an industry as an expectation of the company's beta. Kaplan and Peterson, (1998) proved that this method was reliable by taking into consideration the "full information of the industry and all the relevant players that operated on it". However, this approach has the difficulty of accurately defining a peer group of similar companies. Even companies that are similar present some differences among them that might pose a problem in the estimation of a proper beta. "Kaplan and Peterson, (1998) add the fact that some important firms in the industries, where that company is present, might be left out".

The process of finding a perfect beta is almost impossible to be conducted, but there are mechanisms that help estimating it in a more correct way. For instance, "the market index used should be one that includes as many securities as possible, should reflect the level of diversity of the marginal investor and finally, it is recommendable that the index is market weighted (Damodaran 1999)". The period of time should be "adjusted according to the level of stability of the company and monthly return intervals should be used (Damodaran, 1999)".

1.4.2.4 Market Risk Premium

The market risk premium definition represents the extra return that the investors require to invest in riskier assets. "According to Damodaran (1999), in order to estimate the market risk premium, three

methods can be used: surveys to investors to obtain their expectations, analysis of historical values and analysis of the current market".

Fernandez (2009) defines 4 different concepts of market risk premium, which might be responsible for the variety of values that analysts estimate for the market risk premium, since analysts do not differentiate each type of market risk premium. The four concepts of market risk premium are:

- **Historical equity premium: historical differential return of the stock market over treasuries**
- **Expected equity premium: expected differential return of the stock market over treasuries**
- **Required equity premium: the incremental return of a diversified portfolio over the risk-free rate required by an investor.**
- **Implied equity premium: the required equity premium that arises from assuming that the market price is correct.**

The first concept is the easiest one to compute because it is observable, but also because it is equal for all investors.

There is a sensitive point regarding the market risk premium, which is the question of including or not a parameter regarding country risk. Damodaran (2008) does not recommend including a parameter of country risk because "the risk between countries is uncorrelated and because the investors that own the operations are also diversified in their portfolios". James and Koller (2000) defend the opposite and state that the "country risk premium should be included in the estimates of the cash flows". They argue that the "risk of emerging markets can be diversified if there is a global investment portfolio, that the risks are specific to each company and industry and the third reason is related to the error of adjusting the equity risk premium because sometimes the sovereign debt is riskier". The country risk premium can be given by the rating agencies through the spreads associated with those ratings, but also by the economical and political authorities of the countries, namely, through the country risk scores.

1.4.2.5 Cost of Debt

The cost of debt of a firm depends on the "riskless rate, the tax benefits of using debt and of the default risk of the firm, being the cost of debt generally measured by the company's bond ratings, which is a process that involves three steps" (Damodaran, 2002). The first one is to estimate the firm's debt and interest expenses. The second step is to compute financial ratios at each level of debt, in order to estimate the rating of the company and finally, after the default spread based on the rating of the company being added to the risk-free rate to get the pre-tax cost of debt, applying the marginal tax rate. After applying the marginal tax rate, the cost of debt is given (Damodaran, 2002).

1.4.2.6 Weights of Debt and Equity

The weights of debt and equity used by a company have to be correctly estimated, so that the cost of capital is minimized and to reach that objective, different values of debt and equity have to be weighted to calculate the minimum cost of capital (Damodaran, 2002). Relying on book values of Debt and Equity is not a recommended approach to estimate the minimum cost of capital of a firm (Fernández, 2003). It is preferable to use the market values of both equity and debt.

1.4.2.7 Cyclical Companies Valuation

When companies have a volatile performance, being highly affected by different cycles in their business, it means that the methods of valuing those companies become much more susceptible of being incorrect. It is recommendable "to look into these companies in the long-term and construct different scenarios, avoiding possible surprises that might affect the correct value of the company" (Goedhart et al., 2005).

Despite being relatively simple and commonly used, the FCFF is not exempt from defects. One of the arguments to criticize the FCFF technique is related to the influence that a volatile capital structure of a company might have on the reliability of the method. The FCFF is a good method when the capital structure is stable (Luehrman, 1997) but if it is not, new values of the WACC have to be estimated and that would be difficult to perform an accurate and correct valuation of a company.

1.4.3 Dividend Discount Model

The dividend discount model estimates the value of a company by the discount of expected future dividends at the cost of equity. In the Dividend Discount Model, assumptions are needed in relation to the growth rates of earnings and payout ratios. "The forecasted growth rate of dividends cannot be greater than the expected growth of the economy in the future and the growth rates of dividends and other measures of performance of the firm are expected to be equal" (Damodaran, 2006).

"The model is appropriate for firms that have stable growth rates over time" (Damodaran, 2006), which is not the case of Mota-Engil, so this variant of the Discounted Cash flow model will be discarded in this specific case. Many authors appreciate the model and "Foerster and Saap (2005) demonstrated in their study that the Dividend Discount Model is particularly effective to value the equity of a mature firm, with stable growth rates and dividend payments". However, "these two assumptions limit the applicability of this model" (Mullins, 1982). This model has been constantly developed to overcome its limitations, like the existence of a variant of the initial model that now takes into account the possibility of different stages of growth. The link between dividends and stock prices is relatively weak in the opinions of some authors. For instance, "Shiller (1981) has shown that stock price was much more volatile than dividends". The model does not take into account operational variables, which is a disadvantage relatively to the FCFF, but since the shareholders that have shares of the company might receive dividends or benefit from share buybacks, this model seems interesting in their optical. "The

major drawback of this model is when the level of leverage of a company is high and unstable" (Luerhman, 1997).

1.4.4 Free Cash Flow to Equity Model

The FCFE is the sum of all the cash flows that equity holders can claim. It is a method of valuation that "focuses on what the value of the company is after paying debt obligations" (Damodaran, 2006).

FCFE = Net Income - Net CAPEX+ ∆ Working Capital + New Debt – Debt Repayment

The FCFE is an alternative of the DDM because it assumes that the companies do not pay everything they can afford to pay as dividends. Like the DDM, it is a "good method to evaluate ownership claims (Luerhman, 1997)" because managers need to know not only the value of the investments their companies are going to participate together with other parties, but also the interests their companies have in the investments. Moreover, it is capable like the DDM of "measuring how the cash flows and risk of equity holders might be influenced by differences in the ownership structure of the company (Luerhman, 1997)".

This alternative of the Dividend Discount model fits very well in companies with high levels of debt, which is the case of Mota-Engil.

1.4.5 Adjusted Present Value Model (APV)

The APV model is an alternative solution to one major imperfection from the other Discounted Cash Flow models. That imperfection is the assumption that the capital structure of a firm is stable over the years. There is some controversy among different authors regarding capital structure issues. "According to (Fama and French, 2002), in the trade-off model, a company is capable of choosing its leverage target, but with the pecking-order model, the company is not able to do that". However, their studies regarding those hypotheses were inconclusive. "Luerhman (1997) defends that this model is particularly effective in the valuation of the operations of a company, like a business, a product, or a market".

The APV requires fewer assumptions than the FCFF and consequently, it is less vulnerable to errors. The APV is capable of estimating the value of an asset, but also to discover the origin of the value of that specific asset. It has the drawback of "requiring new predictions for the levels of debt of the company (Booth, 2007)", which can be more problematic in comparison with the WACC method.

Value of the Firm= $V_u + PV_{tx} + PV_{bc}$

There are three main components in the APV model. The first component corresponds to the present value of the firm financed only with equity. The second component is the present value of the tax benefits corresponding to a given level of debt that the company uses to finance itself; those benefits are the interest tax shields that arise due to deductions of interest payments. The third component is

the present value of expected bankruptcy costs that the firm has due to possessing that specific level of debt (Luerhman, 1997). In the end, the value of the company is given by the sum of these three parts. The first component of the APV is given by the discount of the expected free cash flows to the firm by the unlevered cost of equity. The second component demands some assumptions, like the possibility of variations in the tax rate and level of debt. "According to Cooper and Nyborg (2006) the appropriate discount rate of the interest tax benefits is the cost of debt. "Luerhman (1997) argues that to properly discount tax shields, a higher rate than the cost of debt should be used". The third part of the APV is the most difficult to estimate, due to the ambiguity in the values of probability of bankruptcy, usually measured with the interest coverage ratio and of the present value of bankruptcy costs, being both difficult to measure and consequently, representing a disadvantage of this model in relation to the WACC model.

1.4.5.1 FCFF VS APV

There has been a recent debate in the academic field regarding the comparison of these two models because they are relatively similar. Some authors state that the "two approaches under the same assumptions lead to the same value of the company like Jennergren (2008)". Other authors like "Oded and Michel (2007) argue that there are differences between APV and FCFF".

The APV is also more practical to value the company by the definition of a Sum-of-the-Parts valuation, which is better to value the company in each country where it operates. Moreover, in the APV each component of valuation is clearly specified, understating the criteria of value additivity. The critical point regarding the APV is the discount rate. For the equity part, the unlevered cost of equity is used, but for the tax shields, there is no consensus. Some analysts use the cost of debt and others use a higher rate to better reflect the risk involved. The terminal value of the tax shields is usually computed by using the same long-term growth rate of the unlevered part of the company. Comparing the two approaches, the "APV is better in situations where companies have an unstable capital structure, complicated tax positions and a complex strategy of funding (Luerhman, 1997)".

FCFF continues to be the preferred model to many managers due to its simplicity and because it became over the years the most used model to perform companies' valuation. Regarding its simplicity, it is inevitable that companies that aim a specific capital structure use it because the model fixes the capital structure of a company, however, to achieve that objective, the debt/equity ratio at market values changes and problems of circularity might appear, since it is ultimately this ratio that allows the estimation of the market values of debt and equity, essential for the final objective of having a fixed capital structure. Other disadvantage of the WACC model is related to the use of only one discount rate in the computation of the value of a company, assuming that rate supports all the risk a firm faces in its activities.

The APV has two main disadvantages according to Luerhman (1997). The first disadvantage is related to the fact that "income from stocks may be taxed differently when the investor files a personal tax return". The second disadvantage is that the model does not take into account "costs of financial distress, as well as other financial side effects". Miles and Ezzell (1980) state that the choice between these two models will depend on: "the exogeneity of the debt re-payment schedule and on the exogeneity of the leverage ratio in relation to the market values". An exogenous ratio of leverage seems implausible for the authors and when there is an assumption of an exogenous schedule of debt payments, "Miles and Ezzell (1980) defend the use of the APV, instead of the FCFF/WACC approach".

1.4.6 Excess Return Models

These models consist in determining the excess returns of a firm relatively to the book values. "Baran et al., 2007 state that the EVA is an approach that looks to the value of a company in the eyes of the owners of it and most importantly, looks fundamentally to the capacity of value creation that a firm might have". The EVA is appropriate to compare the excess returns over the cost of capital and the dynamic ROE in the case of excess returns in relation to the cost of equity of the firm. The models have the disadvantage of relying too much on the market, which is not always efficient and the other disadvantage of these models concerns the fact of not properly distinguishing the different business units that the firm might have.

EVA= (ROIC-WACC)* Invested Capital

These models, especially the EVA are considered to be simpler than Discounted Cash Flow models; "Burksaitiene (2009) states that the inputs used are the same in both methods".

1.5 Relative Valuation

Other approach to evaluate a company is the use of multiples. "In relative valuation, the objective is to value assets of a firm based on how similar assets are currently priced in the market. There are two characteristics of relative valuation. The first one is the standardization of prices in order to value assets on a relative basis and the second one is to find an appropriate set of comparable firms (Damodaran, 2002)".

The selection of comparable firms can pose a problem in relative valuation. It is difficult to find comparable firms in some cases. "According to Goedhart et al (2005), only firms with similar expectations of growth and return on invested capital should be compared". Other approach to the choice of comparable firms is the one used by Bhorjraj and Lee (2001). The authors suggest that "the choice of comparable firms should be a function of the variables that drive cross-sectional variation in a given valuation multiple, instead of the common approach of choosing comparable firms based on

industry match". The disadvantage of using a peer group consisting of firms of the same industry is that "those firms can have major differences in growth rates, returns on invested capital or in capital structures and due to that, defining the peer group only as firms inside the same industry can be problematic (Goedhart et al 2005)".

When properly used, "multiples can help a company to test its forecasted cash-flows, enable the comparison of a company's performance with the performance of its competitors and can also identify the key factors to succeed in a specific industry" (Goedhart et al, 2005).

There are many multiples available to realize a relative valuation of a company and "Goedhart et al (2005) specifies four principles to apply multiples in a proper way: the use of comparable firms with similar prospects for ROIC and growth, the use of forward-looking multiples, the use of enterprise value multiples and the adjustment of enterprise-value-to-EBITDA multiple for non-operating items like operating leases and pensions, which should be added to the enterprise value". "According to Fernandez (2001), multiples can be divided in three groups":

- **Multiples based on the company's capitalization (Equity value)**
- **Multiples based on the company's value (Equity and Debt values)**
- **Growth-referenced multiples**

Among the multiples based on the company's capitalization, there are multiples such as the Price Earnings Ratio (PER), the Price to Sales (P/S) and the Price to Book Value (P/BV). These ratios have the advantage of not considering debt, but it can also be a problem if the levels of debt of the company are too different from the levels of the firms in the peer group. In the category of the multiples based on the company's value, which are not influenced by the financing structure of the firm, there are multiples such as the Enterprise Value to EBITDA (EV/EBITDA) or the Enterprise Value to Sales (EV/Sales). The third group of multiples is the growth-referenced multiples, like the PEG or the Enterprise Value to EBITDA growth.

Besides these three categories, "Fernandez (2001) also refers relative or sector-specific multiples and emphasizes that these multiples have to be placed in a specific context, can be in respect to the firm's own history, with respect to the market or with respect to the industry". Regarding the valuation of Mota-Engil, a special focus will be given to two specific multiples: the Price to Earnings ratio and the Enterprise Value to EBITDA multiple.

1.5.1 Price Earnings Ratio

PE= Market price per share/Earnings per share

The PE ratio is the most widely used method of valuation (Source: Morgan Stanley Dean Witter Research), however, it is also one of the most misused and manipulated ratios. The PE ratio must be

consistently defined and variations in the definition of earnings should be avoided in the computation of the ratio. A major flaw of this multiple is that it is affected by the capital structure of a company. Additionally, it also "includes non-operating items in earnings, which may represent one-time events unnecessary in the valuation of the company (Goedhart et al, 2005)". "Damodaran (2002) refers that firms that have higher growth, lower risk and higher payout ratios, controlling for other variables, have higher PE ratios, but also states that it is important to control these fundamentals across countries, time and companies, so that this multiple can give a precise estimation of a company's value". "Lie and Lie (2002) found evidence supporting the fact that the PE multiple based on forecasted earnings is more accurate than a PE based on historical earnings". In the opposite direction of Lie and Lie (2002) is Sommer (2009), who states that a "PE based on historical earnings is more accurate than a PE based on forecasting earnings".

1.5.2 EV /EBITDA

EV/EBITDA= (Market value of equity + Market value of Debt- Cash)/EBITDA

"Férnandez (2001) argues that this ratio performs much better than PER in the majority of industries, including the construction sector". The Enterprise Value to EBITDA multiple can be an alternative to the P/E ratio, due to the fact of "not being so affected by changes in capital structure and depreciations (Goedhart, 2005)". Other reasons for the increasing popularity of this ratio are related to the fact of being a broader ratio, in the sense that "less firms have negative EBITDA then earnings per share and because it is more easily compared between firms with different levels of financial leverage, being a recommendable ratio for companies that have large investments in their activities (Damodaran, 2002)".

A report of Moody's Investors Service in 2000 stated some flaws that the ratio might have, namely the "fact of EBITDA not taking in consideration the reinvestment needs of a company, of being a wrong measure of liquidity or of ignoring changes in working capital".

1.5.3 DCF vs. Relative Valuation

It is not fair to think that these two approaches compete with each other, in order to perform the best evaluation of a company. The method used should be to estimate the value of a company with both approaches. Many authors argued in favor of this idea. "Goedhart et al. (2005) and Férnandez (2001) suggested that multiples should be used as a complement to the most common approach used to value a company, the DCF". Instead of substitutes, these two methods of evaluation should be understood as complements, despite DCF being more complete, it is important to compare the valuations of both DCF and multiples, especially because multiples give an important attention to market evaluation and on peer group comparison. Moreover, multiples do not demand as many assumptions as DCF valuation.

1.6 Cross-Border Valuation

Currently, the majority of the companies have the opportunity of developing a considerable volume of businesses in other countries. It can be acquisitions, projects with international partners, mergers and evaluating those activities is becoming increasingly important and it has to deal with some factors like "the choice of the currency to execute the analysis, the timing of discounting the foreign cash flows, the choice concerning the tax rate used (domestic or foreign), the estimation of the cost of capital and the risks involved in the cross-border activities (Froot, 1997)". "According to Froot, 1997 there are two methods to discount foreign currency cash flows. One is to discount the cash flows in the foreign currency; the other is to convert the cash flows to the home currency and then discounting them, fitting particularly well in cases where projects are very vulnerable to changes in exchange rates".

Cross-border valuation follows the same structure than conventional valuation, but in this type of valuation, there are special features like "different currencies, tax rates, legislation that requires some adaptations and the WACC method might be substituted by the APV or complemented with real options to better evaluate investments in foreign countries (Froot, 1997)".

1.7 Valuation in Emerging Markets

"Koller (2000) stated that his favorite valuation approach in emerging markets is to use the discounted cash flows, but constructing different scenarios to properly deal with the risk associated with operations in emerging markets, especially macroeconomic variables like inflation rates, growth rates of GDP, interest rates, among others".

When valuing operations in emerging markets, "the risks associated should be incorporated in the cash flows and not added to the risk free rate due to three main reasons: the first is that investors can diversify most of the risks associated with emerging markets, the second reason is that many of those risks differ by industry and are not uniform in all the industries of an emerging country and the final reason is that equity investments in a company can be lower than the risk associated with that specific country, for instance, investments in government bonds can be riskier than equity investments in corporations (Koller, 2000)".

2. Company overview

2.1 Introduction

Manuel António da Mota created Mota Engil in 1946 in Amarante. Mota-Engil is the current leader in the Portuguese sectors of civil construction and public works. Immediately after the foundation of Mota-Engil in Portugal, the company developed a branch in Angola. Currently, Mota-Engil is benefiting from the fact of being present in Angola since its foundation. The presence in Angola is a key success factor of the company nowadays and it is expected to continue to be in the future.

Mota-Engil SGPS, the holding of the Group is quoted on PSI-20, which is the most important index of the Euronext Lisbon, since 2005. The group is widely known for its presence in Portugal, but also in the other 19 countries where it operates **(Appendix 1)**. The Mota-Engil group has a portfolio of different activities, however, the three main areas where Mota-Engil operates are:

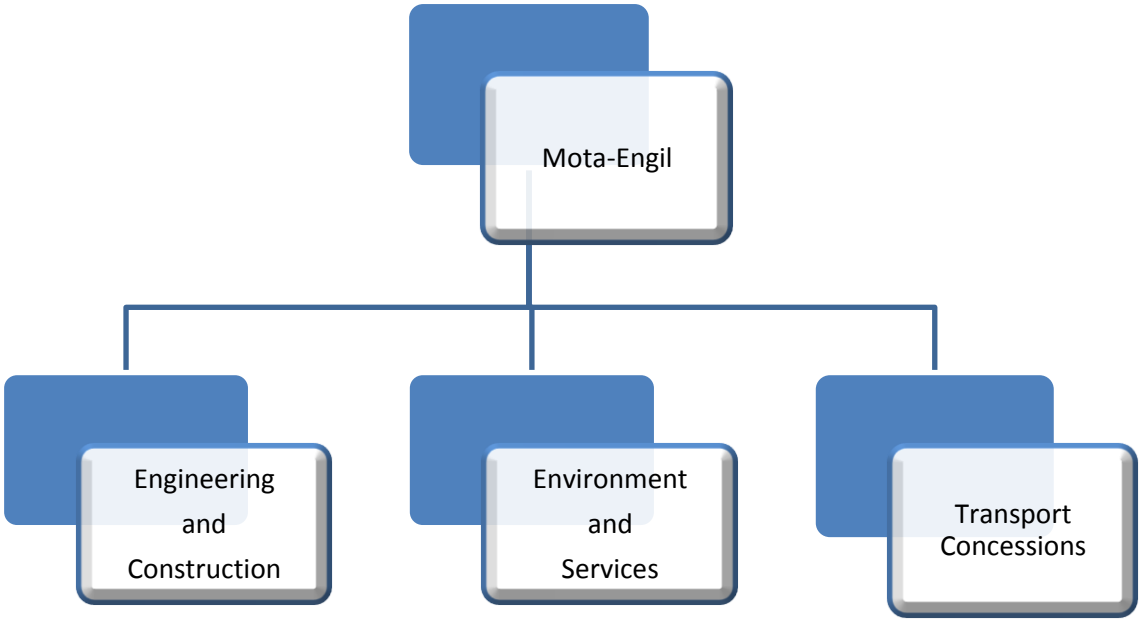


Figure 1-Business Structure of Mota-Engil

Major shareholders of Mota-Engil SGPS	
Mota Gestão e Participações	39,29%
Algosi- Gestão de Participações Sociais	14,92%
Privado Holding	5,06%
António Vasconcelos da Mota	2,45%

Figure 2- Major shareholders of Mota-Engil SGPS, SA Source: Euronext Lisbon

2.2 Mota-Engil: Engineering and Construction

Mota-Engil has the reputation of being one of the most important companies in the sector of Engineering and Construction in Portugal and in the other countries where it has construction projects. Mota-Engil has focused on four main areas of the engineering and construction sector:

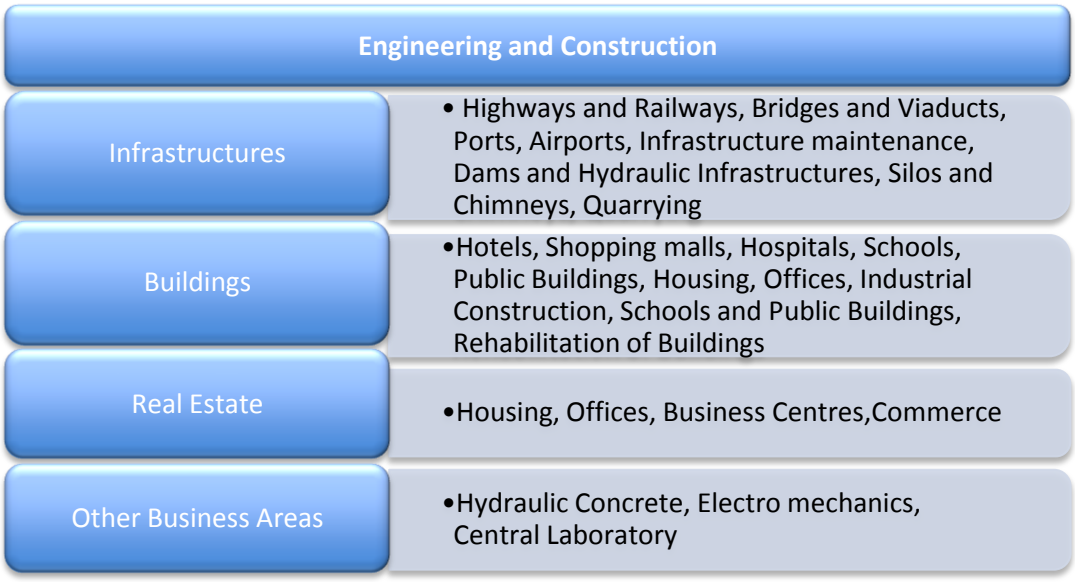


Figure 3-Engineering and Construction **Source: Mota-Engil**

2.3 Mota Engil: Environment and Services

In this segment, Mota-Engil has businesses in four major areas:

Waste	Water	Logistics	Multi-Services
• Solid urban waste and industrial waste collection and treatment • Urban cleaning • Used oils recycling and enhancement • Environmental Education	• Water and sanitation concessions • Management of water supply systems • Wastewater management and treatment	• Management of port terminals • Operation of road and rail terminals • Integrated logistics services • Carriage of goods by rail operations	• Buildings and facilities maintenance • Rehabilitation of pipelines • Landscape architecture • Design, construction and maintenance of green spaces and golf courses • Car park management • Operation of electronic markets • Finishing of mail and Direct mail

Figure 4-Environment and Services Source: Mota-Engil

2.4 Strategic Guidelines and Objectives of Mota-Engil for the Future

The strategy of Mota-Engil for the future is focused on four main pillars according to the company:

Figure 5-Strategic Guidelines and Objectives Source: Mota-Engil

Moreover, the company is in a permanent search for new businesses and high returns. For each segment, Mota-Engil has some guidelines that will probably be achieved in the future and that were taken into consideration for the valuation of the company in this dissertation.

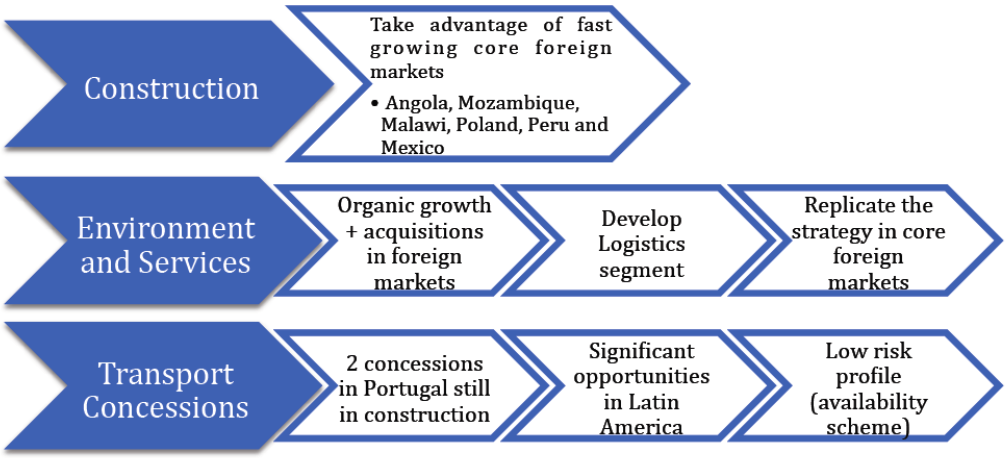


Figure 6-Future Perspectives for Mota-Engil Source: Mota-Engil

The management team of the company reinforces the fact that the company is on track to achieve its long-term goals, that the growth rate in Environment and Services accounts for small sized acquisitions and finally, that the level of leverage would be lower if the acquisitions turn out to not happen. In the dissertation, it was not assumed such an optimistic perspective, at least in relation to the forecasts of the future total turnover and EBITDA of the company **(Appendix 2)**.

2.5 Recent Performance of Mota-Engil

Highlights of Mota-Engil in 2010
- Total turnover of 2.005 €million.
- EBITDA and EBIT margins of 11,8% and 6,6%, respectively
- Net income of 40,1 €million
- Backlog of €3.300million
- Corporate debt (with recourse) amounted to 907 €million

Figure 7- Highlights of Mota-Engil in 2010 Source: Mota-Engil

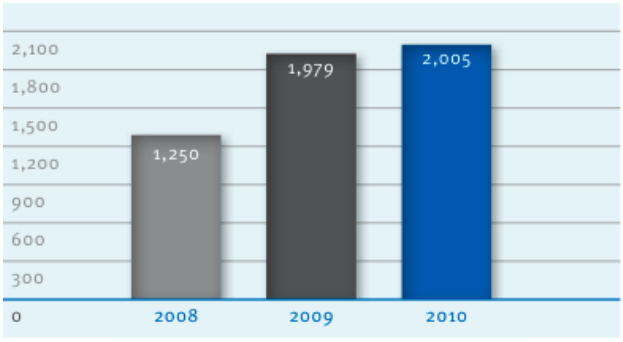


Figure 8-Turnover Group
Source: Mota-Engil

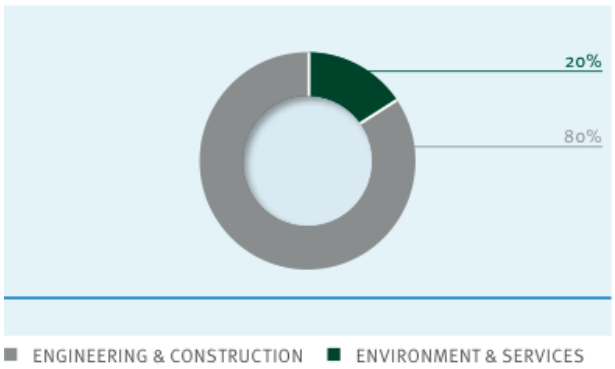


Figure 9- Turnover Business Areas
Source: Mota-Engil

The turnover of the group saw an increase in 2010 of approximately 1.3% in relation to 2009. The Engineering and Construction segment represents nearly 80% of the total turnover of the group and the Environment and Services segment nearly 20%. In the forecasts of the revenues of both segments, it was assumed that the current weights will be maintained in the next decade because despite the growth that the segment of Environment and Services has seen in the previous years, the Engineering and Construction segment still is the segment where Mota-Engil has its main competitive capabilities. The countries where Mota-Engil expects to develop the Engineering and Construction segment assure the company that this segment will also grow in the future at considerably high growth rates. The same line of reasoning applies to the Environment and Services segment, where the expectations of growth are also high for the next decade.

The EBITDA of the group in 2010 also increased, mainly because the EBITDA margin of Engineering and Construction improved to 10.2% in 2010, when in 2009 it was only 7.9%. In 2010, the EBITDA increased approximately 21% in comparison with 2009. However, due to the higher volume of revenues generated by the Engineering and Construction segment, the contribution for the EBITDA of Engineering and Construction is still higher than the EBITDA of Environment and Services segment. In 2010, the EBITDA of Engineering and Construction was 67% of the total EBITDA of the company. Environment and Services contributed for 33% of the total EBITDA of Mota-Engil.

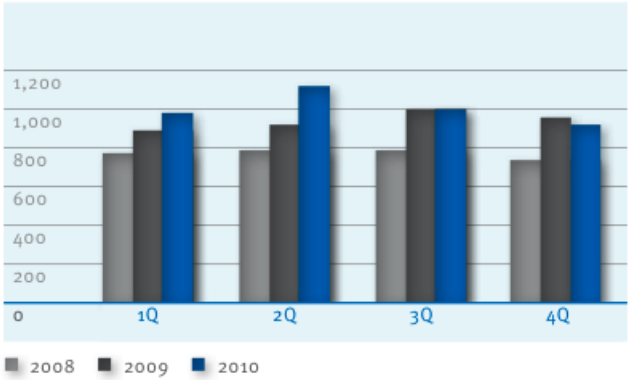


Figure 10-Net Debt Excluding Non-Recourse
Source: Mota-Engil

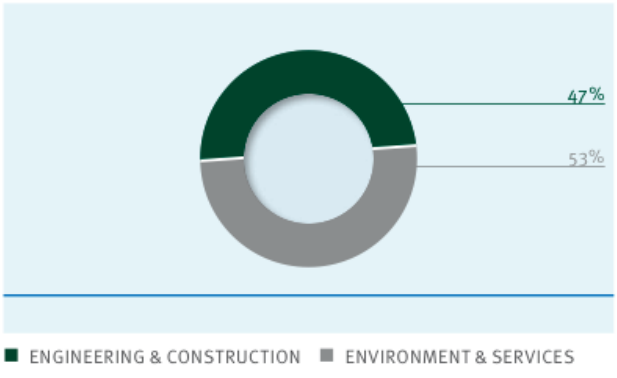


Figure 11-Capex
Source: Mota-Engil

One of the major weaknesses of Mota-Engil is the high level of Debt that the company possesses. Net Debt remained relatively constant in relation to 2009. In 2010, the Net Debt of Mota-Engil amounted to 1.015€ billion, in comparison with 908€ million in 2009. The Net Debt of the Engineering and construction segment was 303€ million in 2010 and the Net Debt of the Environment and Services segment was approximately 445€ million.

In relation to CAPEX, the total amount in 2010 was 161€ million. The Environment and Services segment had 83€ million in CAPEX and the segment of Engineering and Construction 75€ million. In the time period of 2011-2020 used in this Dissertation, it was assumed that the total amount of CAPEX would decrease in comparison with recent years.

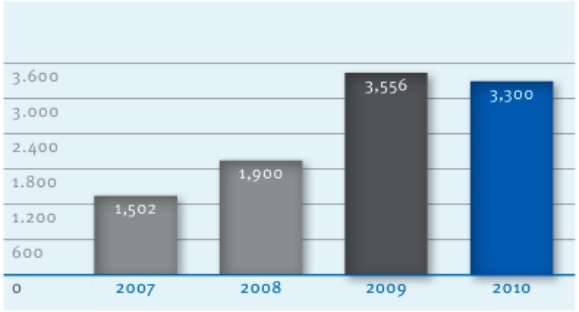


Figure 12-Order Book
Source: Mota-Engil

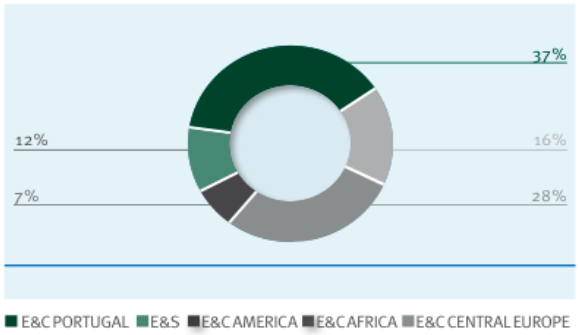


Figure 13-Order Book
Source: Mota-Engil

The order book in December of 2010 amounted to 3.3€ billion. From those 3.3€ billion, 2.9€ billion were from the Engineering and Construction segment, since Environment and Services is only related with the provision of services contracts in the Waste and Multi-Services sectors. The weight that Peru and Mozambique have in the order book of the company increased in 2010 and compensated the reduction in the Portuguese construction segment.

3. Engineering and Construction Overview

3.1 Mota-Engil: Engineering and Construction in Portugal

Mota-Engil is the leader of the Portuguese construction sector. Portugal accounted for 42% of Construction revenues and 26% of the Construction's EBITDA of Mota-Engil. The sector is currently in a deep crisis, which is something understandable due to the fact of the country being in a very difficult financial situation **(Appendix 3)** too. The Portuguese construction sector has been in crisis since a few years ago and the perspectives for the near future are not optimistic. The three main problems identified by Mota-Engil in this sector in Portugal are: low demand, excessive installed capacity and low operating margins. As a matter of simplicity, the activities of Mota-Engil in this sector in Ireland and Spain are also included in the business segment of Portugal, since they have a residual weight on the total turnover of the company.

In Portugal, this activity continues to be dependent of the public investments and the Portuguese government will have some difficulties boosting this sector in the following years, due to the need of stabilizing the public finances **(Appendix 3)**. It has already faced a contraction in public investments in the year of 2010. Especially negative is the fact of the residential-building construction segment being the most affected by the financial crisis. Unfortunately, it is natural that when a country faces a financial crisis with consequences for the banking sector, families have more difficulties in obtaining loans to buy houses. The lack of confidence and the unemployment rate are also factors affecting the decrease in demand for housing in the previous years, a trend that has a good probability of being accentuated in the next years in Portugal. The private investments in the segment of non-residential buildings also decreased, as a consequence of the financial crisis in the previous years. However, the public investments in this segment offset a little bit that reality in the past years, mainly due to the school-buildings rehabilitation program done by "Parque Escolar".

The Portuguese construction sector has been highly affected over the recent years by the poor economic performance of the country. In fact, the level of investments in this sector has decreased considerably over the years, both private and public investment. In 2010, it decreased 5.8% according to FEPICOP and it prolonged to nine the number of years that it has been decreasing. The production of the sector also decreased by the ninth consecutive year and in 2010, the estimated decrease was around 6.5% (Source: FEPICOP). The accumulated decrease in this sector is now of 35% (Source: FEPICOP). In **Appendix 4,** reality of the Portuguese construction sector is further developed.

Structure of the Portuguese Construction sector in 2010 (%of Total Revenues)	
Civil Engineering	**46%**
Residential	**29%**
Non-residential (private)	**16%**
Non-residential (public)	**9%**

Figure 1- Structure of the Portuguese construction sector Source: FEPICOP

3.2. Mota-Engil: Engineering and Construction in Central Europe (Poland)

Regarding Central Europe, Mota-Engil has operations in Romania, Poland, Czech Republic, Slovakia and Hungary **(Appendix 3).** However, it is the presence in Poland that is most important for Mota-Engil. In Poland, the company expects to grow in the segment of Engineering and Construction, especially in highway infrastructure **(Appendix 5)**. According to the consolidated report of the company, three main factors have influenced the high growth in this segment in Poland and will continue to influence in the next years: the investments for the EURO 2012, investments financed by the EU and the growth of the property market. For this region, one of the objectives of Mota-Engil is to develop the residential segment (highly affected by the financial crisis) in the most important cities of the countries in Central Europe like Warsaw, Prague or Bratislava. Central Europe is becoming very important for the strategy of Mota-Engil, due to the expected growth rates in the segment of Engineering and Construction in those countries and it is even more important because the Portuguese market in this segment is stagnant.

Mota-Engil has been conducting a policy of proximity with regional customers and in 2010, Mota-Engil started operating in Lubuskie and Slaskie. The field of operations of Mota- Engil in Poland has now two more regions. In 2011, the company will focus its operations in Poland on the homebuilding sector, starting the third stage of the Slotysowska and the second stage of the Devonska II projects, with construction beginning in the second term of 2011.

Highlights of Mota-Engil in Poland (2010) and factors influencing the future performance of the company in this region:
- Operations in Poland and Czech Republic: revenues of €239 million 2010 (15% of Construction Revenues and 5% of Construction EBITDA)
- Eastern Europe is short of decent roads, Poland most of all. It has fewer kilometers than even Slovenia, a country one-tenth its size (Source: The Economist).
- Poland has currently 916 kms of motorways (23 kms per million inhabitants as compared to 271 kms per million inhabitants in Portugal)
- GGDKiA, the Polish road infrastructure authority should double capital expenditure to PLN 28 billion in 2011
- Spain, a country smaller than Poland in size, built 11.000 kms of motorways since 1986

- Poland-rising margins
- Poland represents 79% of the total Turnover of Mota-Engil in Central Europe (2010)

Figure 2- Highlights of Mota-Engil in Poland Source: Mota-Engil

3.3. Mota Engil: Engineering and Construction in Africa

In Africa, Mota-Engil is present in these countries: Angola, Mozambique, Malawi, Sao Tomé and Príncipe and Cape Verde **(Appendix 3).** Angola is a country very important for Mota-Engil, not only because of historical reasons, since the company is there since 1946, but also because it is a country where the company expects to increase its revenues in this segment. Malawi, Mozambique and Cape Verde are also countries where Mota-Engil expects good perspectives of growth, especially in highway infrastructure. Mota-Engil has the advantage of having a very good reputation in these countries, especially in Angola and that factor is important for the strategy that the company wishes to implement in this geographic area.

In Angola and despite the financial crisis, the perspectives of future growth of the company are optimistic and Mota-Engil will try to diversify its operations, targeting other segments of the Engineering and Construction sector. Moreover, the backlog also indicates that Angola will probably grow in importance for Mota-Engil. Malawi, Cape Verde and Mozambique are important countries for the strategy of Mota-Engil, especially in the highway construction segment. The backlog is currently high, around 447€ million and the company has already built a strong reputation in those countries, so the perspectives of growth in those countries are also very optimistic. Mota-Engil, for instance, saw in Mozambique in 2010 a major increase of its turnover, due to the construction of the Olympic village and swimming pools for the 10th African Games in Maputo, the Tete River Project or the rehabilitation of a highway with 84 km length, just to mention some of the projects of Mota-Engil in Mozambique.

Highlights of the performance of Mota-Engil in the recent past and factors influencing the future performance of the company in the region:
-65 years of experience in Angola
- Revenues of €626 million in 2010 (39% of division's Revenues and 66% of EBITDA)
- Angola has been one of the fastest growing economies in the world
- Projects to build 12.000 km of roads and 1.500 km of bridges until 2012
-Estimated public CAPEX of €3 billion
- Incorporation of Mota-Engil Angola in October 19th 2010: new partnership with Sonangol (51% of the stake belongs to Mota-Engil).
- Significant growth expected in Mozambique and Malawi for the coming years

Figure 3- Highlights of Mota-Engil in Africa Source: Mota-Engil

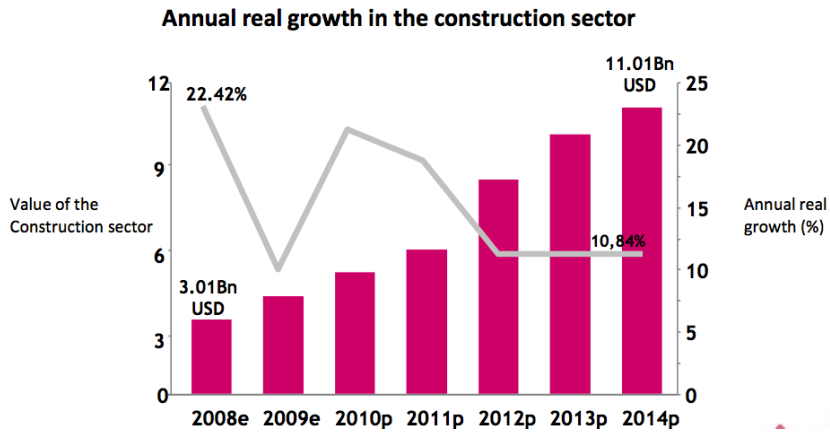


Figure 4- Annual real growth in the Angolan construction sector; Source: Millennium BCP

3.4. Mota Engil: Engineering and Construction in Latin America

In the segment of Engineering and Construction, Mota-Engil has operations in Mexico and Peru **(Appendix 3).** Mexico and Peru are two countries, where the operations in this segment have been performing very well and Mota-Engil has good perspectives of developing future works in those countries, especially in Mexico where the government has a program of infrastructure development (2007-2012 National Infrastructure Program) with a total value of €60 billion. In Peru, the construction sector is expected to increase around 8,7% annually between 2010 and 2013. The segments where both public and private investments are going to be made in the construction sector are: transport infrastructure, housing and the energy sector. (Source: www.andina.com.pe)

Simultaneously, Mota-Engil is developing its businesses in America, by trying to enter in countries like Colombia and Brazil, countries with considerable growth rates in the previous years, especially in the segment of Engineering and Construction.

Highlights of the performance of Mota-Engil in the last year and future factors that might influence the performance of the company in the future:
-Unique growth prospects
- Operations in Peru and Mexico (acquisition of Idinsa in 2010)
- Group is building two motorway concessions (Mexico)
- Activity in Peru started with earth movement contracts for the mining industry (copper and gold) and was recently extended to road construction
- Looking for acquisitions of small sized companies in Brazil and Colombia

Figure 5- Highlights of Mota-Engil in Latin America Source: Mota-Engil

4. Environment and Services Overview

4.1. Waste Management

Mota-Engil has the leading position in the sector of waste management in Portugal. Based on the Suma subgroup **(Appendix 6)**, the company has achieved diversification and expansion of its businesses to other countries, especially in Central Europe, Africa and Latin America (particularly in Brazil, a country that will improve the revenues of this segment in the next years). Besides the internationalization process, the company wants to diversify its operations in this segment and as consequence; Mota-Engil will focus on industrial waste and in the treatment market on the near future. In Portugal, the company faces some problems, particularly the stagnation of the business and the low level of privatization in the sector, which turns out to be obstacles to the growth strategy designed by the company in the waste segment. However, Poland (Ekosrodowisko), Angola (Vista Waste Management) and Brazil (Geo Vision) represent opportunities for the company in this business segment, a strategic one for the company. Mota-Engil is always studying opportunities in other markets for possible business operations, especially due to the increasing worldwide concerns in relation to the environment.

Highlights of Mota-Engil in the Waste Management segment
• Market leader in Portugal
• Revenues increased by 6% in 2010 to €119 million, representing 36% of the E&S revenues
• The EBITDA margin was 27% in 2010, contributing for 48% of the E&S EBITDA
• High rate of contract renewals
• SUMA has a 54% market share in the Portuguese market of collection of solid urban waste and urban cleaning
• The level of privatization in Portugal (37%) is still low compared to Spain (80%)
• Mota-Engil started exploring opportunities in Eastern Europe and Angola
• Internationalization is already responsible for 20% of the total turnover of the Waste Management segment

Figure 1- Highlights of Mota-Engil in Waste Management **Source: Mota-Engil**

4.2. Water Distribution

Based on the subgroup Indaqua **(Appendix 7)**, Mota-Engil is the biggest private player in the Portuguese water concessions and the second in the Portuguese sewerage services. Abroad, Indaqua controls Vista Water in Angola. As in other business segments, the Portuguese market has not been growing and the company is looking for possible opportunities in the Brazilian and Peruvian markets. However, due to the overheating of the economic conditions of those countries, Mota-Engil does not want to make investments that represent a high risk for the company. For instance, Brazil due to the large amount of public investments in basic sanitation in the upcoming years is a market that Mota-Engil is very interested in investing. The investment in 2010 in this segment amounted to €33 million and in 2011, Indaqua expects to compete in all the tenders of Portuguese concessions.

Highlights of Mota-Engil in the Water Distribution segment
• 5 concessions in Portugal that represent 20% of market share
- Santa Maria da Feira: 50 years concession (1999-2049); 160.000 clients; total CAPEX of €148 million
- Santo Tirso/Trofa: 35 years concession (1999-2034); 128.000 clients; total CAPEX of €31.5 million
- Fafe: 25 years concession (1996-2020); 55.000 clients
- Matosinhos: 25 years concession (2007-2032); 205.000 clients; total CAPEX of €67 million
- Vila do Conde: 40 years concession (2007-2047); 93.000 clients; total CAPEX of €102 million
• Only 22% of the Portuguese population is served by private companies
• Urgent need to invest in the network should work as a catalyst to accelerate privatization of the Portuguese sector

Figure 2- Highlights of Mota-Engil in the Water Distribution segment Source: Mota-Engil

4.3. Overview of the Portuguese water and waste sectors

The water and waste sectors have different management models. In fact, the main division is between State-owned systems and municipal or intermunicipal owned systems. Below, it can be seen the different types of management models of both sectors.

Management models in Water and Waste services		
1. Management models in State owned systems		
Model	**Operator**	**Collaboration type**
Direct management	State (there is no case)	Not applicable
Delegation	State-owned company (EPAL is the only example)	Not applicable
Concession	Multimunicipal concessionaire	Participation of State and municipalities in the share capital of the concession
2. Management models in municipal or intermunicipal owned systems		
Model	**Operator**	**Collaboration type**
Direct management	Municipality	Not applicable
	Municipalized services	Not applicable
	Asscociation of municipalities	Constitution of a collaborative public management body, in which several municipalities take part
Delegation	Company established in partnership with the State	Participation of State and municipalities in the share capital of the concession
	Municipal owned company	Participation of several municipalities in the share capital of the concession, however, there may be a minority share of private companies
	Parish or users association	Agreements or contract programs between the municipality and parish or users association
Concession	Municipal Concessionaire	Public-Private Partnership (municipality or municipalities and other private operators)

Figure 3- Management models in Water and Waste services **Source: RASARP 2009**

The Portuguese reality is somehow difficult for private companies, since the level of privatization in the industry is still low **(Appendixes 8, 9, and 11).** Both sectors are divided in bulk and retail. In Portugal, where Mota-Engil is particularly active in these segments, the "multimunicipal" systems are responsible for the bulk activity and the municipal systems for the retail activity. The activities included in the retail and bulk segments are: drinking water supply, wastewater management and municipal waste management. The drinking water supply services in the bulk segment do the abstraction, treatment and transport of water to the retail system that is then responsible for distributing the water to the population. The wastewater management service is responsible for the collection, transportation and treatment of urban wastewater. Finally, the municipal waste management takes care of retail activities like the collection and transportation of waste done mainly by municipal systems and in the bulk

component, municipal waste management takes care of the storage, recovery and elimination of the domestic waste **(Source: RASARP 2009).**

In 2009, the share capital of the water and waste sectors in Portugal was €1072 million. The multimunicipal concessions have the largest share with 51% of the total share capital, followed by the municipal and intermunicipal companies with 46% and municipal concessions with 3% of the share capital. Water services represent 78% of the share capital, waste services have 9% and companies that provide both services account for 13% of the share capital of this industry **(Appendix 11)**.

The multimunicipal concessions of the water segment had a turnover around €461 million, an increase of 10.2% in relation to 2008 (similar to the average annual growth rate in the period 2002-2009). The municipal concessions of water services had approximately €203 million of turnover in 2009, an increase of 21.4% in comparison with 2008 (average annual growth rate for the period 2002-2009 was 9.7%) and the multimunicipal concessions of the municipal waste services had a turnover of €165 million, a growth rate in 2009 of 3.8% in relation to 2008 (average annual growth rate for the period 2002-2008 was 9.4%)**. Appendix 12 provides in detail more information about the turnover of these two sectors.**

Key Factors of the Industry

Threats
• Over-optimistic estimates for service demand;
• Oversized infrastructure for actual service need;
• Significant cost divergence in the implementation of investment plans;
• Accumulation of billing deficits for non-compliance with the minimum payments established in contracts;
• Accumulation of large outstanding balances with low recoverability from the municipalities
• The impact of new technology options or new investments, approved or imposed by authorities, not originally planned in the concession agreement

Figure 4- Threats of the Portuguese water and waste sectors Source: RASARP 2009,

Threats for the operators of Municipal concessions of water services:
• Over optimistic estimates for service demand;
• Delays in the conclusion of investments.

Figure 5- Threats for the operators of Municipal concessions of water services Source: RASARP 2009

Threats for the operators of Multimunicipal concessions of Municipal waste services:
• Anticipation of the depletion of landfills;
• The definition of the geographical distribution of new treatment units;
• High level of municipal debt;
• New technology options unforeseen in the concession contracts

Figure 6- Threats for the operators of Multimunicipal concessions of Municipal waste services

Source: RASARP 2009

Future Perspectives and limitations
• There has been a tendency for growth in the level of activity in the multimunicipal concessions of water services, even though there is some concern regarding economical and financial sustainability;
• There has been a slowdown in the growth of municipal concessions of water services, though with the entry of new concessions it is predicted that this tendency will be reversed;
• The multimunicipal concessions of municipal waste services is generally in a state of maturity, generating results that allow operators to face the challenges of introducing new technology in waste management.

Figure 7- Future perspectives of the water and waste sectors Source: RASARP 2009

4.4. Logistics

Tertir, the subgroup of Mota-Engil is the leader of the Portuguese market of port terminal operations (Lisbon, Leixoes, Aveiro, Setubal) and among other activities, it is the co-promoter of a logistics platform located in Poceirao, that will serve Lisbon, the new airport and the ports of Lisbon, Sines and Setubal. Abroad, Mota-Engil is present in some other countries and in Peru, it has the concession of the Paita port. The Portuguese market in the Logistics sector has been performing relatively well, which is something excellent, due to the difficult situation of the country, but justified by the increase in exports of Portugal. Angola is also a market with very good perspectives of growth in the future, especially due to the activity of Sonauta, the company of Mota-Engil responsible for the coastal shipping between the ports of Angola. However, not everything is going well for Mota-Engil in this sector. The imbroglio with Liscont in relation to the concession of the Alcantara port is not solved yet and the company is currently fighting for its rights, arguing that it is unconstitutional to cancel the right of exploring that concession until 2042.

The structure of the Tertir group is subdivided in four major segments. The first segment is the segment of the port terminals, where it is included the concessions of the ports of Lisbon, Sines, Figueira da Foz or Leixões. Intermodal transport is other of the divisions of the group, but it is in the segment of freight

forwarder that Tertir has operations all over the world. Angola, Mozambique and Spain are some examples of countries where Transitex (one of the companies that belong to Tertir) has operations. Finally, Tertir possesses the segment of Logistics Platforms, where the Poceirão platform is included. The Logistics segment is expected to increase in future years because it is an activity intimately connected with the exports and the Portuguese exports are expected to increase in the next years.

Highlights of Mota-Engil in the Logistics segment:

- Market leader in ports in Portugal
- Concessions in the main Portuguese ports
- This segment represented 48% of the division's revenues and EBITDA
- Complementarities with rail cargo transportation and logistic platform of Poceirao (dry ports)

Figure 8- Highlights of Mota-Engil in the Logistics segment Source: Mota-Engil

The Portuguese government aims to develop a logistics platform that would enable the country to improve its economic relations with other countries. By developing the logistics infrastructure, it turns out to be easier to increase the level of exports of the country. Mota-Engil is in a privileged position to benefit from the future development of the Portuguese Logistics segment, since it is the market leader of the sector. Despite having four major segments, it is on the ports segment that Tertir has the majority of its revenues and as matter of simplicity, the future cash flow projections of this dissertation in the Logistics segment will be almost entirely based on the future activity of Tertir in the Portuguese ports.

4.4.1 Portuguese Logistics segment

Unfortunately, the Logistics segment continues to be far behind from the Logistics segments of other European countries and particularly, small and medium enterprises are highly affected by that reality. According to the Portuguese government, it is the Logistics activity related with the production process that is still underdeveloped. The major problem of not developing the Portuguese Logistics segment is the loss of competitiveness of the Portuguese companies. The inexistence of a network of logistics platforms is something that should be modified, especially because the EU is promoting the establishment of logistics platforms in the countries that belong to the EU. The Portuguese economy is now facing a very difficult situation and many public works were suspended or delayed, like the TGV. That factor is once again a problem in the future development of a strong Logistics segment in Portugal.

4.5 Multi-Services

This segment continued to increase in 2010 and Mota-Engil has a variety of companies in this segment, like Manvia in the buildings and facilities maintenance, Vibeiras in landscape architecture, also present in Angola and Mozambique, or Emsa and Parquegil in car park management.

5. Methodology used for the Equity Valuation of Mota-Engil

The method used to evaluate Mota-Engil consisted in a sum of the parts valuation, using the Discounted Cash Flow (DCF) model. The DCF was used to evaluate the segments of Engineering and Construction and of Environment and Services. For each segment, different assumptions were used and in the end, the final result of the company will be a reflex of the sum of the valuations of each segment of Mota-Engil. For the transport concessions valuation, the model used was also the Discounted Cash Flow, however, in the case of the transport concessions, it was used the Free Cash Flow to Equity. For the Engineering and Construction and Environment and Services segments, it was used the Free Cash Flow to the Firm. The position that Mota-Engil holds in Martifer was valued according to the market price of the company and the property that the company holds was valued at book value. Finally and as a way to infer if the value estimated for the company was appropriate, it was conducted a relative valuation of the company using two multiples (the PER ratio and the EV/EBITDA ratio).

The main objective of evaluating the company is to obtain a price target for Mota-Engil and then, obtaining a final recommendation for the company. It was bearing in mind with this principle that the whole company valuation was performed. Moreover, a comparison between this Dissertation and an Investment Banking equity valuation of Mota-Engil was conducted, highlighting the major differences and the assumptions used by both approaches.

6. Variables used in the Dissertation

6.1 Revenues of Engineering and Construction

In order to achieve a realistic scenario regarding future revenues of Mota-Engil in the different countries and geographic segments where the company's Engineering and Construction sector operates, some key drivers were taken into consideration. The first key driver used to estimate the revenues were the values of GDP growth rates provided by the IMF of the different countries where the company operates. The Engineering and Construction sector is intimately related with the evolution of national GDP of the different countries, so it was this variable that was most taken into consideration for the estimates of the revenues.

The second factor influencing the estimates for the revenues was the historical performance of Mota-Engil in each country and region. Thirdly, special attention was also taken in relation to the past evolution of the Engineering and Construction sector in each country. The African and the Latin countries represented a challenge since there is not much historical information. In relation to the African countries, more importance was given to the historical performance of the company and also to the economic affinity of those countries with Portugal. In relation to Mexico and Peru, the GDP growth

rates were the main drivers to estimate the revenues.

Finally, the last factor influencing the values computed for the revenues were the future perspectives of the sector in each country. Fortunately, only in Portugal the perspectives are negative for the sector. In the other countries, there are signs going in the direction of the development of infrastructural structures and consequently, all countries where Mota-Engil operates in this segment are expected to grow in the next decade.

6.1.1. Revenues of Mota-Engil in the Portuguese Engineering and Construction sector

The first assumption used to estimate the revenues for the Portuguese Engineering and Construction segment was to not rely too much on historical values and being particularly careful about the values corresponding to the years of 2008 and 2009, which do not match the tendency of the engineering and construction sector in Portugal. The reason for not relying too much on the performance of Mota-Engil in 2008 and 2009 is related to the fact that those years were years where the "Parque Escolar" construction schools were put in place and contributed for the good performance of Mota-Engil.

Other assumption was to consider the perspectives for the year 2011 of the FEPICOP **(Appendix 4).** Over time, the opinions of the entrepreneurs associated with the engineering sector in Portugal were reliable estimates of what really happened in those years and since only the perspectives for 2011 are available, the estimate of the performance of Mota-Engil in 2011 was mainly influenced by that report. Since the FEPICOP estimates a decrease of around 5% in the Portuguese construction sector in Portugal, the estimate provided in this paper also expects that Mota-Engil will decrease its revenues in Portugal in 2011. However, the perspectives were reviewed downwards since the country is facing a sovereign debt crisis and it is implementing some restrictive policies enforced by the IMF, the European Comission and the European Central Bank. The FEPICOP report did not take that fact into consideration in their estimates.

For the time period between 2012 and 2016, the key driver to estimate the revenues for the construction sector in Portugal were the estimates for the GDP growth rate of Portugal, provided by the IMF **(Appendix 3)**. Since the perspectives for the GDP growth rate are not too optimistic, the revenues estimated assumed that Mota-Engil would not increase its revenues until 2017, since the economic growth of the country is modest. Obviously, the GDP growth rate was the main driver, but always taking into consideration that the engineering and construction sector in Portugal has been decreasing in volume since 2002 and the expectation is to continue to decrease. The estimates present lower growth rates of revenues for the years of 2011 and 2012. Those years will be years of economic recession in Portugal, affecting the performance of Mota-Engil, since it is a company highly dependent of the public component of the non-residential building segment. From 2013 until 2017, the revenues will gradually decrease at a lower level until 2017, being in accordance with more optimistic scenarios regarding the

GDP growth rates in perspective for Portugal. From 2017 to 2020, a moderate increase in the revenues was assumed. Throughout all the estimates regarding the Portuguese Engineering and Construction segment of Mota-Engil, the main assumption behind the calculus was the fact that this sector has been decreasing over the past decade and according to the answers provided by FEPICOP, the tendency will continue to be of reduction of the volume of the sector, which will obviously affect Mota-Engil, as well as all the other companies of this sector in Portugal.

The amount of revenues of the Portuguese construction sector for Mota-Engil was assumed to be relatively stable from 2013 to 2020. It was assumed that the level of revenues seen in the years of 2008 and 2009 will decrease, due to the lack of public works that is expected in the Portuguese construction sector in the next few years and most important than that, it was assumed that the level of revenues of the Portuguese construction sector would return to the level of revenues of 2007, previously than the "Parque Escolar" construction project.

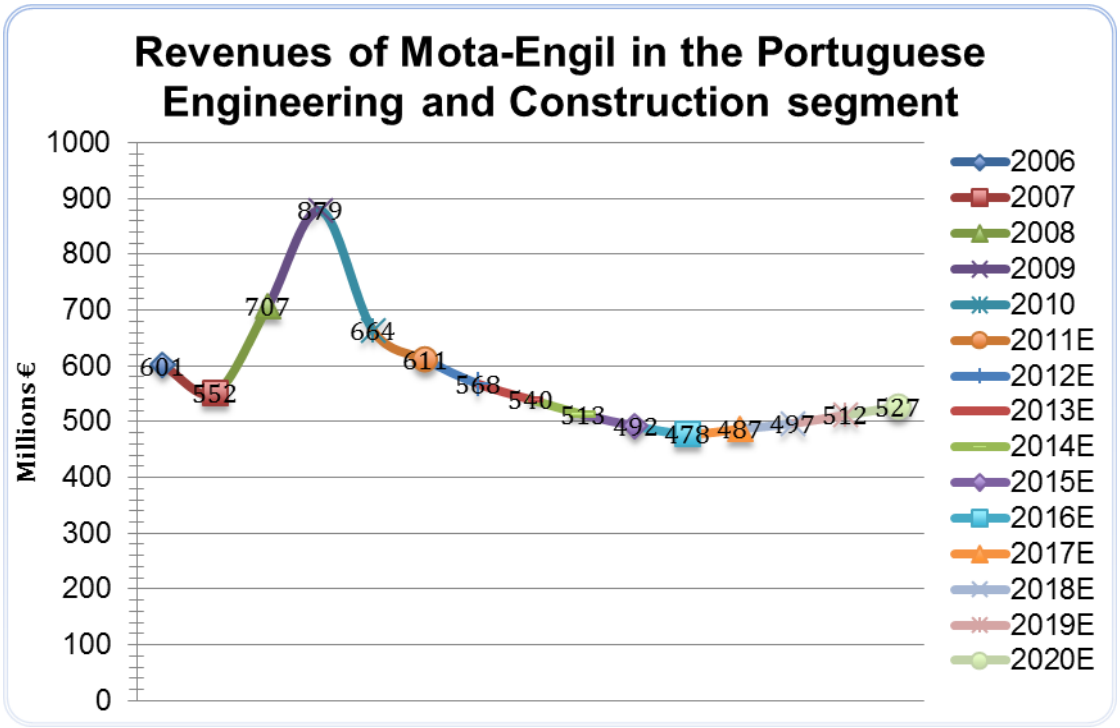


Figure 1- Portuguese Engineering and Construction estimates (€million)

Source: Mota-Engil's Annual Reports; own calculations

6.1.2 Revenues of Mota-Engil in the Angolan Engineering and Construction sector

Angola will continue to have high GDP growth rates in the near future, especially in 2011 and 2012, according to the IMF **(Appendix 3)**. The GDP growth rate of Angola was the main driver to estimate the revenues in Angola and the revenues' estimates fluctuate in relation to the GDP growth rates. The historical values of the revenues of Angola in the last five years were also taken into consideration and

besides the fact of 2010 having been a year of lower GDP growth in Angola compared with the previous years, it is evident that the growth rates of the engineering and construction revenues in Angola have been high in the last five years. In 2011 and 2012, the growth rates of the revenues in Angola were assumed to be high, stabilizing from 2013 to 2020. The assumption was that Mota-Engil will have double-digit growth in revenues in the next two years and will gradually decrease to around 3% in 2019. Besides the GDP growth rates, other two assumptions were taken into consideration to estimate the revenues for Angola. One was the assumption that the revenues will continue to increase in Angola due to the recent partnership between Mota-Engil Angola and Sonangol, which will contribute to the development of the Engineering and Construction sector in Angola, even in years where the Angolan economy will not grow as in the past. The other assumption concerns the fact of the historical presence of Mota-Engil in Angola. The reputation that it has gained over the years was assumed as a factor that could contribute for a good performance in the future.

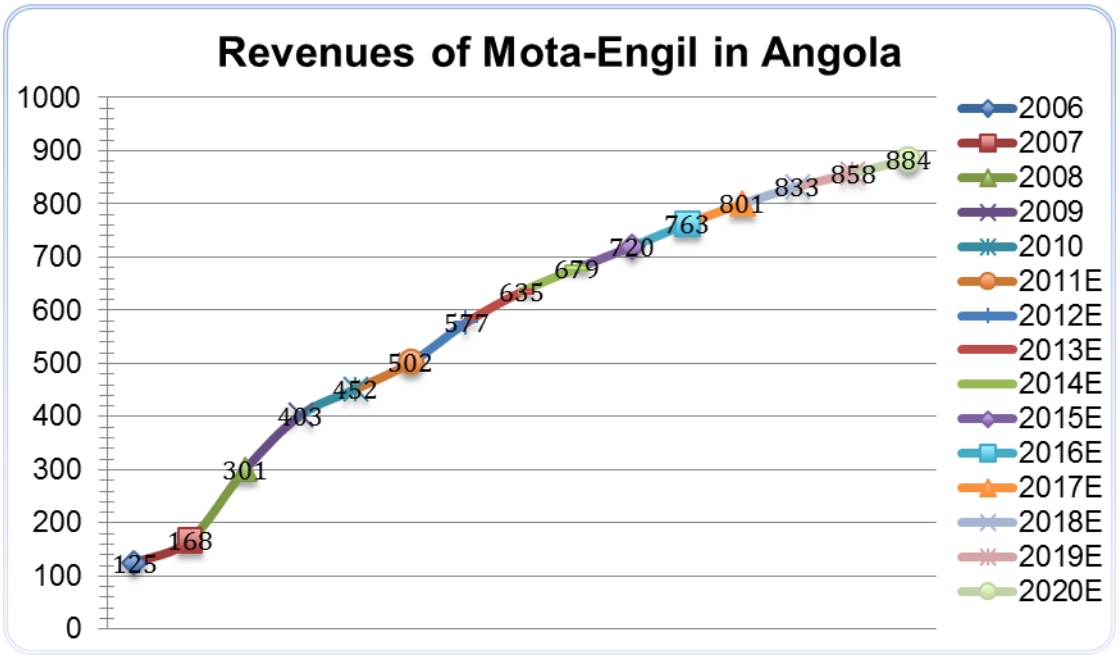


Figure 2- Estimates of the Angolan Engineering and Construction sector (€million)

Source: Mota-Engil's Annual Reports; own calculations

6.1.3 Revenues of Mota-Engil in other African countries

Mozambique, Malawi, São Tomé and Príncipe and Cape Verde

The revenues for these countries were jointly estimated. Regarding this group of countries, Mozambique and Malawi will be two major targets of future investments of Mota-Engil in this segment. Since Malawi and Mozambique will be two countries where Mota-Engil expects to invest, it is logical to expect considerable high growth rates of revenues in both countries for the period of 2011-2020. The estimates for the GDP growth rates in Mozambique **(Appendix 3)** are high and that fact aligned with the

willingness of the government of Mozambique of developing the infrastructure of the country, will certainly boost the revenues of the companies that are already in Mozambique, which is the case of Mota-Engil. Again, as in the case of Angola, the reputation built by Mota-Engil will definitely further enhance the growth rates of revenues of the company in that country. Moreover, Malawi will also grow at good rates, contributing for a future good performance of Mota-Engil in those countries and reducing the dependency in relation to the Angolan construction sector in Africa.

The estimates for the period 2011-2019 consider that in the years of 2011, 2012, 2013 and 2014, Mota-Engil will have high growth rates of revenues, especially due to the growth rate in Mozambique and further on, the growth rate of revenues will stabilize around 3% in 2019. Basically, it is expected a considerable period of growth in the next four to five years in these countries, especially in Mozambique and after that, a consolidation of that growth.

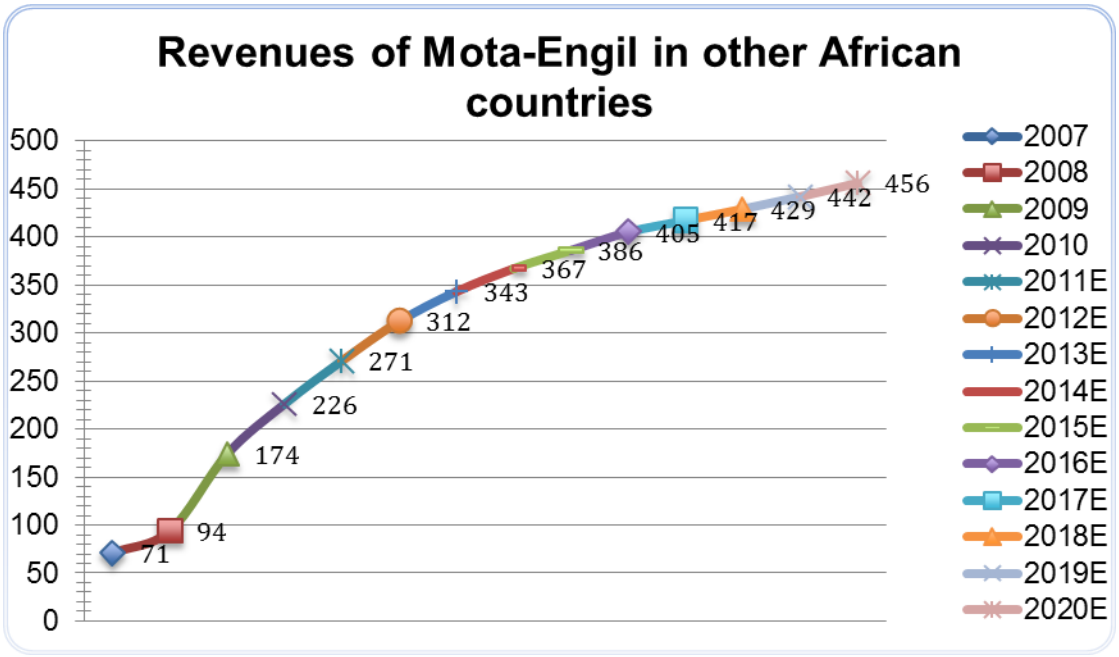


Figure 3- Estimates for other African countries revenues in the Engineering and Construction sector (€million)
Source: Mota-Engil's Annual Reports; own calculations

6.1.4. Revenues of Mota-Engil in Central Europe (Engineering and Construction)

The assumptions related to this geographic area are mainly assumptions related with Poland, since the majority of the activity of the Engineering and Construction segment of Mota-Engil in Central Europe is focused on Poland. The GDP growth rates for Poland will stabilize around 3.7% in the upcoming years according to the IMF **(Appendix 3).** However, in this case, the estimates of the Polish revenues are reviewed upwards in relation to the GDP growth rates estimates, since Mota-Engil has a good competitive position in this country and especially because Poland will have in the next few years a solid program of public investment in infrastructure, also associated with the organization of the EURO 2012 in Poland. Since the competitive position of Mota-Engil is strong, the revenues in this segment are

expected to increase in the period of time considered. In the last three years of estimates, the performance in Poland was assumed to decrease a little bit, in order to present growth rates of 3% in 2020.

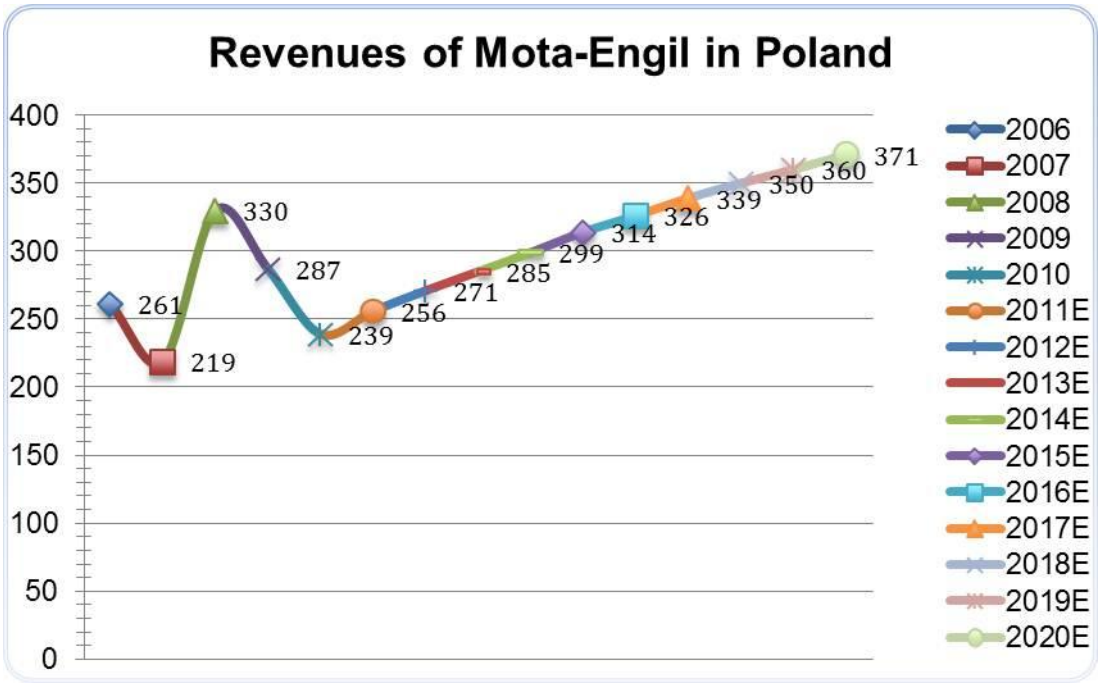


Figure 4- Estimates of revenues in Central Europe in the Engineering and Construction sector (€million)

Source: Mota-Engil's Annual Reports; own calculations

6.1.5. Revenues of Mota-Engil in Latin America (Engineering and Construction)

Regarding these geographic segment, it is difficult to estimate revenues because this segment depends too much on possible future investments of the company. However, it is a fact that Mota-Engil has highly invested in Peru and Mexico and it is looking for opportunities in Brazil, so it was assumed that the company will have double-digit growth rates until 2015 and then it will stabilize around 3% in 2019. It seems to be realistic assuming good performances in this geographic segment, since the future GDP growth rates for Mexico and Peru are very optimistic.

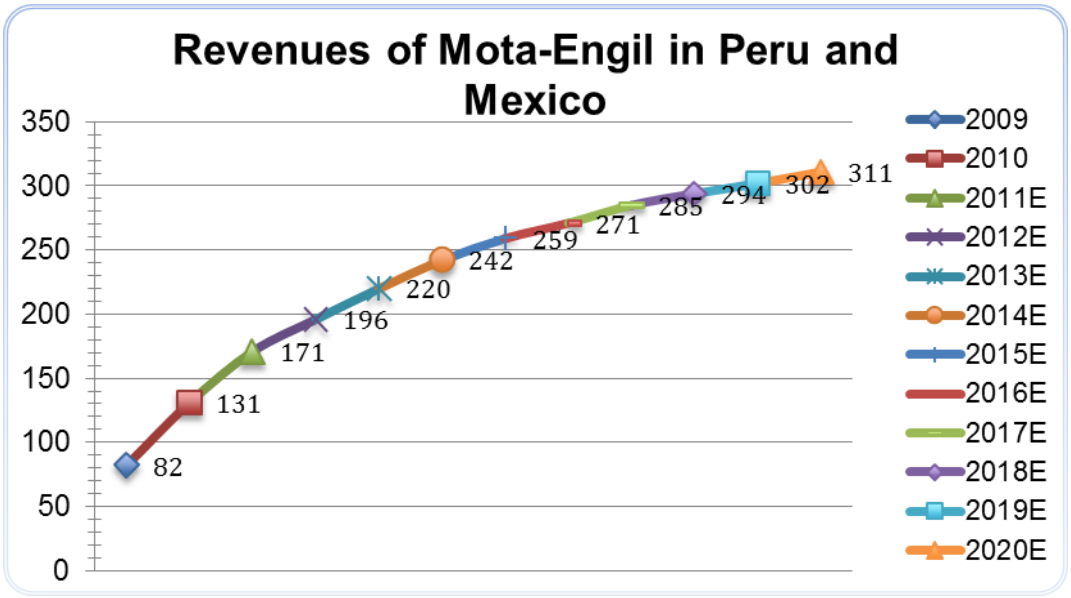


Figure 5- Estimates of revenues in Latin America in the Engineering and Construction sector (€million)

Source: Mota-Engil's Annual Reports; own calculations

The total turnover of Mota-Engil in the Engineering and Construction sector is expected to increase in the time period between 2011 and 2020. The expected growth rates in Angola, Poland and Latin America will definitely influence positively the behavior of the company in this segment.

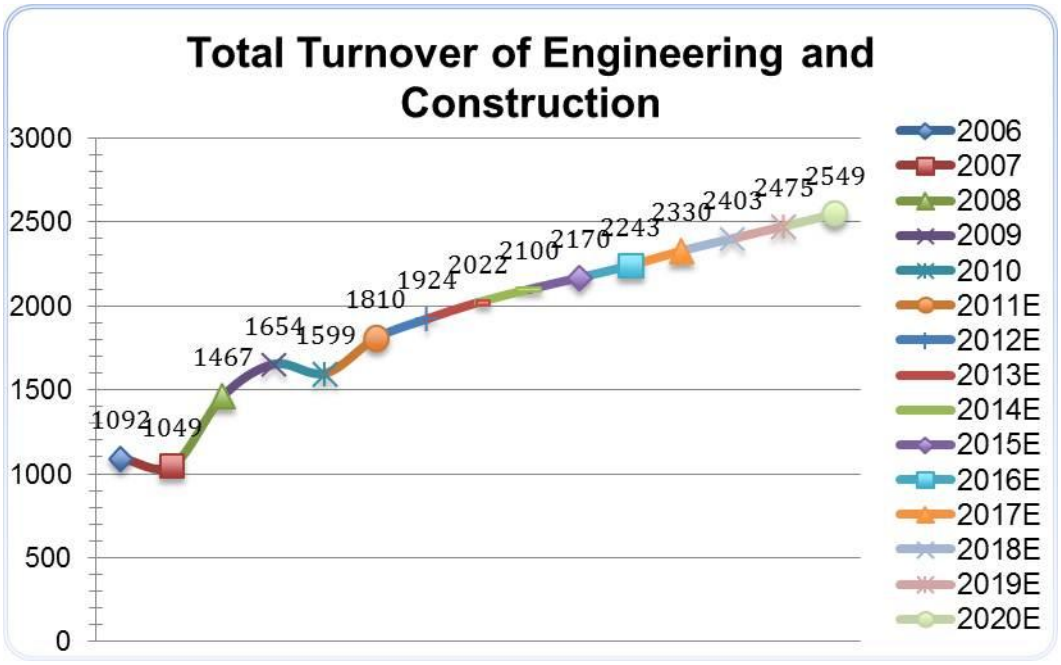


Figure 6- Estimates of revenues in Engineering and Construction (€million)

Source: Mota-Engil's Annual Reports; own calculations

Revenues (E&C Growth rates)	2007	2008	2009	2010
Portugal	-8%	28%	24%	-24%
Angola	35%	78%	34%	12%
Other African countries		32%	85%	30%
Central Europe	-16%	51%	-13%	-17%
Latin America		-14%	95%	60%

Figure 7- Historical growth rates of Mota-Engil in EC Source: Mota-Engil

Revenues	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Portugal	-8%	-7%	-5%	-5%	-4%	-3%	2%	2%	3%	3%
Angola	11%	15%	10%	7%	6%	6%	5%	4%	3%	3%
Africa (other)	20%	15%	10%	7%	5%	5%	3%	3%	3%	3%
Poland	7%	6%	5%	5%	5%	4%	4%	3%	3%	3%
Latin America	30%	15%	12%	10%	7%	5%	5%	3%	3%	3%

Figure 8- Forecast of Growth rates in Engineering and Construction by country

6.2. Revenues of the Environment and Services segment

6.2.1 Revenues of Waste Management

Waste management currently represents 29% of Mota-Engil's revenues in the segment of Environment and Services. The situation in Portugal does not seem to have considerable high growth rates in the future. Besides that, the company with its subgroup Suma has a market share of 54% in the privatized national market of waste management**.** The Portuguese market has forced the company to target other markets and to internationalize its waste management services. The assumptions made in waste management also rely on what is expected to happen in Angola, Poland and Brazil. All these countries are investing heavily to improve their waste management services and Mota-Engil with Vista Waste Management in Angola, Ekosrodowisko in Poland and the recent acquisition of Geo Vision in Brazil are expected to contribute for stable growth rates of revenues in the time period of 2011-2020.

The sector had a relatively breakdown in 2010 compared with the performance of the previous years, but that is explained by the high dependence in relation to the Portuguese market. However, in 2011 and as a consequence of the acquisition of Geo Vision, SUMA expects to see a major increase in revenues. From 2012 to 2015 and due to the effect of the internationalization process, this sector will have stable growth rates, lowering again from 2017 to 2020. Despite considering that the GDP growth rates of the countries where the firm operates in this segment are good key drivers of the performance of the company in Waste management, the reality is that the sector will always have few chances of growing more than 4% or 5% per year in the near future. The explanation comes from the fact that Mota-Engil already has a relatively strong value of revenues and the high growth phase of this sector has

already gone way, especially in Portugal. **Appendix 12** evidences the historical turnover of the municipal concessions of waste services in Portugal, where the average growth rate of the last seven years was approximately 9%. However, in 2010, the turnover grew at only 4%. It was assumed that the estimates for the revenues of Mota-Engil Waste management will follow the tendency of the Portuguese sector, presenting moderate growth rates between 2012 and 2020.

Figure 9- Estimates of the revenues in the Waste management segment

Source: Mota-Engil's Annual Reports; own calculations

6.2.2 Water Distribution

Mota-Engil has five concessions in Portugal that represent a total of 20% of market share **(Appendix 11).** Unfortunately and similar to the waste management segment, the level of privatization in Portugal in the water distribution segment is still low**.** Currently, private companies serve only 22% of the Portuguese population. The weight that the Portuguese market has in this segment for Mota-Engil is very high and the estimates for the revenues take that into consideration. In 2011, it is expected that Water distribution achieves a double-digit growth, since in 2010 the growth of the revenues was considerable, but from there on, it was assumed the same scenario as in the waste management, not growing more than 5% a year. The reason behind that line of reasoning is associated with the fact that the majority of the Portuguese population is covered by drinking water supply services **(Appendix 10),** not leaving too much space for future growth in this sector. However, it is important to mention that revenues of the municipal concessions of water services in Portugal presented an annual average growth rate of approximately 12% in the past seven years.

The international presence of the company in this segment is also assumed to contribute for the revenues in the near future and consequently, reducing the vulnerability of the company to the

Portuguese market, otherwise, the company would not be able to achieve stable growth rates in this sector. The participation of Indaqua in Vista Water in Angola is assumed to contribute positively for the expected growth in this segment. Angola is a country with special needs regarding water distribution and sanitation. Mota-Engil expects to invest in Peru and Brazil due to the opportunities that those markets represent in the water distribution segment. However, the assets in this sector are currently overpriced and comparing with the waste management segment, Mota-Engil faces much more difficulties to expand its operations abroad and consequently, being less dependent of the Portuguese market. The possible acquisition of companies in Brazil or Peru was not considered in the valuation of the company.

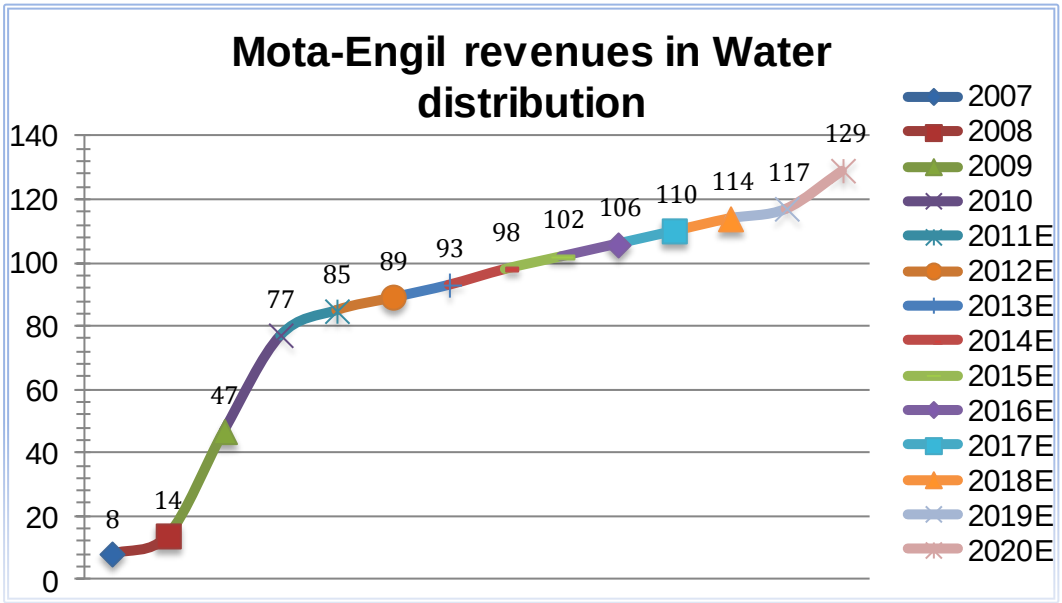


Figure 10- Estimates of the revenues in the Waste management segment

Source: Mota-Engil's Annual Reports; own calculations

6.2.3 Logistics

This segment is the most important for Mota-Engil in the Environment and Services sector, since it represents 39% of total revenues in the sector. The estimates for the revenues in the Logistics segment are influenced by the projections of the Portuguese exports in the next few years. In fact, the projections of the Portuguese exports provided by the IMF were considered to be the most important key driver of the Logistics segment revenues in this dissertation, especially because the activity that contributes more for the turnover of Tertir is the ports segment. Portuguese exports are expected to increase and Mota-Engil with its concessions of the four main national ports will benefit from that. From 2014 on, the growth rate of revenues will steadily decrease. The logistic platform of Poceirao will also contribute for the growth of the sector. The only problem of Mota-Engil in Portugal is related to the concession of the port of Alcantara to Liscont that can be cancelled.

Exports	2011E	2012E	2013E	2014E	2015E	2016E
Portugal	2,8%	4,3%	4,2%	4%	4%	4%

Figure 11- Estimates of Portuguese exports Source: IMF

Internationally, the presence in Peru (concession of the port of Paita), in Angola, Mozambique and other countries will also contribute for the development of this segment. Generally, it was assumed that this sector will have stable growth rates for the time period covered and will continue to be the most important segment of the Environment and Services business activity.

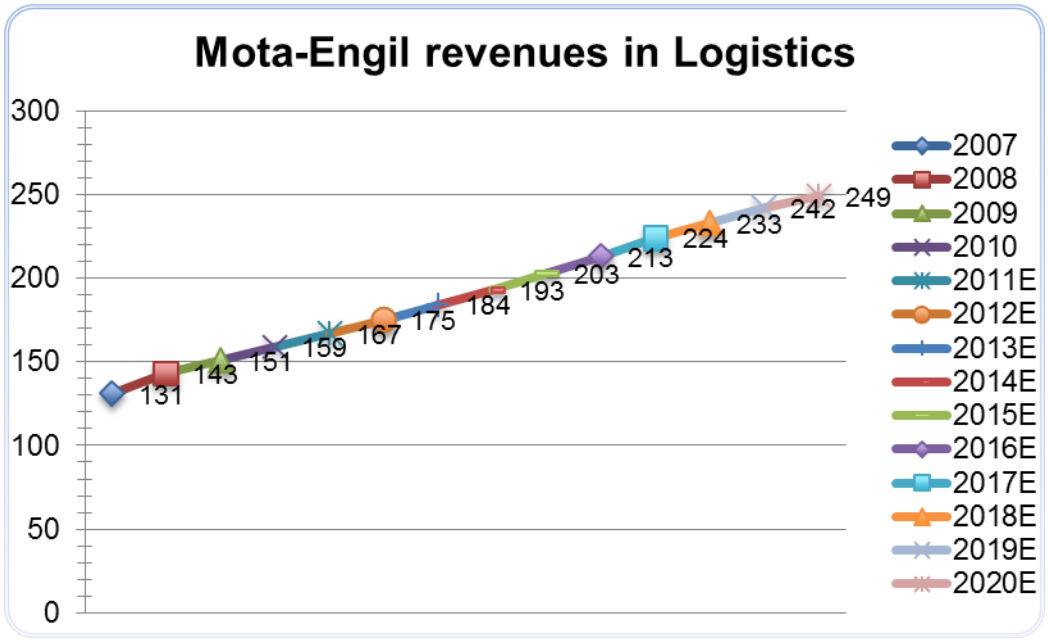


Figure 12- Estimates of the revenues in the Logistics segment

Source: Mota-Engil's Annual Reports; own calculations

6.2.4 Multi-services

This segment was assumed to grow at lower rates than the historical ones in the time period of 2011 to 2020. In 2010, this segment had a growth rate of revenues of nearly 9%. It was assumed that in 2011 and 2012, the segment would grow at half of that rate (5%) and then it will grow at lower rates, having in 2020 a growth rate of revenues of around 3%.

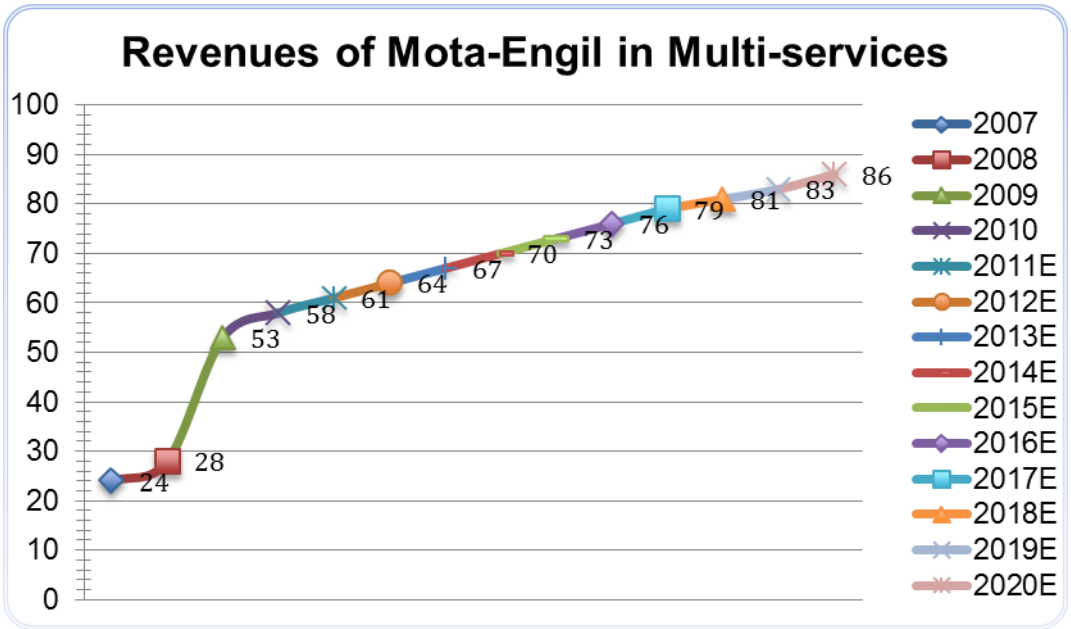


Figure 13- Estimates of the revenues in the Multi-services segment

Source: Mota-Engil's Annual Reports; own calculations

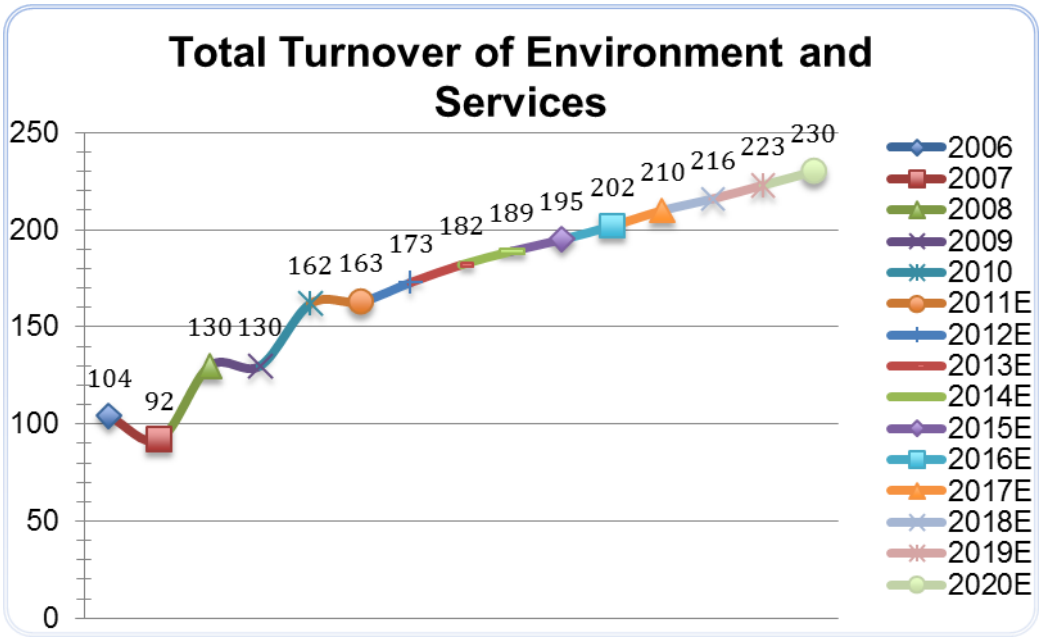


Figure 14- Total Turnover predicted in the Environment and Services segment (€million)

Historical Revenues (E&S Growth rates)	2008	2009	2010
Waste Management	18%	11%	6%
Water Distribution	85%	238%	64%
Logistics	9%	6%	5%
Multi-services	15%	89%	9%

Figure 15- Historical growth rates of Mota-Engil in ES

Revenues	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Waste	43%	4%	4%	4%	4%	4%	3%	3%	3%	3%
Water	10%	5%	5%	5%	4%	4%	4%	3%	3%	3%
Logistics	5%	5%	5%	5%	5%	5%	5%	5%	3%	3%
Multi-services	5%	5%	5%	4%	4%	4%	4%	3%	3%	3%

Figure 16- Growth rates of Environment and Services by segment

6.3. Operating Expenses and other Operating Income

Regarding operating expenses and other revenues, the first step taken to estimate them for the time period of 2011-2020 was to rely on the historical values of operating expenses as a percentage of the revenues of Mota-Engil in the last five years **(Appendix 13).** After estimating the historical values of the operating expenses of the group, the second step was to look to the historical values of the EBITDA margin of each segment.

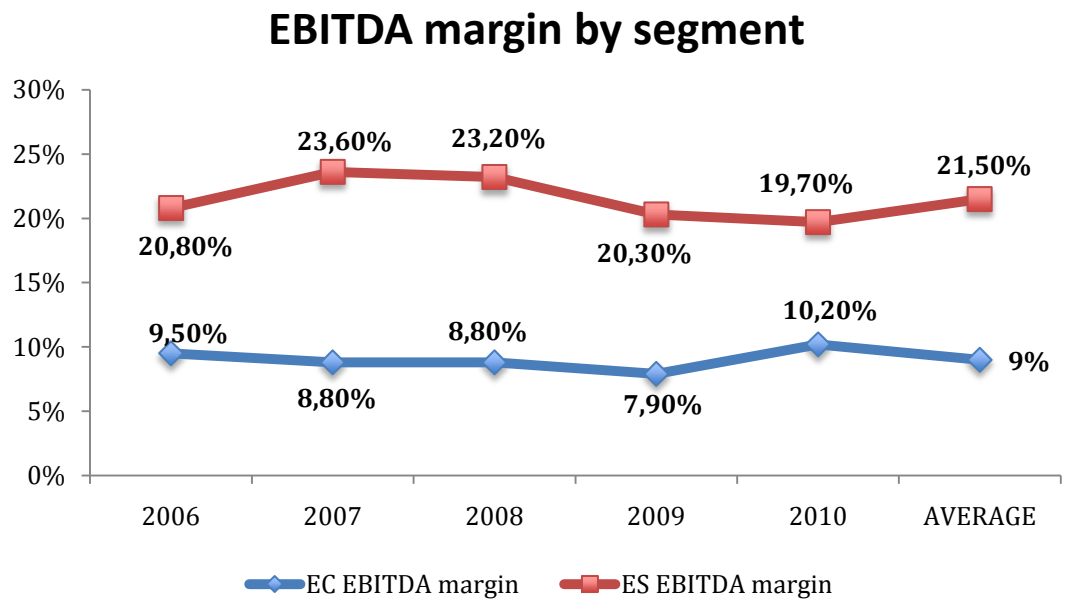


Figure 17- Historical EBITDA margin by segment Source: Mota-Engil

It was decided to use the average EBITDA margin of the last 5 years for the segment of Engineering and Construction (9%), but for the Environment and Services segment, the EBITDA margin considered for 2011-2020 was the one from the year of 2010 (19.7%), since there has been a decreasing tendency of the Environment and Services EBITDA margin. After deciding the EBITDA margins to use by segment and taking into consideration the historical operating expenses (as a % of the revenues) of the group, it was simple to allocate operating expenses to each segment **(Appendix 13).** In **Appendix 13**, there is also a more detailed explanation of the operating expenses, as well as their respective values by categories.

6.4. Gross Tangible and Intangible Assets of Mota-Engil

In order to estimate the depreciation of the assets of both segments, the first step taken was to estimate the value of the gross fixed assets of the company. The method used to estimate the values of the gross fixed assets for the period of time period between 2011 and 2020 was to rely on the historical values of the last seven years of Mota-Engil and assuming that the average growth rates of both Tangible and Intangible Assets in the past seven years would remain constant in the period of the analysis **(Appendix 14).** An exception was made for the estimation of the gross tangible assets and gross intangible assets for the year of 2011. In order to avoid big modifications in the values of both categories of assets, it was assumed that the growth rate for the year of 2011 of the gross tangible assets would be equal to the one of 2010 and that the growth rate of the intangible assets of the year 2011 would be half of the average historical growth rate of the gross intangible assets that was computed. Another exception was made for the gross tangible assets in the years of 2019 and 2020. It was assumed that the growth rates for those years would be lower because the gross values of tangible assets were already high enough and maintaining the growth rate would imply unrealistic values of gross tangible assets.

(€million)	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Gross Intangible Assets	330	316	303	291	279	268	257	247	237	227
Gross Tangible Assets	1184	1218	1252	1287	1323	1360	1398	1437	1459	1473

Figure 18- Forecast of the gross fixed assets

6.5. Depreciation

In order to estimate the depreciation of the tangible and intangible assets, the first step taken was to analyze the values of depreciation of both tangible and intangible assets in the previous seven years**.** The second step was to estimate the depreciation of both tangible and intangible assets as a percentage of the gross tangible and intangible assets in the previous seven years, respectively **(Appendix 14).** After estimating the average percentages and with the gross assets estimated above, the depreciation of both categories of assets was calculated, assuming that those average percentages of depreciations in relation to both categories of assets would remain stable for the time period in analysis.

(€ million)	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Depreciation of Int. assets	11	11	11	10	10	9	9	9	8	8
Depreciation of tangible assets	77	79	81	84	86	88	91	93	95	96
Total	**88**	**90**	**92**	**94**	**96**	**97**	**100**	**102**	**103**	**104**

Figure 19- Forecast of Depreciation of fixed assets

Finally, the depreciation of both categories of assets was allocated to each segment (Engineering and Construction and Environment and Services) for the period 2011-2020 by assuming that the total depreciation of the company would be allocated to each segment, respecting the share that each segment had on the total depreciation of 2010 **(Appendix 14).** In 2010, Engineering and Construction had nearly 64% of the total depreciation of the company and Environment and Services around 36% of the total depreciation of Mota-Engil.

6.6 Net Tangible and Net Intangible Assets

The Net Tangible and Intangible assets were also estimated taking into consideration the historical values. After analyzing the net tangible and intangible assets as a percentage of the respective gross tangible and intangible assets **(Appendix 14),** it was assumed that the percentage of the net assets in relation to the gross assets would remain stable for the time period between 2011 and 2020. In **Appendix 14,** the net fixed assets are given by segment.

(€million)	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Net Int. assets	261	251	241	231	222	213	204	196	188	180
Net Tan. assets	608	625	642	660	679	698	717	737	748	756

Figure 20- Forecast of Net assets

6.7. Capital Expenditures

The capital expenditures of each segment for the period 2011-2020 were estimated by adding the annual change of both categories of net assets (tangible and intangible assets) to the respective depreciation of the year.

CAPEX-EC	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Δ Net Int. Assets	-10	-0,5	-0,4	-0,4	-0,4	-0,4	-0,4	-0,4	-0,3	-0,3
Δ Net Tan.Assets	25	12	12	13	13	13	14	14	7	5
Depreciation	57	58	59	61	62	63	65	66	67	67
CAPEX	**72**	**70**	**71**	**73**	**75**	**76**	**78**	**80**	**73**	**72**

Figure 21- Forecast of CAPEX of E&C (€million)

CAPEX-ES	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Δ Net Int. Assets	-11	-10	-10	-9	-9	-9	-8	-8	-8	-7
Δ Net Tan.Assets	14	4	5	5	5	5	5	5	2	2
Depreciation	31	32	32	33	34	34	35	36	36	37
CAPEX	**35**	**26**	**27**	**28**	**30**	**31**	**32**	**33**	**31**	**31**

Figure 22- Forecast of CAPEX of E&S (€million)

For the time period of 2011-2020, it was assumed that the capital expenditures would be relatively lower than the ones from the previous years **(Appendix 14).** It was assumed that fact because it is not expected that the company will continue to invest in financial investments abroad (minority

participations), a strategy that has been recurrent of Mota-Engil in the last years. The company provided information regarding the future capital expenditures and according to the information provided, a total CAPEX of 100€ million was considered a pretty good estimate for the total CAPEX in the future, which corresponds to the CAPEX estimated in this dissertation.

6.8. Non-cash Working Capital

The noncash working capital was assumed to vary according to the amount of revenues. According to information provided by Mota-Engil, the non-cash working capital of the firm has been considerably higher than expected due to the operations in Angola **(Appendix 14)**. Based on information provided by the company, it was assumed that non-cash working capital would be around 13% of the revenues in 2011, lowering to 12% between 2012 and 2015 and finally, lowering again to around 11% of the operating revenues in the following years.

Non-cash WC= Current assets –Current liabilities

Current Assets= Inventories+ Customers+ Other Debtors+ Other current assets

Current Liabilities= Suppliers+ Sundry Creditors+ Other current liabilities

NWC	2010	2011	2012	2013	2014	2015…	2019	2020
Inventory	203	243	237	249	259	268	282	290
Customers	1008	1206	1179	1238	1287	1333	1399	1441
Other debtors	304	364	356	373	388	402	422	434
Other current assets	128	153	150	157	163	169	177	183
Suppliers	482	577	564	592	616	638	669	689
Sundry creditors	441	527	516	542	563	583	612	630
Other current liabilities	471	563	551	578	601	622	653	673
NWC	**249**	**299**	**292**	**306**	**318**	**330**	**346**	**356**
Change		**49**	**-6**	**14**	**12**	**12**	**10**	**10**

Figure 23- Forecast of NWC

6.9 Cost of Equity

6.9.1 Risk Free Rate

The risk free used for the valuation of Mota-Engil corresponds to the long-term default-free government bond of Germany with maturity of ten years. The maturity of ten years is justified by the fact that the time period covered in this valuation corresponds to ten years and since Mota-Engil is a Portuguese company, operating in a country that belongs to the Euro area, the German government bond seems to be the most appropriate. The risk-free rate is 3.25%.

6.9.2 Beta of Mota-Engil

Reuters was the source that provided the beta of the company, which is 1.36.

6.9.3 Market risk premium

The market risk premium was estimated, taking into consideration the future weights of the countries where Mota-Engil operates. In relation to the Engineering and Construction segment, it was simple to estimate the market risk premium, since the segment is divided by geographical regions. Given that the revenues were estimated for the time period of 2011-2020, the method used to calculate the market risk premium was to look at the weight that each country had on the revenues of 2020 and estimating the market risk premium of each segment by multiplying the corresponding market risk premiums of each region where Mota-Engil will have operations in 2020 by the respective weight on the revenues of 2020. The market risk premiums of each country were provided by Damodaran's website. In relation to the Environment and Services segment, there is some uncertainty regarding the weights of the corresponding countries where Mota-Engil will operate in the near future. The natural tendency of Mota-Engil is to be present in the same countries, where it has already operations in the Engineering and Construction segment.

Market Risk Premium of Engineering and Construction		
Country	**Market Risk Premium**	**Weight on revenues in 2020**
Angola	11%	34,7%
Peru and Mexico	8%	12,2%
Poland	6,5%	14,5%
Portugal	6,25%	20,7%
Mozambique, Malawi, Cape Verde	8,87%	17,9%
TOTAL MARKET RISK PREMIUM OF E&C=8,6%		

Figure 24- Forecast of Market Risk Premium of E&C

Market Risk Premium of Environment and Services		
Sector	**Market Risk Premium**	**Weight on revenues in 2020**
Waste	8,33%	34%
Water	8,05%	17,5%
Logistics	8%	36%
Multi-services	7,48%	12,5%
TOTAL MARKET RISK PREMIUM OF E&S=8%		

Figure 25- Forecast of Market Risk Premium of E&S

After estimating all the components of the cost of equity for both segments, the cost of equity of Engineering and Construction estimated was 14.9% and the cost of equity of Environment and Services estimated was 14.1%.

6.10 Cost of Debt

The first step taken to estimate the cost of debt of the company was to estimate the historical interest coverage ratio of the previous years, so that it could be found the value of the default spread of the company.

	2007	2008	2009	2010	AVERAGE
EBIT	148	192,7	112,5	131,7	
Interest expenses	95,4	110,9	41,7	44,5	
Interest Coverage Ratio	1,55	1,74	2,70	2,96	**2,24**

Figure 26- Interest coverage ratio of Mota-Engil

Given that the interest coverage ratio was 2.24, the spread associated is 5%, according to Damodaran. After adding the spread to the risk-free rate, the cost of debt estimated was 8.25%. Multiplying the cost of debt by the Portuguese corporate tax rate of 29% gives the after-tax cost of debt of 5.86%.

6.11 Weights of Debt and Equity

Estimating the leverage level of a company is not always easy to do. The approach followed was to rely on the market values of both equity and debt of Mota-Engil, in order to find the weights of Debt and Equity in the capital structure of the company. That approach consists in treating the entire book value of debt as one coupon bond, being the coupon equal to the interest expenses of all the debt and the maturity of the bond equal to the face value-weighted average maturity of all the debt. Finally, the cost of debt would be used to value this bond. The discount rate used in this approach is the pre-tax cost of debt of the company (8.21%).

Market Value of Debt	
Interest expenses	44 €M
Face-value weighted average maturity	3,3 years
Pre-tax cost of debt	8,21%
MV of Debt	1.061 €M

Figure 27- Market Value of Debt of Mota-Engil

The market value of equity is given by the product of the price share of Mota-Engil by the number of outstanding shares of the company. Since the market value of debt was calculated from the book value of debt of the company in 31 of December of 2010, it was assumed that the share price of Mota-Engil would be the price at 31 of December of 2010, in order to maintain some consistency in the method.

Market Value of Equity	
Price share of Mota-Engil (31/12/2010)	1,74€
Number of outstanding shares	204,6 €M
MV of Equity	356,1 €M

Figure 28- Market Value of Equity of Mota-Engil

With these values, the Debt/Enterprise value would be of around 75%. Despite Mota-Engil being a highly indebted company, this value is distant from the target leverage of Mota-Engil. In the DCF valuation, the weights of debt and equity should correspond to the target capital structure of the company. Definitely, this ratio does not correspond at all to the target capital structure of the company, so an alternative method was used to estimate the leverage ratio of the company.

Instead of focusing on the market values of debt and equity, it was estimated the average leverage ratio of the company based on the historical book values of debt and the market value of equity in each year. It was assumed that the book values of debt could be good proxies of the market values of debt of the company. In relation to equity, it was taken into consideration the market values of equity, but special attention was taken in relation to the share price. In order to preserve some consistency, only the share prices of the last day of the respective years were considered. Moreover, 2007 and 2008 were considered to be outliers and were not taken into consideration for the average because on those years, Mota-Engil had the Transport Concessions segment included on their reports and as a consequence of that, the amount of debt of the company was considerably higher that in the previous years.

Debt to Enterprise Value Ratio								
	2004	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**AVERAGE**
BV of Debt	464	585	629	1916	2032	1113	1215	
MV of Equity	405	665	1052	1048	481	806	356	
D/EV	53,3%	46,8%	37,4%	65%	80,9%	58%	77,3%	**54,6%**

Figure 29- Historical Debt to Enterprise Value ratio of Mota-Engil (Values of Equity and Debt in €million)

It was assumed a 50% level of leverage for both segments (Engineering & Construction and Environment & Services), instead of the 55% given by the average.

6.12 Corporate Tax Rate

The corporate tax rate used was the Portuguese standard corporate tax rate of 25%, plus a municipal surcharge of 1,5% and plus a state tax of 2,5% of taxable profits higher than €2M,which is the expected case of Mota-Engil for the period of 2011-2020. The value of the corporate tax rate used in this dissertation is then of 29%.

6.13 Terminal Value

For the year of 2020, which is the last year of the time period analyzed in this dissertation, it was assumed that the revenues of 2020 would have grown at a rate of 3%. For the terminal value, the growth rate considered in perpetuity for the free cash flows was relatively lower than 3%. It was assumed that in perpetuity the free cash flows would grow at a rate of 2,1%, which is given by the sum of the last GDP growth rate estimate available for Portugal by the IMF (1,2%-2016) with half of the last inflation rate estimate available for Portugal by the same institution (1,8%-2016). Capital expenditures and depreciation were considered to be equal in perpetuity for both segments.

7. Enterprise Values of EC and ES

EC	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Revenues	1810	1924	2022	2100	2170	2243	2330	2403	2475	2549
EBITDA	163	173	182	189	195	202	210	216	223	229
(-) D&A	57	58	59	60	61	63	65	66	67	67
EBIT	106	115	123	129	134	139	145	150	156	162
(-) Taxes	31	33	36	37	39	40	42	44	45	47
(+) D&A	57	58	59	60	61	63	65	66	67	67
(=) OCF	132	140	146	152	156	162	168	172	178	182
(-) ΔWC	37	-4	12	9	8	-14	10	8	8	8
(-) CAPEX	72	70	71	73	75	76	78	80	73	72
(=) FCFF	23	74	63	70	73	100	80	84	97	102
WACC	10,5%									
PV FCFF	21	61	47	46	45	54	40	38	39	38
T. Value	458									
EC Value	**888**									

Figure 30- Enterprise Value of Engineering and Construction (€million)

ES	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Revenues	483	505	529	552	576	602	626	649	668	688
EBITDA	95	100	104	109	114	119	123	128	132	136
(-) D&A	31	32	32	33	34	34	35	36	36	37
EBIT	64	68	72	76	80	85	88	92	96	99
(-) Taxes	19	19	21	22	23	24	26	27	28	28
(+) D&A	31	32	32	33	34	34	35	36	36	37
(=) OCF	76	81	83	87	91	95	97	101	104	108

(-) Δ WC	12	-2	3	3	3	-3	3	3	2	2
(-) CAPEX	35	26	27	28	30	31	32	33	31	31
(=) FCFF	29	57	53	56	58	67	62	65	71	75
WACC	10%									
PV FCFF	27	46	40	38	36	37	32	31	30	28
T. Value	367									
ES Value	**713**									

Figure 31- Enterprise Value of Environment and Services (€million)

8. Dividends to shareholders

In relation to dividends, it was assumed that Mota-Engil will pay dividends in the time period of 2011-2020 at a payout ratio of 45%, which is the average value of the payout ratio of the last seven years, but excluding the year of 2008 from that average, since in 2008, Mota-Engil paid a considerable amount of dividends as a % of net income, clearly higher than what the company usually has done in the past.

	2004	2005	2006	2007	2008	2009	2010	AVERAGE
Dividends	10,8	15,7	19,7	22,5	21,4	21,3	21,3	
Net Income	22,3	30,4	32,2	97,5	30,6	72,6	37	
Payout ratio	48%	52%	61%	23%	70%	29%	58%	**45%**

Figure 32- Historical Dividends of Mota-Engil

9. Debt and Interest expenses

In relation to debt and the interest expenses, it was taken into consideration that Mota-Engil is highly indebted. The assumption made for the period of 2011-2020 consisted in taking as a fact that Mota-Engil would repay its high level of debt in the next years, but at the same time assuming that the company will continue to contract debt for its operations. The estimates for the debt also assume that the level of leverage of the company in 2020 would be approximately 50%. Mota-Engil expects to reduce its level of debt by 150€ million in a period of time of 12 to 18 months. This dissertation also assumed that by the end of 2014, the reduction of debt would be around 150€ million, an approach slightly more conservative than the expectations of Mota-Engil, regarding its level of debt. The debt and interest expenses are developed in **Appendix 15.**

10. Partnership in Angola with Sonangol

The recent partnership that Mota-Engil established with Sonangol in Angola in the Engineering and Construction segment is the exception in a segment that is almost completely controlled by Mota-Engil. The share of 49% that Sonangol owns in Mota-Engil Angola was exluded from the final value of the

segment. The procedure used to estimate the value of the position of Sonangol was to pick the equity value of Engineering and Construction and deduct from that value the share that Sonangol holds. In order to do that, the revenues were used as a proxy to estimate the value of Sonangol's share of the company. The weight that the revenues in Angola will have in 2020 according to the projections of this Dissertation would be around 34.7% of the total revenues of the segment of Engineering and Construction in 2020. Sonangol currently has 49% and based on that share, Sonangol has the right to approximately 17% of the total revenues of Mota-Engil in 2020 in the Engineering and Construction segment. In order to find the equity value of the segment, it was deducted the value of net debt corresponding to the EC segment and added the value of the financial investments of the company in that segment to the enterprise value of EC. The Net Debt of 2011 of this segment was assumed to have the same weight on debt that it had on 2010. So, in 2010 from a total Net Debt of 1015€ million, 303€ million corresponded to this segment, which corresponds to approximately 30% of the total Net Debt of the company. In 2011, from a total of 1034€M, 310€M would be allocated to the EC segment.

Equity Value of EC= Enterprise Value of EC – Net Debt of EC + Financial Investments of EC

Equity Value of EC= 888-310+68=646

Minority Interests=17%* 699= 110

11. Minority Interests of Environment and Services

Due to the lack of visibility of the Environment and Services segment, more assumptions had to be done regarding the minority interests of this segment. As a matter of simplicity and since the minority interests from the Multi-services segment are relatively low, those minority interests were not estimated. Only the minority interests of Suma, Indaqua and Tertir were taken into consideration. As in the case of the partnership with Sonangol, the method used to estimate the minority interests on the value of the segment was to rely on the revenues' value that each one of the companies (Suma, Indaqua and Tertir) would have on the total revenues of this segment and estimating the percentage that each of minority interests belonging to each company.

Companies	% of Minorities	Weight on ES revenues	Weight of Minorities on ES
Suma	38,5%	34%	12,9%
Indaqua	50%	17,5%	8,8%
Tertir	35%	36%	12,6%
TOTAL			**34%**

Figure 33- Minorities in Environment and Services

Minority Interests of ES = 34 % *(EV of E&S- Net Debt 11 of E&S + Fin.Investments of E&S 11)

= 34 % *(713-455+8) = **90 €M**

According to information provided from the company, the Net Debt of the group in 2010 was 1005€M

and Environment and Services had 445€M of Net Debt from the total Net Debt of 1005€M, which corresponds to 44% of the total Net Debt of the group in 2010. For 2011, the same % was assumed of the total Net Debt of 2011 (1034€M), which corresponds to a total Net Debt of E&S of 455€M.

12. Equity Value of Mota-Engil

Mota-Engil's Valuation			
	€Million	**% of EV**	**Method**
Engineering& Construction	888	43%	DCF
Environment & Services	713	35%	DCF
Transport Concessions (Appendix 17)	317	16%	DCF, attributable
Martifer (37.5%)	42	2%	@1.11€
Property	89	4%	BV
TOTAL EV adjusted	**2049**		
Net Debt YE11	-1034		
Provisions	- 82		
Off BS Debt	-365		Factoring and leasing
Derivatives	-14		
Treasury stocks	18		
Financial Investments	155		
Minorities in EC	-110		Mota-Engil Angola
Minorities in ES	-90		Tertir, Indaqua and SUMA
Dividend Payment	-26		
Equity Value	**501**		
# Shares	204.6		
Value per share	2.45€		
Holding discount	10%		
Price per share 2011	**2,20€**		

Figure 34- Equity Value of Mota-Engil

13. Relative Valuation

The use of multiples to find an appropriate value for a company demands some assumptions. The first is related to the multiples to use. In this dissertation, relative valuation was used as a measure of control. The objective is to find an interval of values given by the multiples, in order to find if the value calculated in the DCF valuation of Mota-Engil is appropriate or not. Since relative valuation was used only as a complement of the DCF valuation, the final choice relied on only two multiples to perform the evaluation of Mota-Engil. One Enterprise Value multiple (EV/EBITDA) and one Equity Value multiple (Price/Earnings).

After deciding what multiples to use, the second step was to choose the peer group of Mota-Engil **(Appendix 16).** It was decided to use only firms that had operations in the Heavy Construction Industry and that were European. Some of the firms used for the selection of the peer group were collected from the reports of Investment Banks. Finally, after having a pre-selection of firms, it was decided to use firms that had similar values of ratios in three main topics: management effectiveness, growth and profitability. Financial strength was left behind because Mota-Engil is highly levered and consequently, it would be difficult to find an appropriate peer group for Mota-Engil. The ratios used for each topic were:

TEST 1: Management Effectiveness
• ROI (TTM)
• ROI (5 years average)
• ROE (TTM)
• ROE (5 years average)
TEST 2: Growth
• Sales Growth rate (5 years average)
TEST 3: Profitability
• EBITDA margin

Figure 35- Ratios used in the comparison of companies

The companies that were used for the peer group of Mota-Engil would have to present similar values of at least two of the three topics and in the end the following companies were selected to perform the relative valuation of Mota-Engil:

Relative Valuation		
Companies	**P/E ratio (TTM)**	**EV/EBITDA 2011**
OHL	12,05	6,62
Ferrovial	2,35	12,51
FCC	nm	8
Eiffage	15,09	9,1
Vinci	12,37	7,1
Bouygues	10,28	4,6
Astaldi	6,43	4,5
Soares da Costa	3,56	nm
Mota-Engil (Reuters estimate)	**5,1**	**6,61**
AVERAGE of the peer group	**8,88**	**7,49**
Price per share	**3,39€**	**1,69€**

Figure 36- Results of Relative Valuation Source: Reuters, Infinancials, Bloomberg, Deloitte

According to the Reuters estimates, Mota-Engil is undervalued in relation to the peer group, but according to the final price per share estimated in this Dissertation, the valuation of Mota-Engil is in between the two pirces per share estimated with the multiples.

14. Investment Banking Comparison

Millennium Investment banking (MIB) was chosen to perform a comparison between this dissertation's equity valuation of Mota-Engil and the equity valuation of an investment bank.

14.1 Valuation and Estimates of Millenium Investment Banking

MIB				
€ million	**Valuation**	**Stake**	**SoP YE 2011**	**Method**
Eng. & Construction	339	100%	339	DCF
Environment & Services	176	50%	88	DCF
Martifer (market prices)	144	37,5%	54	DCF
Transport Concessions	319		319	DCF
Other Assets	-25		-25	
Debt at Holding level	212		212	
Dividend paid in 2011			21	
Own shares			18	
TOTAL			**560**	
Price per share			**2,75€**	

Figure 37- Valuation and estimates of MIB

14.2 Key performance indicators comparison

MIB						
Growth rates %	**2011E**	**2012E**	**2013E**	**2014E**	**2015E…**	**2019E**
Revenues	5%	1%	2%	3%	3%	3%
EBITDA	13%	2%	3%	3%	1%	1%
EBITDA Mg	12%	12%	12%	12%	12%	11%
EBIT	19%	1%	3%	5%	2%	2%
EBIT Mg	7%	7%	7%	7%	7%	7%
CAPEX	-30%	-3%	-3%	-2%	-2%	3%
% Revenues	5%	5%	4%	4%	4%	3,9%
Working Capital (Mn)	377	365	354	344	334	307
% of Revenues	18%	17%	16%	15%	14%	12%
EPS	33%	9%	10%	13%	9%	8%
Dividend	8%	0%	2%	13%	-7%	8%

Figure 38- MIB KPI

DISSERTATION						
Growth rates %	**2011E**	**2012E**	**2013E**	**2014E**	**2015E…**	**2019E**
Revenues	14%	6%	5%	4%	3,5%	3%
EBITDA	9%	5%	5%	5%	3%	3%
EBITDA Mg	11%	11%	11%	11%	11%	11%
EBIT	20%	15%	7%	5%	4%	4%
EBIT Mg	7%	7%	8%	8%	8%	8%
CAPEX	-31%	-22%	3%	3%	3%	-7%
% Revenues	5%	4%	4%	4%	4%	3%
Non-cash Working Capital (Mn)	299	292	306	318	330	346
% of Revenues	13%	12%	12%	12%	12%	11%
EPS	13%	30%	-12%	-2%	-1%	4%
Dividend	26%	30%	-12%	-2%	-1%	4%

Figure 39- Dissertation KPI

From the comparison of the key performance indicators, it can be seen that the perspectives of the bank are less optimistic in relation to the growth rates of revenues. Capital expenditures were assumed to decrease in the Dissertation's analysis in the future, especially in the two next years, something that is related to the current difficulties Portuguese companies are having, in what concerns funding. In relation to the Working Capital, the Dissertation assumed lower values of Working Capital as a percentage of revenues, while the bank assumes that working capital needs would decrease over the years. A comparison of each sector can be seen in **Appendix 18**.

15. Sensitivity Analysis

Every equity valuation process demands a sensitivity analysis. It is an important tool to verify how the price of the company might differ from the evaluation if the circumstances where the company operates change. Inevitably, things are not always predictable and this sensitivy analysis tries to infer the changes on the price per share of Mota-Engil if some factors do not behave as it was expected in the valuation process conducted in this Dissertation.

Sensitivity Analysis	
Assumptions	**Price per share (€)**
BULL case	**2.98**
• EBITDA margin 2% higher in E&S	2.60
• Revenues of E&S 1.5% higher	2.52
• Non-cash WC 3% lower in ES	2.26
Dissertation value	**2.20**
• CAPEX of E&S 1% higher	2
• EBITDA margin of E&C 1% lower	1.57
• Revenues of E&C 2% lower	1.54
BEAR case	**0.71**

Figure 40- Sensisitivity Analysis

16. Conclusion

With a price per share estimated of 2.20€ for Mota-Engil, which represents a current potential upside of 63%, the recommendation is to buy. The Engineering and Construction segment was assumed to continue to be the most important driver of the economic performance of the company, despite the recognition that the segment of Environment and Services is growing in importance for the company.

It was also assumed a repayment of debt over the years covered in this analysis, as a result of the robust economic performance of Mota-Engil in the time period in consideration. Despite that fact, it was also assumed that the company will continue to have a considerable amount of Debt in the next years. The assumptions regarding the Portuguese Engineering and Construction segment were tremendously negative in this analysis; however, it is important to mention that Mota-Engil has already a considerable amount of revenues in abroad in this segment, something that was assumed to boost their revenues in the time period of 2011-2020.

Appendix 1: International presence of Mota-Engil

The group is present in many countries around the world and the internationalization process has been a reality for the company in the last years. Mota-Engil has operations in former colonies of Portugal like Angola, Mozambique, Sao Tomé and Principe, Brazil and Cape Verde. Mota-Engil also has activities in countries of Central Europe like Poland, Czech Republic, Hungary, Romania and Slovakia. In Latin America, Mota-Engil is present in countries like Colombia, Mexico and Peru.

The strategy of internationalization has the ambition of positioning the group as one of the leading companies in the sectors where the group operates around the world. Furthermore, it is absolutely essential for the company to be present in countries that have good perspectives of strong GDP growth rates in the near future, like Brazil, Angola, or even the countries of Central Europe, especially Poland. It is important not only to open new markets and achieve economies of scale for the company, but also to diversify and consequently, not being so dependent of the performance in Portugal, where things have not been good lately, especially in the Engineering and Construction segment. Certainly, Mota-Engil is and will continue to be one of the companies that has a stronger implementation abroad, among all the most important Portuguese companies.

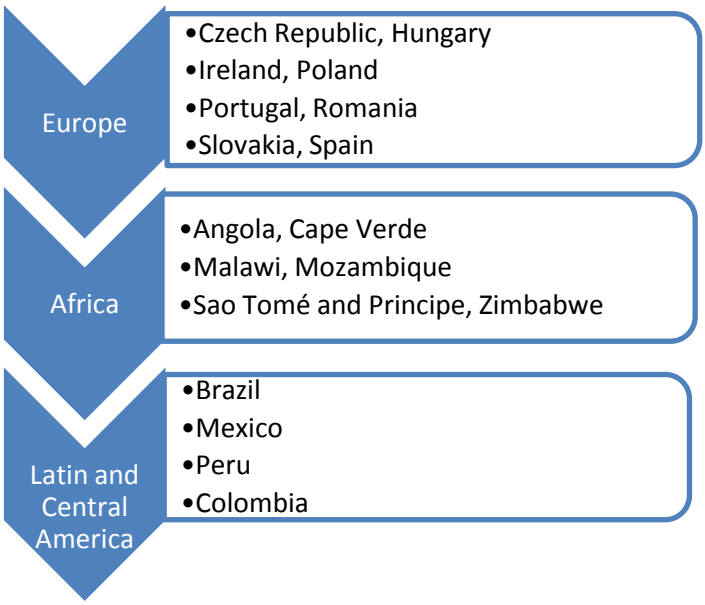


Figure 1-International Presence

Appendix 2- Forecasts of Mota-Engil

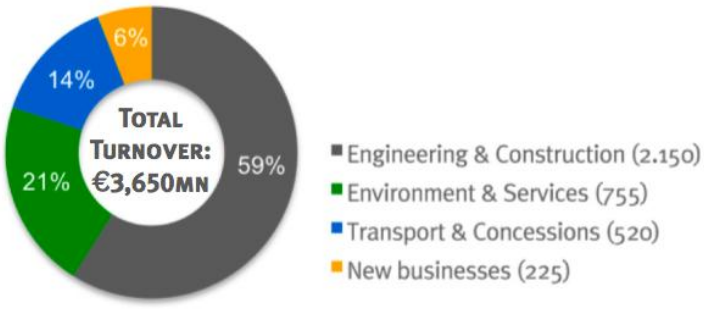


Figure 1-Turnover (Forecast 2013 - €mn)

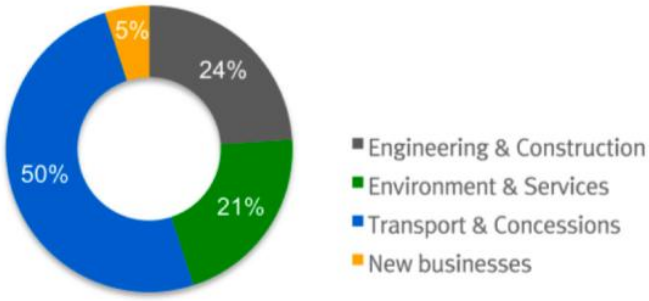


Figure 2-EBITDA Margin (Forecast 2013)

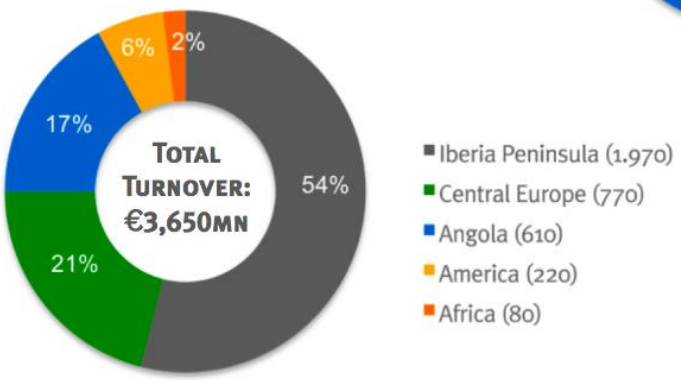


Figure 3- Turnover by Markets (Forecast 2013 - €mn)

Appendix 3- Macroeconomic Framework

3.1. Portuguese Economy

The Portuguese economy is facing a very complicated situation. Unfortunately for Portugal, the sovereign-debt crisis that affected Greece and Ireland expanded to Portugal, causing difficulties for the Portuguese banks in getting funds to finance the Portuguese economy. Actually, Portuguese banks have mainly benefit from the action of the European Central Bank in the last months; otherwise, they would not have been capable of getting enough funds. The IMF, the European Commission and the European Central Bank were forced to help Portugal, in order to solve the current budget deficit, the level of public debt, but also to force the country and especially the Portuguese government to establish a set of policies, with the aim of solving the structural problems of the country.

Portugal does not only have a problem of public and private debt, but also an enormous difficulty of having economic growth. The action of the IMF, the European Commission and of the Central Bank is also concerned with the lack of economic growth evidenced by Portugal in the past years and that is why they are enforcing the implementation of policies that will contribute to a more flexible labor market, to the reduction of subsidies and benefits in the social security field and to the decrease of the Portuguese government influence in the Portuguese economy. Inevitably, those policies will definitely cause a deterioration of the Portuguese level of life in the upcoming years. However, if those measures are well implemented, the Portuguese economy might recover and possibly have a stable economy in the long-term. Despite the difficulties felt in the year of 2010, the Portuguese GDP grew around 1,4%. However, for 2011, the perspectives are not so good and it is expected that the country face a recession. Other major concern of the Portuguese economy is related to the high level of the unemployment rate (10,9% in the end of 2010). The high unemployment rate is another evidence of the reforms that Portugal has to conduct in the near future.

3.2. Angolan economy

Angola is one of the most prominent emerging economies in the world and it was not deeply affected by the economic and financial crisis that started in 2008 with the bankruptcy of the Lehman Brothers in the US. Despite that fact, the GDP growth rate of Angola in 2010 was 2,5%, much lower than the GDP growth rates of other emerging economies and much lower than the growth rates of Angola in the last years.The influence that oil has in the Angolan economy had a negative impact over 2010 and the tendency of an increase in prices of this commodity in the international markets might affect the GDP growth rates of Angola in the near future. Currently, countries are making a special effort to reduce their dependence of oil. Since Angola is a country that exports a considerable amount of oil, it is extremely affected. However, the IMF predicts that in 2011, Angola will return to the usual levels of GDP growth rate seen in the previous years. Actually, the IMF predicts an increase of the national GDP of 7,5% in 2011.

Moreover, Angola has to take special consideration to the inflation rates that currently presents. Unfortunately, Angola continues to be a country not stable enough and consequently, the conditions to invest in Angola continue to be problematic. The fact that Mota-Engil has a strong presence in Angola and specially, a reputation consolidated over the 60 years that has been there, enables the company to be more protected than other similar companies to the instability of the Angolan economy. The growing trade transactions with China and the influence that China is developing in Angola is also a factor that will influence the financial activities in Angola in the near future. Among all the African countries, Angola is definitely the one that possesses more economic relations with the so called BRIC countries, but also with some countries of Latin America and of Asia that are currently experiencing high levels of growth. That fact might be an advantage for the future economic performance of Angola and consequently, of the companies that have operations there, like Mota-Engil. The public infrastructure in Angola continues to be rudimentary and obviously, Mota-Engil is very optimistic about its future performance in Angola. Actually, Mota-Engil is pretty sure that will continue to present two digit growth rates in Angola, especially in the Construction and Engineering sector.

3.3. Polish Economy

Mota-Engil has a strong presence in Central Europe, but it's most important market in this geographic region and consequently, the economy that affects more the performance of Mota-Engil is definitely the Polish economy. The operations of Mota-Engil in Central Europe are extremely focused in Poland. The Polish economy was deeply affected by the subprime financial crisis and only now is recovering. In 2010, Poland had a GDP growth rate of 3,9%. Poland is probably one of the most important emerging countries in Europe, however, the capacity that many analysts recognize concerning the growth capabilities of the Polish economy have to be complemented at the same time with a more rigorous governmental policy. Poland has to reduce its public deficit in the next few years and that factor might affect the future performance of the Polish economy. In the short-term, events like the Euro 2012 might be an incentive for a future strong economic performance that could transform Poland in one of the most important economies of the EU. Although these events might encourage the Polish economy, Poland still is a country with some needs, especially in the infrastructure sector. The Polish economy still needs some investments and taking into consideration that Mota-Engil currently has a good position in this geographic segment, the perspectives of growth in Poland are extremely bright.

3.4. Mozambique, Malawi, Mexico, Peru and Brazil

Despite Mota-Engil being more affected by the macroeconomic contexts of the countries mentioned above, the company is also present in countries like Mozambique, Malawi, Mexico, Peru, Brazil, Cape Verde, São Tomé e Príncipe, Czech Republic, Slovakia, Hungary, Colombia, Ireland and Spain. Among these countries, Mozambique, Malawi, Mexico, Peru and Brazil represent important markets in the future strategy of the company. Mozambique and Malawi are especially important for Mota-Engil, due

to the need that the company has of implementing a strong influence in the African continent and not having operations only in Angola. Mozambique and Malawi are countries with responsible governments, where the economic activity is much more stable and the political risk lower than in Angola. In fact, both countries are expected to have GDP growth rates in the upcoming years of around 7%. Moreover, the governmental policies and public spending are going in the direction of a considerable improvement of the infrastructure of these two countries, especially in the segments of civil engineering and homebuilding. Mexico, Peru and Brazil are also countries where Mota-Engil is trying to develop businesses. These countries are sensitive markets since there is a considerable level of inflation on them, which means that it is harder to find good opportunities for investments, but at the same time they are countries that had relatively good GDP growth rates in the previous years and it is expected that they continue to evidence high GDP growth rates in the upcoming years.

GDP growth rate	2011	2012	2013	2014	2015	2016
Angola	7,8%	10,5%	6,5%	6,4%	6,4%	5,8%
Brazil	4,5%	4,1%	4,1%	4,2%	4,2%	4,2%
Malawi	6,1%	5,7%	5,5%	5,3%	5%	5%
Mexico	4,6%	4%	3,4%	3,2%	3,2%	3,2%
Mozambique	7,5%	7,8%	7,9%	7,8%	7,8%	7,3%
Peru	7,5%	5,8%	5,7%	5,7%	5,7%	5,7%
Poland	3,8%	3,6%	3,7%	3,7%	3,9%	3,9%
Portugal	-1,5%	-0,5%	0.9%	1%	1,2%	1,2%

Figure 1: Estimates of GDP growth rate Source: IMF

Inflation	2011	2012	2013	2014	2015	2016
Angola	14,6%	12,4%	8,9%	6,5%	6%	5,2%
Brazil	6,3%	4,8%	4,5%	4,5%	4,5%	4,5%
Malawi	6,6%	6,9%	6,6%	6,3%	5,8%	5,4%
Mexico	3,6%	3,1%	3%	3%	3%	3%
Mozambique	9,5%	7,2%	5,6%	5,6%	5,6%	5,6%
Peru	2,7%	3,2%	2,5%	2%	2%	2%
Poland	4,1%	2,9%	2,6%	2,5%	2,5%	2,5%
Portugal	2,4%	1,4%	1,4%	1,4%	1,6%	1,8%

Figure 2: Estimates of Inflation rates Source: IMF

Appendix 4- Overview of the Portuguese Construction Sector

The scenario in this sector is bad and parallel to the decrease in production in the construction sector, the level of confidence of all the agents of this sector is low, especially of the entrepreneurs. The average productive capacity and the backlog are also expected to decrease more in the upcoming years, according to the companies operating in this sector.The sales of cement decreased 7.5% in 2010 and 15,4% in 2009. Moreover, 4.6% of people lost their jobs in the construction sector in 2010, compared with 2009. These two factors are clear signs of the low performance of the construction sector in Portugal in the past years and indicate that the sector will continue to suffer losses in the next few years. According to the FEPICOP, three main problems affect this sector nowadays. The reduction of sales, most evident in the residential segment, the difficulties that companies face in receiving their payments and finally, the restrictions that banks are enforcing, concerning the access to credit.

Gross Output of the Construction sector- Current Price Values (€million)				
	2007	**2008**	**2009**	**2010**
Residential	8011	7602	5752	5060
Non-residential	4727	5009	4348	4279
Private	3282	3562	2868	2701
Public	1445	1447	1480	1578
Civil Engineering	6916	7537	7677	7866
Total of the sector	19654	20148	17777	17205

Figure 1- Gross Output of the Portuguese Construction sector (Current Price Values) Source: FEPICOP

Gross Output of the Construction sector- Annual Real Changes				
	2007	**2008**	**2009**	**2010**
Residential	-4%	-10,3%	-22%	-15%
Non-residential	6,8%	0,2%	-10,5%	-4,9%
Private	13%	2,6%	-17%	-9%
Public	-5%	-5,4%	5,5%	3%
Civil Engineering	-1%	3%	5%	-1%
Total of the sector	-0,5%	-3,1%	-9%	-6,5%

Figure 2- Gross Output of the Construction sector (Annual real changes) Source: FEPICOP

4.1 Portuguese Residential Building

The residential building segment has been the most affected by the crisis that began in 2008, especially because of the restrictions that banks started to impose in relation to the credit for housing. Since 2002, it has lost near 59% of its production. In 2010, the decrease was 15%. The number of new buildings in 2010 was 24.304, which corresponds to a reduction of 10% in comparison to 2009 and it corresponds to 20% of the new residential buildings constructed in 1999. Companies in this segment have constantly faced difficulties in the past years. This segment has been the major factor contributing to the crisis of the Portuguese construction sector in the past decade.

4.2 Portuguese Non-residential building segment

This segment is also affected by the economic and financial circumstances of the Portuguese economy. Unfortunately, the private component of this segment has been much more affected than the public one. The level of confidence to conduct the projects in this segment is naturally low and the private agents do not want to bear the risk of doing projects with such an uncertain economic environment. The non-residential building area of construction suffered a reduction of 12,7% in the year 2010, in comparison with the year of 2009.

The public component performed pretty well compared with the private, as well as with the other segments in 2010 and 2009. As a consequence of public investments by the Portuguese government, particularly the program of schools rehabilitation ("Parque Escolar") that has boosted this component of the non-residential segment, the public component increased its production by 3% in 2010 and the private component decreased 9% in the last year, which contributed to an average decrease of 4,9% of the Portuguese non-residential building segment in 2010.

4.3 Portuguese Civil Engineering segment

This segment is also decreasing in importance in Portugal and in 2010, it faced a reduction of production of 1%. In fact, this segment was too much affected by the planned construction works of the Portuguese government that turned out not to be realized due to the economic conditions of the country.

4.4 International Activity of the Portuguese Construction companies

Due to the breakdown of the Portuguese construction sector in the last years, companies of the construction sector have been investing and moving to other countries in the world. Moreover, the tendency of the Portuguese companies has been to bet in Africa, especially because in countries like Angola or Mozambique, two former colonies of Portugal, the GDP growth rates have been high and a considerable amount of investments in the construction sector has been made.

4.5 Perspectives for the future of the Portuguese Construction sector

As a consequence of the sovereign debt crisis affecting Portugal, the construction sector will be even more affected and consequently, it will face some more years of difficulties. It is of most importance that the Portuguese economy starts having economic growth, otherwise, the restrictions that the Portuguese economy is now facing will only contribute for a deeper stagnation of the country and as a consequence, of the Portuguese construction sector. Unfortunately, all the agents of the Portuguese construction sector are not confident about the near future and there has been a contraction of the demand over the years in this sector.

Production of the sector- real variance in production					
	2009	2010		2011E	
			Lower limit	Average	Upper limit
Residential	-22%	-15%	-9%	-8%	-7%
Non-residential	-10,5%	-4,9%	-6%	-5%	-4%
Private	-17%	-9%	-9%	-8%	-7%
Public	5%	3%	-1%	0%	1%
Civil Engineering	5,5%	-1%	-4%	-3%	-2%
TOTAL	-9%	-6,5%	-6%	-5%	-4%

Figure 3- Production of the Portuguese Construction sector Source: FEPICOP

Residential Buildings

The future perspectives for this sector are not bright in Portugal. The weight that residential buildings have in the Portuguese construction sector will surely decrease in the next few years, especially because the country has to establish restrictive economic policies, that will affect people and consequently, the construction of residential will probably decline. The incentives that the Portuguese government is planning to give to people that rent houses is other factor for the probable decrease in the construction of houses.

Non-residential building segment

In spite of not being expectable to decrease its level of production as the residential building segment, it is a matter of fact that the non-residential building segment will also see a reduction of its level of production. The private component will continue to decrease as a consequence of the volatility of the economic situation in Portugal. The public component, due to the restrictions that the Portuguese government will face in the next 2/3 years, will also see some public projects delayed.

Civil Engineering

As the other two segments, civil engineering is also expected to see a decrease in its level of production. Some PPP (public and private partnerships) projects are in stand-by, due to the economic situation in Portugal and it is surely a factor that might cause an even deeper decrease of this segment in the next few years.

Appendix 5- Overview of the Polish Construction Sector

The Polish construction sector has seen considerable growth rates in the last decade, but since 2008, the rhythm of growth has decelerated. Despite that fact, the perspectives for the future are optimistic for the Polish construction sector because Poland will have to realize a considerable amount of public works in the next few years, especially due to the organization of the EURO-2012. Among the major construction companies operating in Poland are companies such as Budimex, Polimex-Mostostal, Strabag or Skanska. In 2010, the value of the Polish construction output was estimated to be 40€bn.

Value of construction and assembly output in Poland (€million)			
	2007	2008	2009
Residential buildings	2557	3741	3323
Non-residential buildings	5035	6247	5977
Civil Engineering	8290	9177	11620
TOTAL	15882	19165	20920

Figure 1- Value of construction and assembly output in Poland
Source: GUS (Central Statistical Office), PMR Publications, 2011

5.1. Civil Engineering Construction

Road construction has been the most important segment of the Polish Civil Engineering construction and in 2010, it accounted for nearly 43% of the output of Civil Engineering construction, which reflects the tendency of Poland to improve its infrastructure.

5.2. Non-residential construction

In the non-residential construction segment, public utility buildings saw an increase in production, while service and retail buildings had a decrease of total output. The construction permits allowed in 2010 amounted to 41.700 buildings.

5.3 Residential construction

In relation to the residential construction, things are a little bit worse than in the other segments. According to the estimates of PMR, the construction output decreased around 2.35€bn in 2010 in the residential construction segment.

5.4 Future Perspectives in the Polish Construction sector

PMR estimates that the construction output in Poland in 2011 will grow 11%. The main driver for this growth rate is the civil engineering projects that are going to be developed in Poland. In 2012 and 2013,

PMR predicts that the construction sector in Poland will decrease its growth rates, but predict that the sector will continue to grow. In 2010, residential construction and railway construction were the segments where construction output increased more. Road construction, environmental construction and sports facilities construction declined in 2010.

Civil engineering construction will continue to be the main driver of growth of the construction sector in Poland in the years of 2011 and 2012. Civil Engineering projects related with EURO 2012, which will be hosted by Poland, are expected to contribute for the growth of the civil engineering construction of the country. Capital expenditures in the segments of water supply and sewerage discharge will also be drivers of the future growth of this segment of the Polish construction sector. Finally, the power sector is also other sector where a considerable growth is expected.

The non-residential building segment will not grow as much as the civil engineering segment in Poland for the next years, due to the financial restrictions that the Polish government is facing, as many other governments in the world. However, the performance in 2010 was positive and perspectives are a little brighter than months ago, especially because the private component is not expected to decrease as much as the public component. The residential construction segment in Poland was the worst performer in 2009 and 2010, with a decrease of nearly 10% in both years. Large projects have been suspended and of the three segments is probably the one that will perform worse in the next three years, at least.

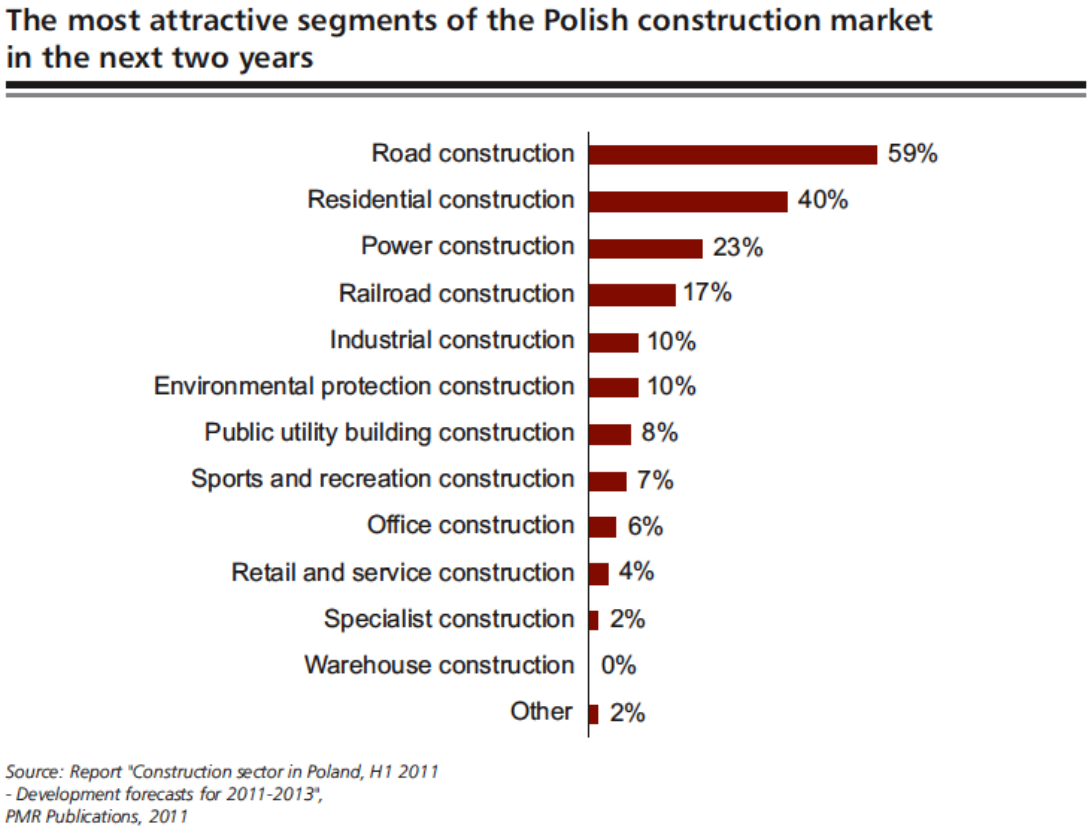


Figure 2- Attractive segments of the Polish construction market in the next 2 years Source: PMR Publications

Appendix 6- SUMA activity (Portugal and abroad)

The group SUMA encompasses near 30 companies that operate in different countries like Portugal, Brazil, Angola and Poland. With nearly 4700 workers, the company has been increasing in the past years. In 2010, the turnover increased 26% in comparison with 2009 and the EBITDA margin increased 2% in relation to 2009, being now of 26%. The population covered is by now of nearly 8,8 millions and in 2010, SUMA collected an amount of 2,5 millions of tons of urban solid waste and half a million tons of industrial waste. In Portugal, SUMA has a market share of 54% and the company is going to expand itself to new markets, being Mozambique and Peru the next targets of the company. Moreover, in every market that the company is present will probably have in the future considerable growth rates.

National presence

Contracts in progress (longer than 1 year)		
	Municipalities hired	**Population covered**
Collection of solid waste/street cleaning	53	2.310.897
Management/Treatment of solid waste	36	610.466

Figure 1- Contracts in progress for SUMA
Source: SUMA

MSW-Collection and Treatment	Tons
2010	2.457.360
2009	1.478.880
2008	1.343.042
2007	1.249.988

Figure 2- Municipal Solid Waste-Collection and Treatment Source: SUMA

Turnover (€Million)	
2011E	172
2010	119,2
2009	95
2008	82,6
2007	70,8

Figure 3- Turnover Source: SUMA

Industrial Waste-Collection and Treatment	Tons
2010	556.000
2009	183.748
2008	77.717
2007	76.741

Figure 4- Industrial Waste- Collection and Treatment Source: SUMA

EBITDA margin (%)	
2011E	23%
2010	26%
2009	24%
2008	24%
2007	29%

Figure 5- EBITDA margin
Source: SUMA

4.1.1 Vista Waste Management-Angola

Vista Waste Management is a company of the group SUMA that is responsible for the Waste segment in Angola of Mota-Engil. The Angolan Government is making an effort to develop the waste infrastructure in Angola and consequently, Vista Waste Management is on the front line to prosper in the future. The company was considered the best operating on the waste sector in Luanda. It started operating in 2008 and its activity focus on guaranteeing an efficient collection, street cleaning, treatment and environmental education. In 2010, Vista Waste Management had a turnover of 22€ million and it has near 800 workers. The volume of waste collected in 2010 amounted to 103 thousand tons, which represented an increase of 48% in relation to 2009.

5.1.1.2. Geo Vision-Brazil

Geo Vision is one of the top ten leaders in the waste sector in Brazil and SUMA with its share of 50% of Geo Vision acquired a very valuable asset. The Brazilian economy is now growing and in this sector, it a very good strategy to have a company like Geo Vision, especially because it is implemented on Ribeirão Preto, which is one of the richest regions of Brazil.

5.1.1.3. Ekosrodowisko-Poland

Ekosrodowisko is the company of SUMA responsible for the collection services and street cleaning in the Polish waste sector. It is present in the region of Krakow, one of the most industrialized in Poland and in 2010 increased its turnover by 400%, collecting 6 thousand tons of waste, that contributed for a turnover of 2,2€ million.

The investments that are going to be realized in the future due to the organization of the EURO 2012 in Poland a very positive sign for the development of this sector and Mota-Engil with Ekosrodowisko will surely benefit from it.

% of the Turnover abroad (Poland/Angola/Brazil)	
2011E	47%
2010	20%
2009	8%

Figure 6- % of the international turnover of SUMA Source: SUMA

Appendix 7- Indaqua

Indaqua was founded in 1994 and it is the company of Mota-Engil responsible for the water distribution and wastewater treatment. Indaqua is currently the biggest private operator in the municipal concessions universe. The Portuguese population covered by Indaqua is currently of half a million people. The company has 5 concessions **(Appendix 6)**:

Concessions
Indaqua Fafe
Indaqua Matosinhos
Indaqua Santo Tirso/Trofa
Indaqua Feira
Indaqua Vila do Conde

Figure 1- Concessions of Indaqua Source: Indaqua

Over the years, Indaqua has developed many business plans to improve its services. In the concessions above mentioned, there have been considerable developments and the population covered by Indaqua has increased in every concession. The investments plan of Indaqua is now of 350€ million and it is not sponsored by the EU. Indaqua is also present in Angola with Vista Water. The company expects to grow in Angola, since Angola is investing on the development of its water distribution services. Proper sanitation still is a field that is in need of a proper investment program in Angola and Vista Water can benefit from that.

Portuguese Concessions

Indaqua Santa Maria da Feira
Region- Santa Maria da Feira
Beginning of the concession- December of 1999
Period of the concession: 50 years
Assets- 75.579.784€
Clients-34.462
Population-140.000
Workers- 67
Investment plan-117.217.506€

Figure 2- Indaqua Santa Maria da Feira Source: Indaqua

Indaqua Santo Tirso e Trofa
Region- Santo Tirso e Trofa
Beginning of the concession- December of 1998
Period of the concession: 35 years
Assets- 21.778.707€
Clients-22.461
Population-140.000
Workers- 31
Investment plan-31.000.000€

Figure 3- Indaqua Santo Tirso e Trofa Source: Indaqua

Indaqua Vila do Conde
Region- Vila do Conde
Beginning of the concession- 2008
Period of the concession: 40 years
Assets- 21.401.862€
Clients-29.353
Population-93.000
Workers-68
Investment plan-87.105.138€

Figure 4- Indaqua Vila do Conde Source: Indaqua

Indaqua Fafe
Region- Fafe
Beginning of the concession- January 1996
Period of the concession- 25 years
Assets- 1.444.989€
Clients-15.670
Population-55.000
Workers- 33

Figure 5- Indaqua Fafe Source: Indaqua

Indaqua Matosinhos
Region- Matosinhos
Beginning of the concession- 2007
Period of the concession: 25 years
Assets- 31.847.049€
Clients-83.928
Population-170.000
Workers-127
Investment plan-75.000.000€

Figure 6- Indaqua Matosinhos Source:Indaqua

Appendix 8- Operators and Population covered in the drinking water supply services

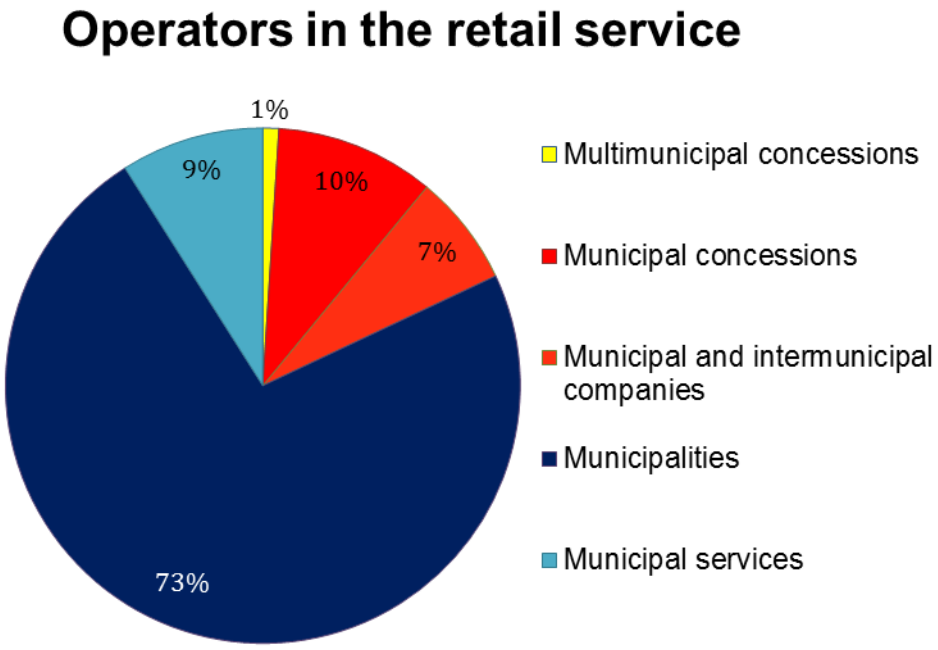


Figure 1- Operators of the Retail service of the Portuguese drinking water supply services.

SOURCE: RASARP 2009

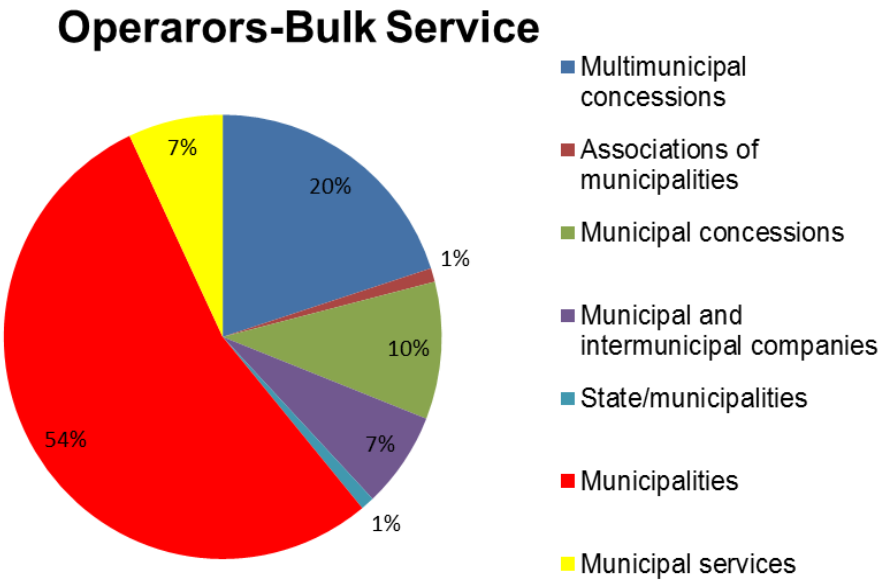


Figure 2- Operators of the Bulk service of the Portuguese drinking water supply services.

SOURCE: RASARP 2009

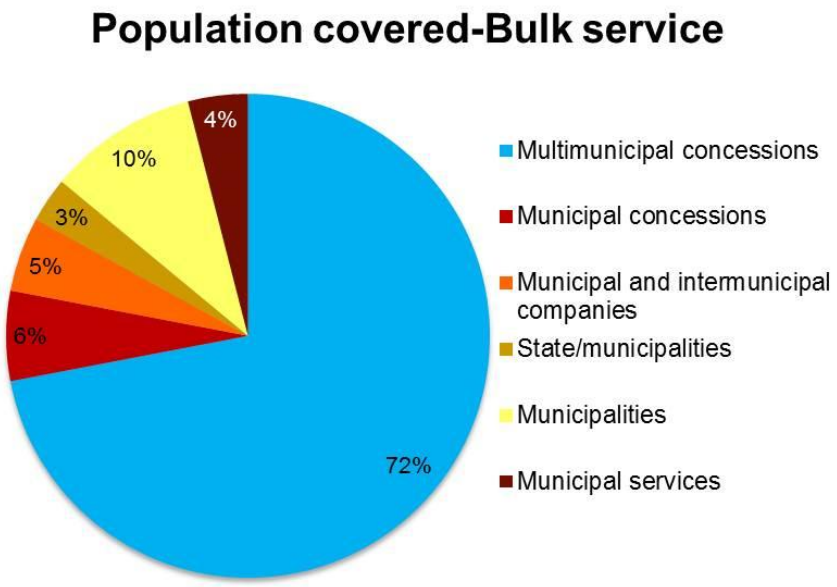


Figure 3: Population covered in the bulk service by type of management model

Source: RASARP 2009

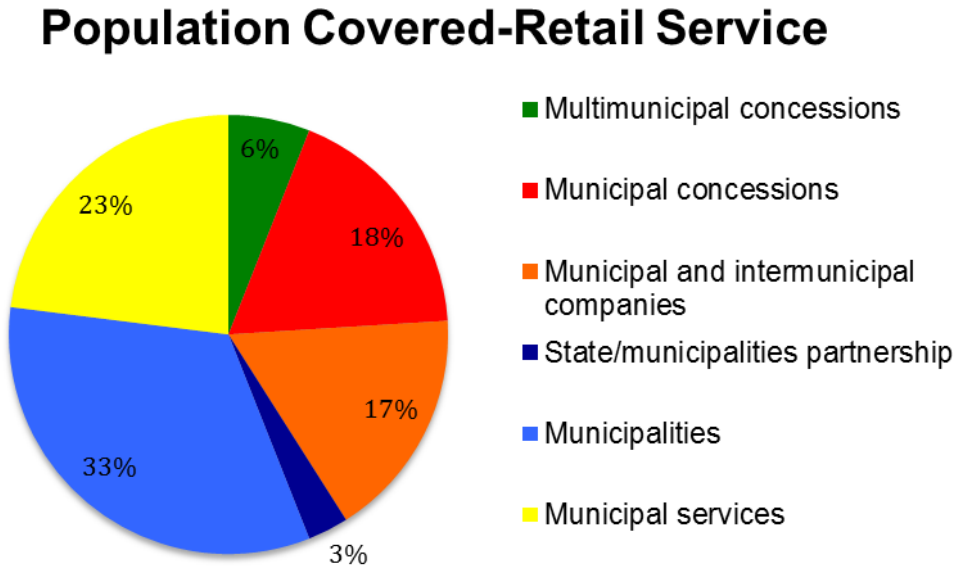


Figure 4 -Population covered in the retail service by type of management model

Source: RASARP 2009

Appendix 9-Operators and population covered in the Portuguese waste services 2009

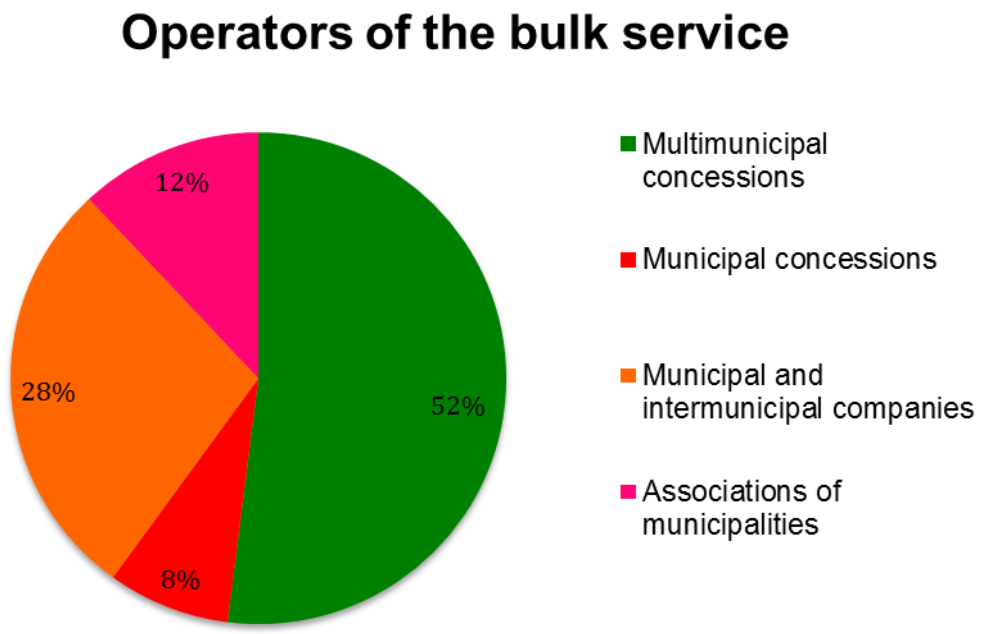


Fig. 1- Operators of the bulk service Source: RASARP 2009

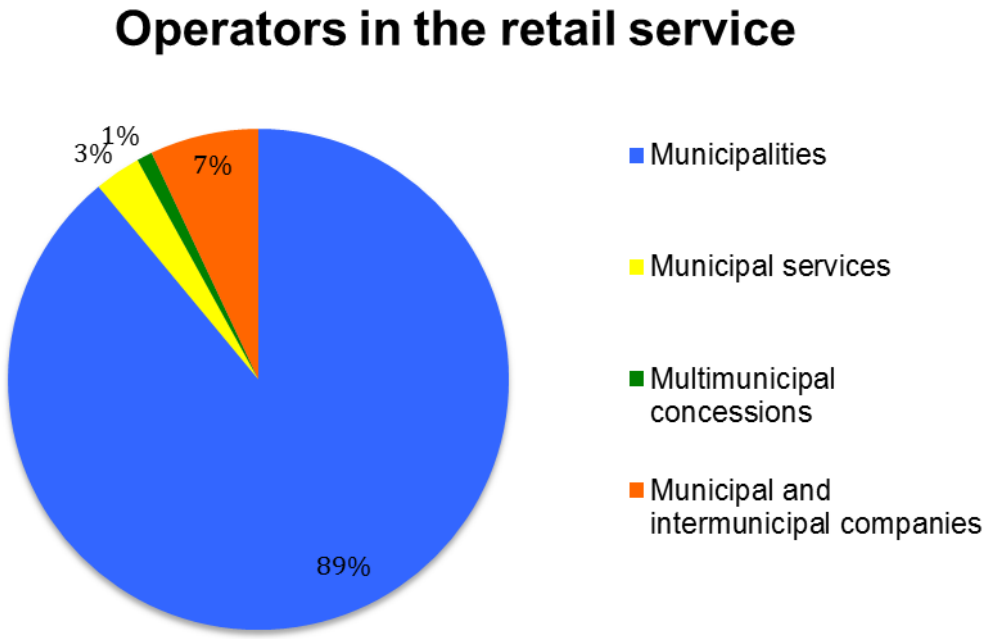


Fig. 2- Operators in the retail service Source: RASARP 2009

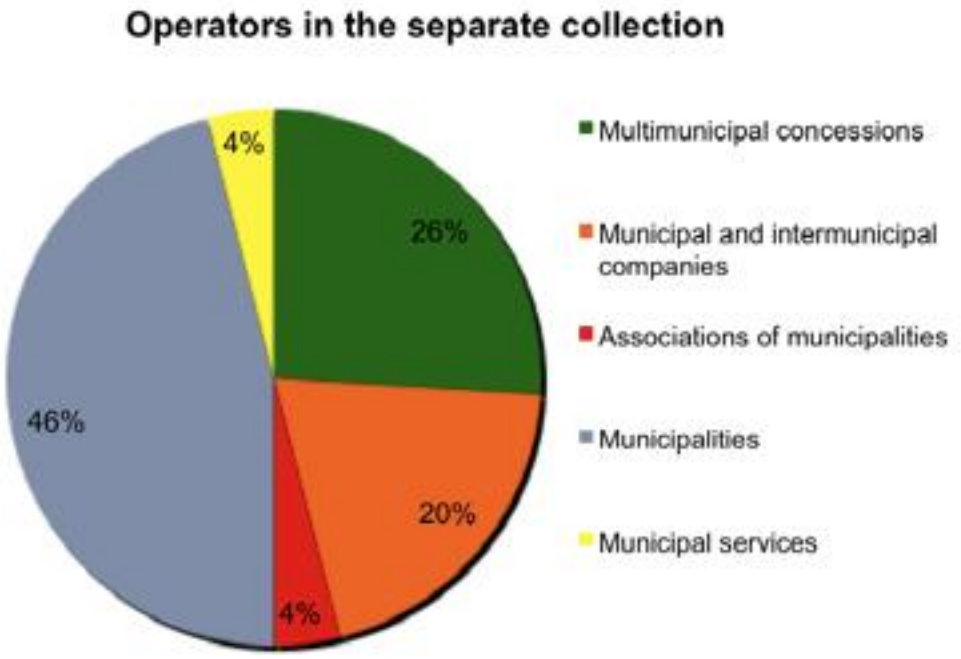


Fig. 3- Operators in the separate collection Source: RASARP 2009

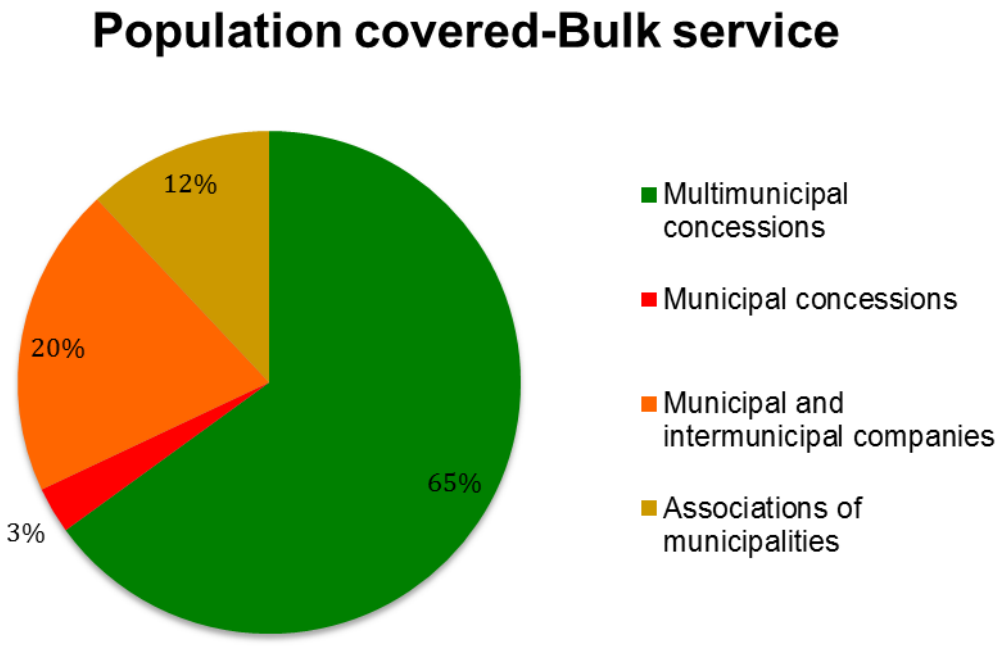


Fig. 4- Population covered in the bulk service Source: RASARP 2009

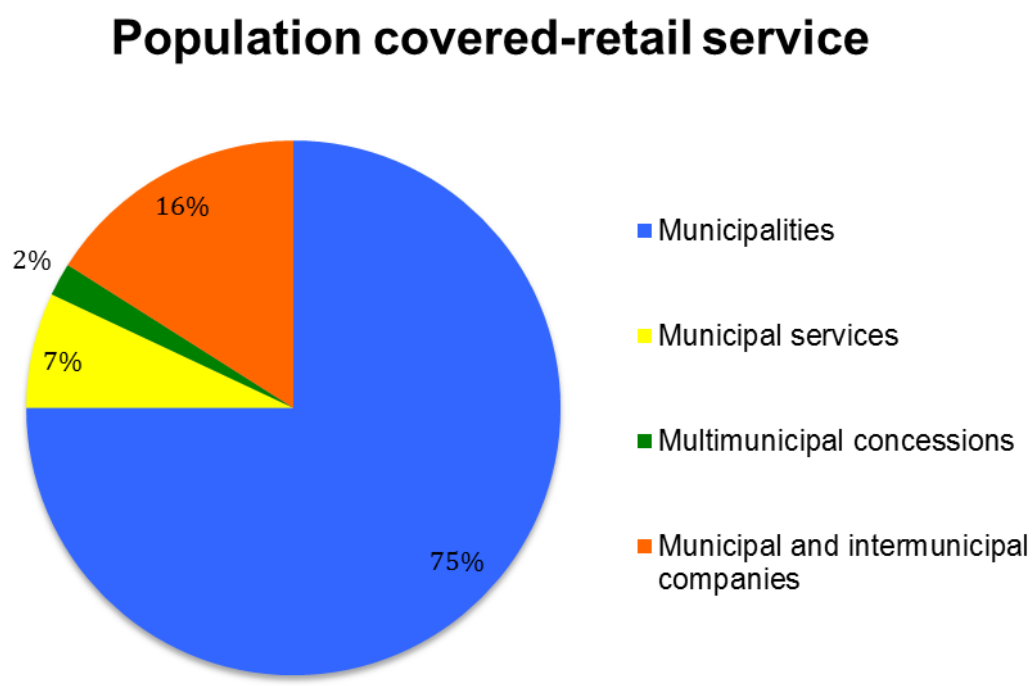


Fig.5- Population covered in the retail service Source: RASARP 2009

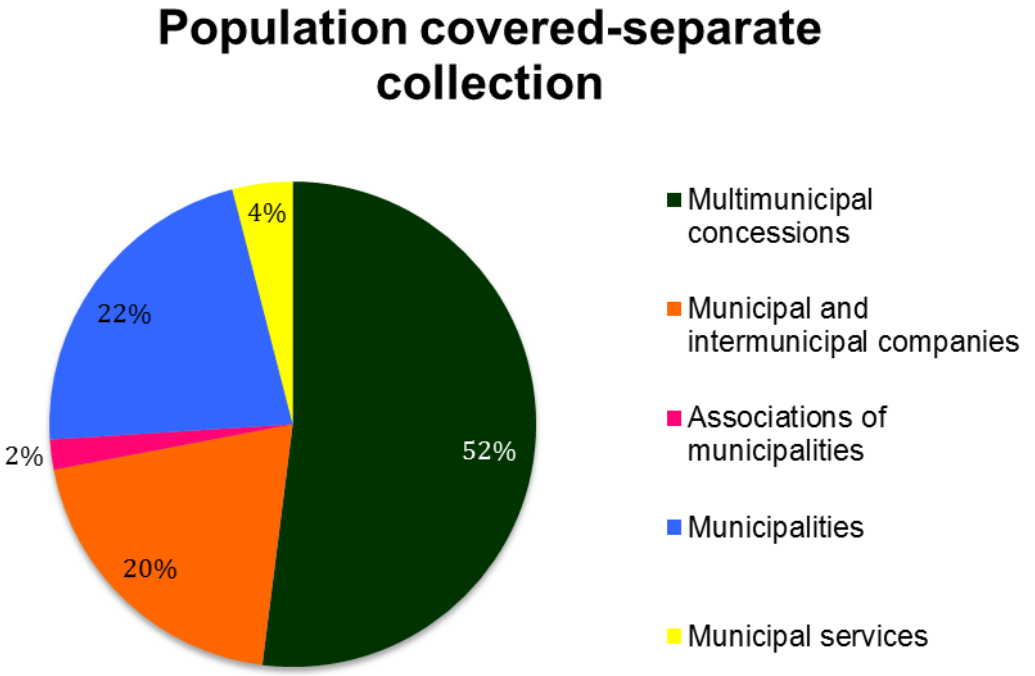


Fig.6- Population covered in the separate collection Source: RASARP 2009

Appendix 10- Evolution of the Portuguese population covered by water and waste services

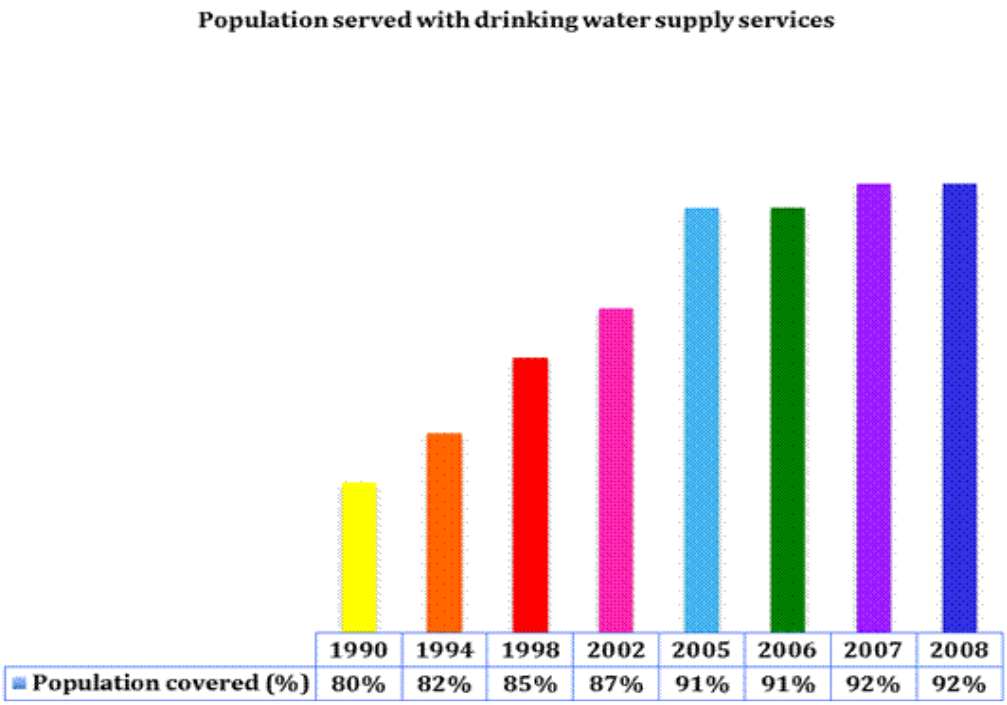


Figure1: Evolution of the population served with drinking water supply services Source: RASARP2009

In 1990, 80% of the Portuguese population was covered with drinking water supply services. Two decades after, the percentage is now of 92%, something that is a fact of the development of the living conditions of the Portuguese. Unfortunately, for the operators it also means that it is going to be difficult to grow in the sector, unless they conquer the concessions from other operators.

The reality of the drinking water supply services is not so well copied in the waste sector. In fact, 29% of the population still is not served with wastewater treatments and 20% still do not have drainage systems, so there might be some opportunities left for the operators in the waste sector, in what concerns population covered. However, things are much better in the destination of the municipal waste in Portugal, adequate disposal is near 100%.

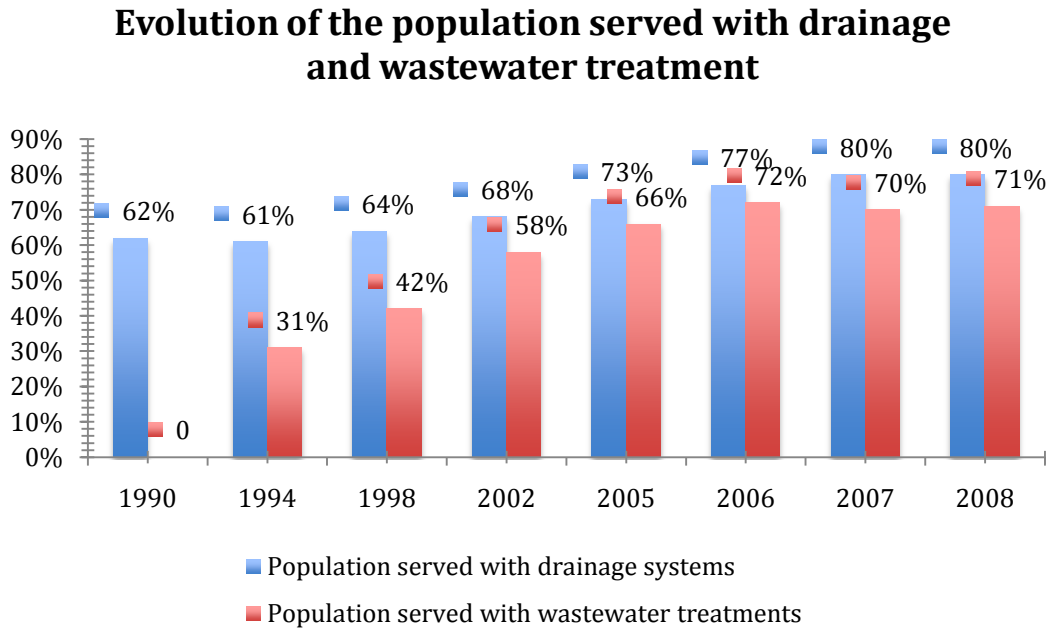
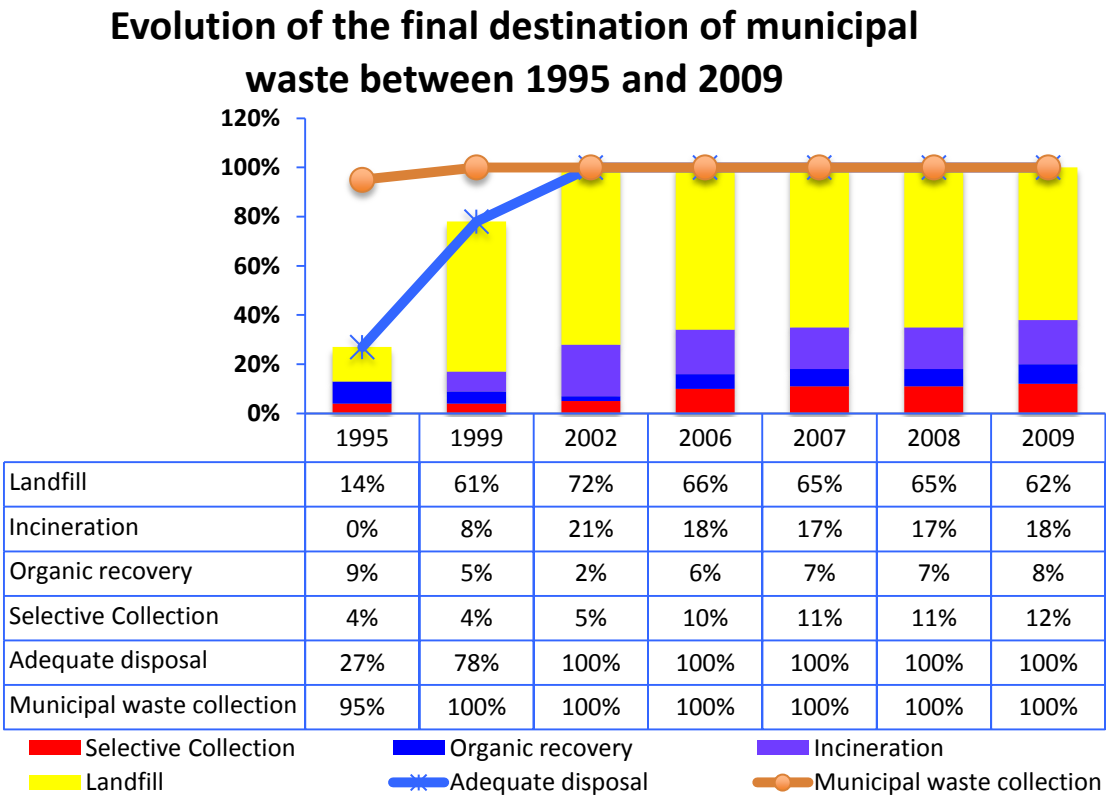


Fig.2: Evolution of the population served with drainage and wastewater treatment Source: RASARP 2009



	1995	1999	2002	2006	2007	2008	2009
Landfill	14%	61%	72%	66%	65%	65%	62%
Incineration	0%	8%	21%	18%	17%	17%	18%
Organic recovery	9%	5%	2%	6%	7%	7%	8%
Selective Collection	4%	4%	5%	10%	11%	11%	12%
Adequate disposal	27%	78%	100%	100%	100%	100%	100%
Municipal waste collection	95%	100%	100%	100%	100%	100%	100%

Fig.3- Evolution of the final destination of municipal waste 1995-2009

Source: RASARP 2009

Appendix 11- Ownership of share capital of multimunicipal and municipal concessions of water services and of municipal waste management operators

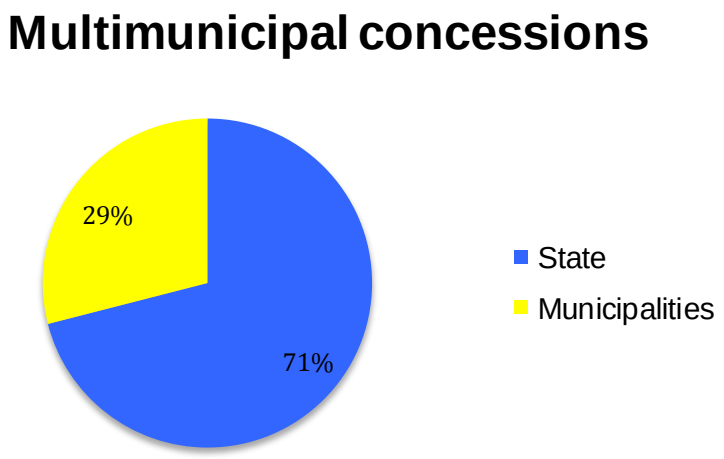


Figure 1 – Multimunicipal concessions of water services Source: RASARP 2009

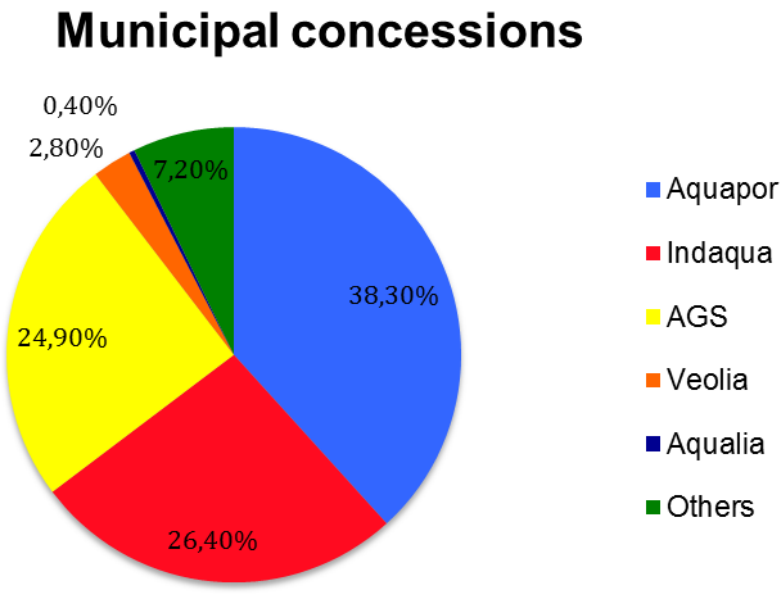


Figure 2– Municipal concessions of water services Source: RASARP 2009

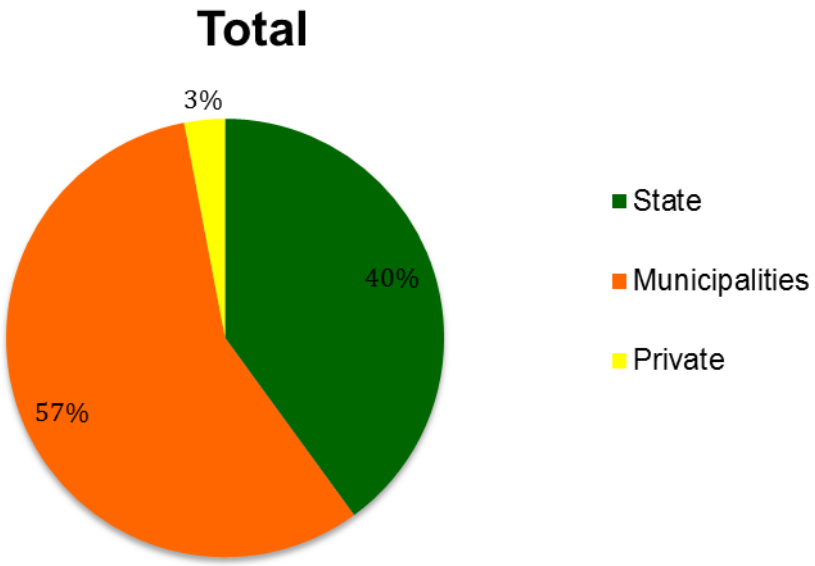


Figure 3– Total ownership of waste services Source: RASARP 2009

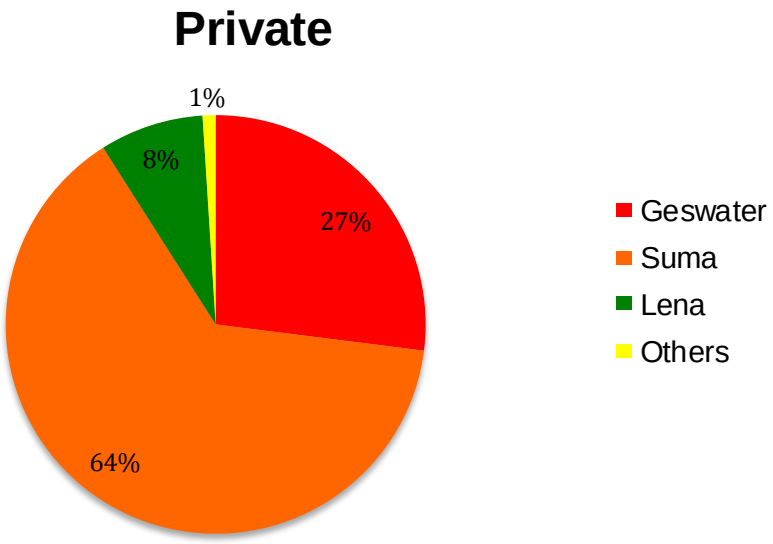


Figure 4– Private ownership of waste services Source: RASARP 2009

Appendix 12- Turnover of the Portuguese Water and Waste sectors

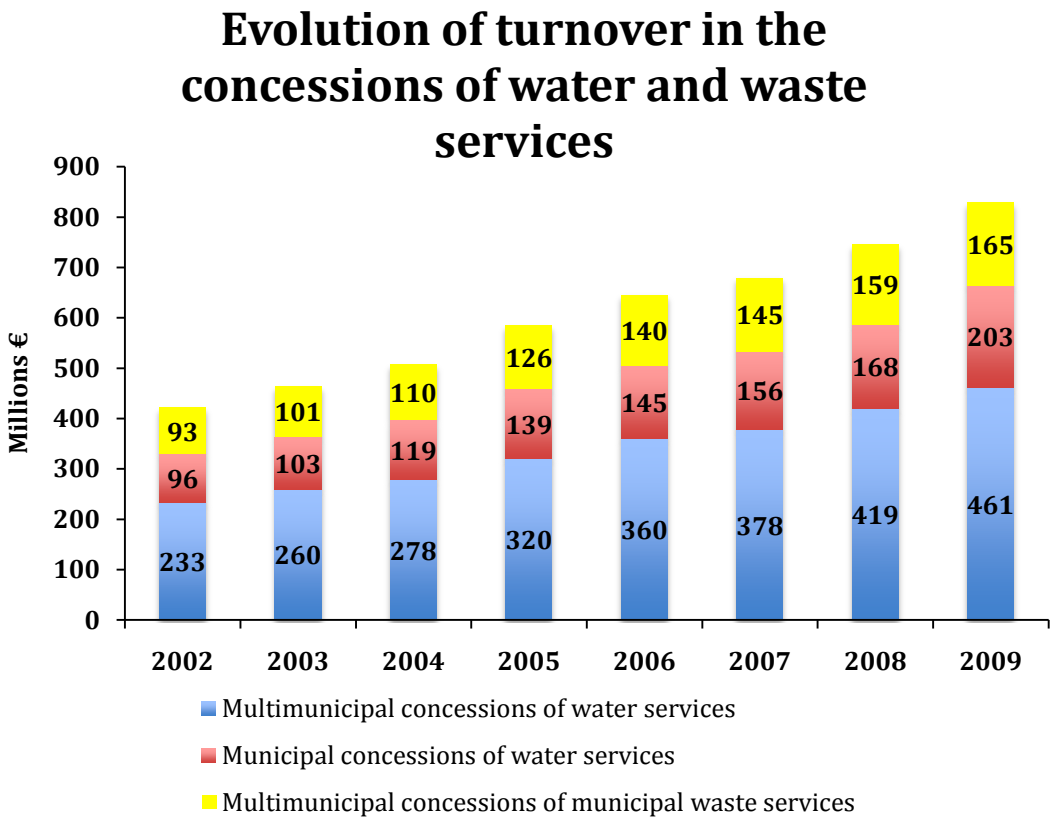


Fig. 1- Evolution of turnover in the concessions of water and waste services Source: RASARP 2009

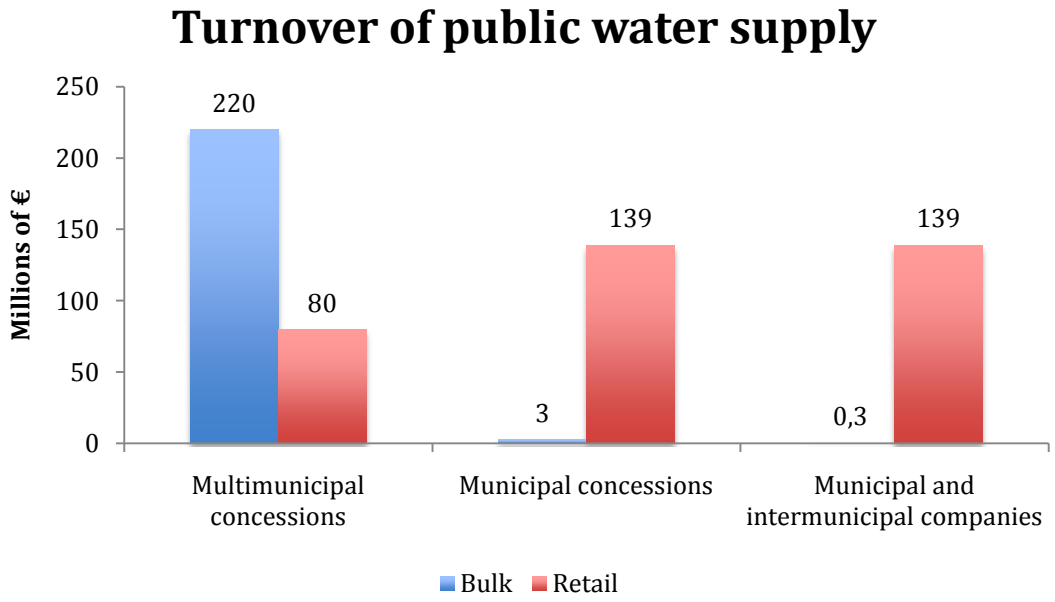


Fig. 2- Turnover of public water supply Source: RASARP 2009

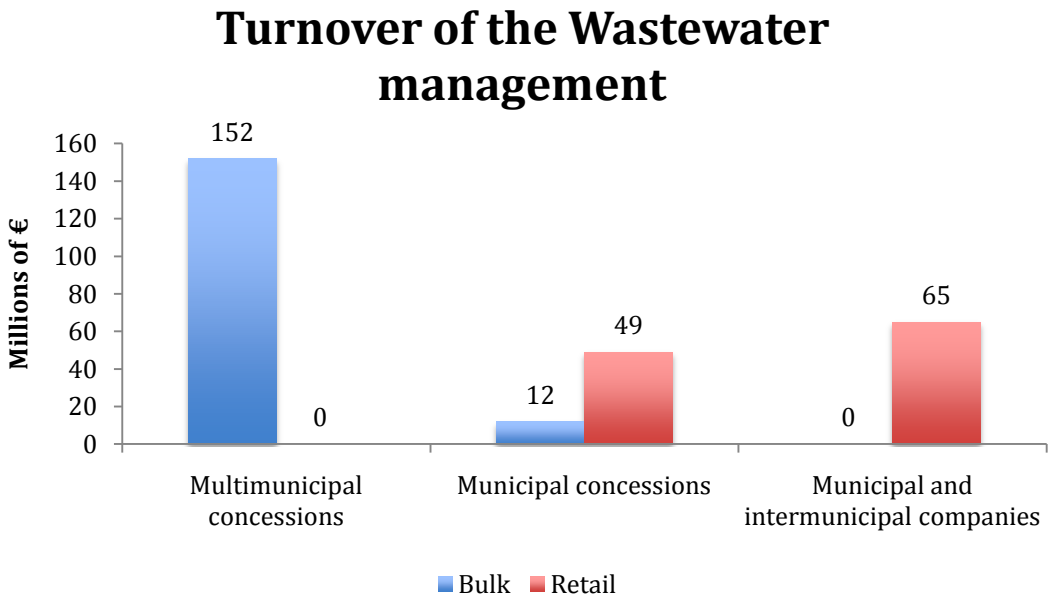


Fig. 3- Turnover of the Wastewater management Source: RASARP 2009

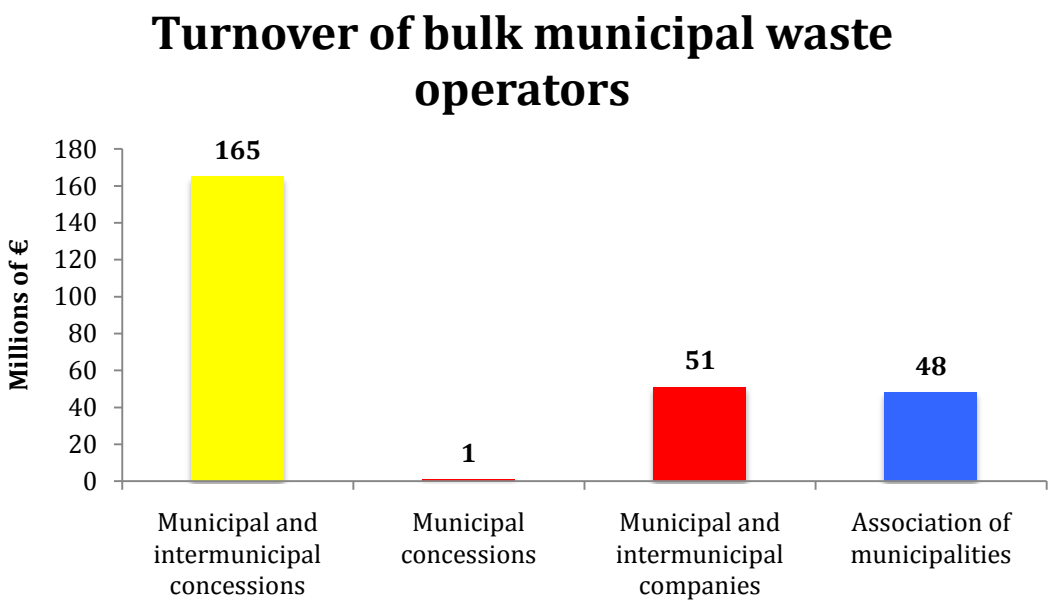


Fig. 4- Turnover of bulk municipal waste operators Source: RASARP 2009

Appendix 13-Operating expenses and other operating income

From the analysis of the historical reports of Mota-Engil, it was not possible to see the exact values of operating expenses and other operating income by segment. However, it was possible to see the values of EBITDA by segment and the values of each type of operating expense and other operating income of the group. The first step taken was to look to the historical values of the EBITDA of Mota-Engil and estimate each type of operating expense and other income of the group as a % of the total revenues.

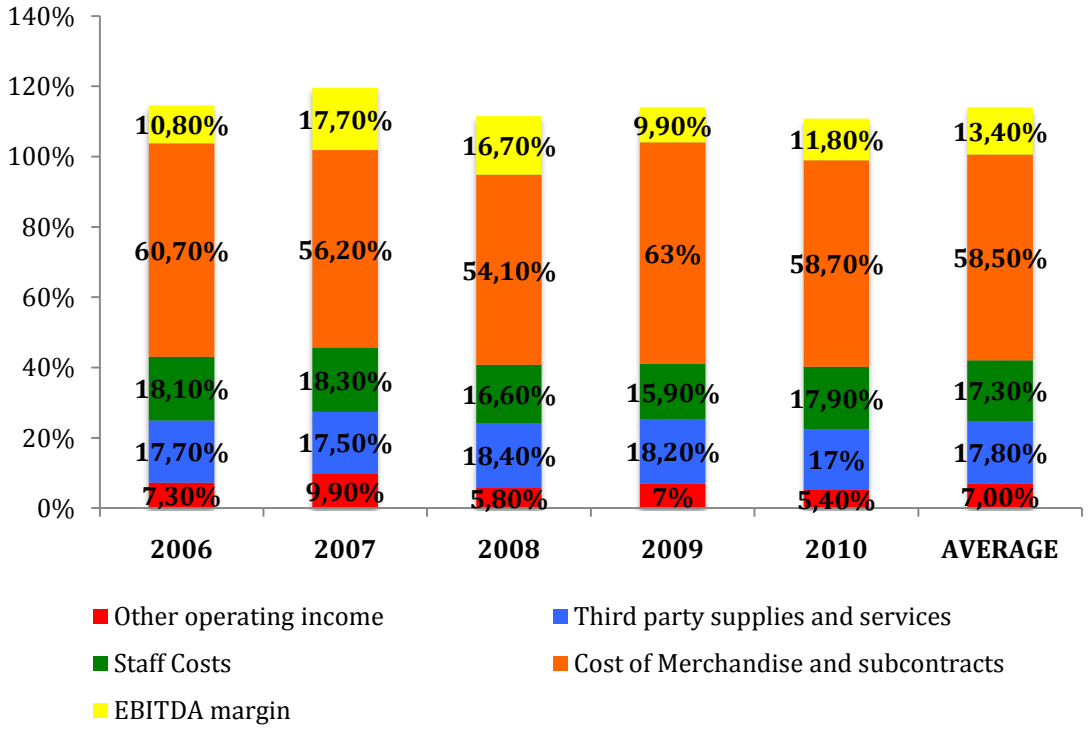
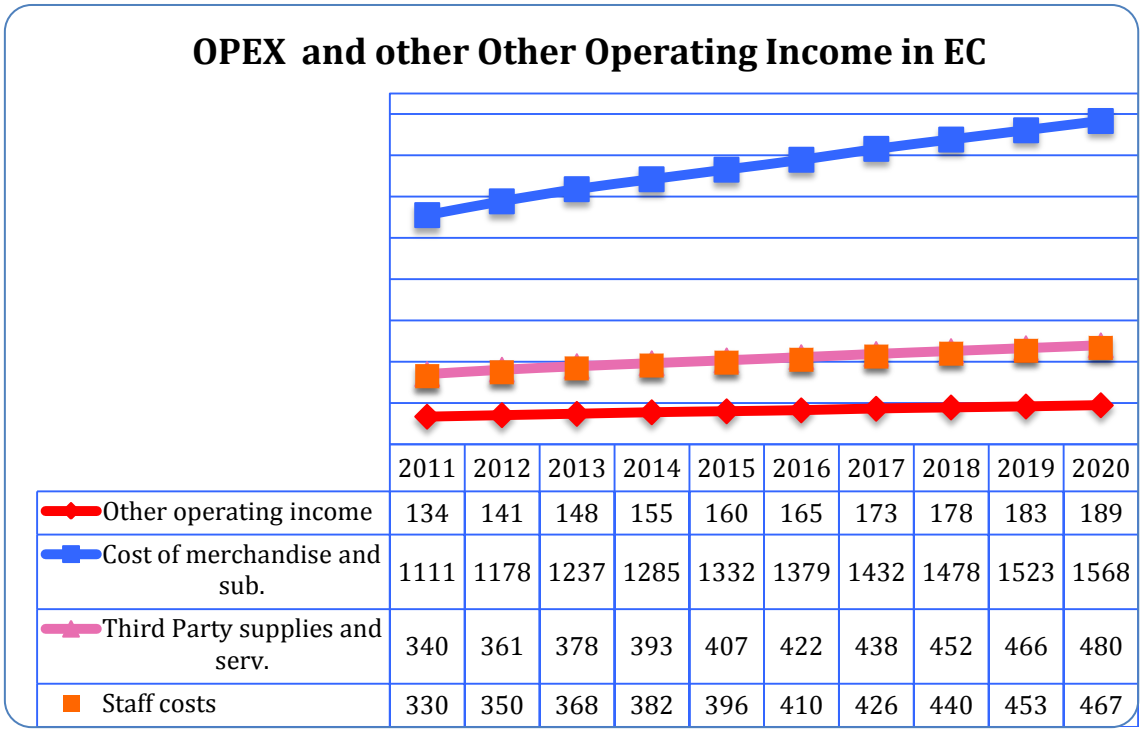


Figure 1- EBITDA margin of Mota-Engil in previous years Source: Mota-Engil

EBITDA= Revenues + Other operating income - Third party supplies and services - Staff costs -Cost of Merchandise and subcontracts

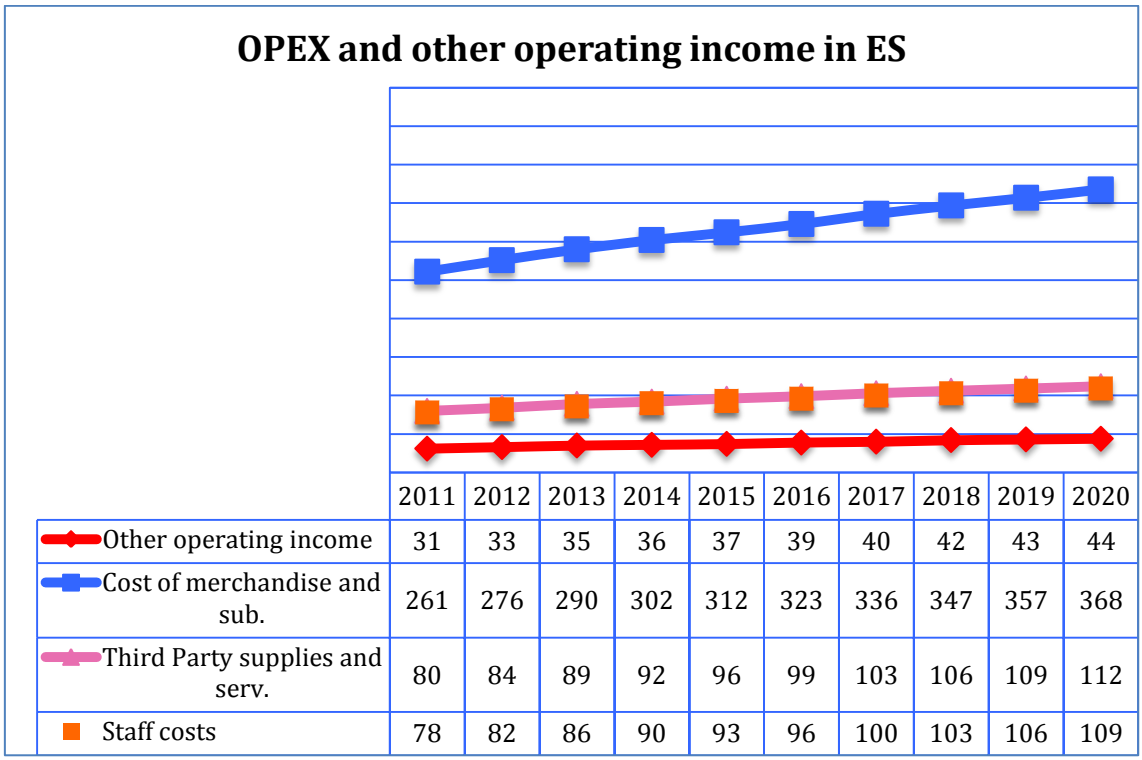
% of Revenues	Mota-Engil consolidated (AVERAGE of the last 5 years)	E&C	E&S
Other operating income	7%	7,35%	6,5%
Staff costs	17,3%	18,2%	16,1%
Cost of merchandise and subcontracts	58,5%	61,5%	54,2%
Third party supplies and services	17,8%	18,7%	16,5%
EBITDA margin	**13,4%**	**9%**	**19,7%**

Figure 2- Operating expenses and other income of each segment for the period 2011-2020



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Other operating income	134	141	148	155	160	165	173	178	183	189
Cost of merchandise and sub.	1111	1178	1237	1285	1332	1379	1432	1478	1523	1568
Third Party supplies and serv.	340	361	378	393	407	422	438	452	466	480
Staff costs	330	350	368	382	396	410	426	440	453	467

Figure 3- Operating expenses and other operating income in EC



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Other operating income	31	33	35	36	37	39	40	42	43	44
Cost of merchandise and sub.	261	276	290	302	312	323	336	347	357	368
Third Party supplies and serv.	80	84	89	92	96	99	103	106	109	112
Staff costs	78	82	86	90	93	96	100	103	106	109

Figure 4-Operating expenses and other operating income in ES

Categories of operating expenses

Cost of merchandise and subcontracts- In relation to cost of merchandise and subcontracts, there are three main divisions of this category of operating expenses: merchandise, raw and subsidiary materials and consumables and finally, subcontracts. Subcontracts are traditionally the component with

the highest value in this category and in what concerns the dissertation; it was assumed that 70% of the value of cost of merchandise and subcontracts would be allocated to subcontracts in the time period of 2011-2020. Raw materials would account for 29% and merchandise only 1%, since Mota-Engil does not have too much merchandise, at least compared with subcontracts and raw materials, as it is evident by the fact of being an engineering and construction company.

(€million)	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Merchandise	38	42	26	12	14	15	15	16	17	17	18	18	19	20
Raw materials	253	307	342	319	373	395	415	431	447	462	480	496	511	526
Subcontracts	497	663	879	844	985	1044	1097	1140	1180	1222	1270	1311	1350	1391
TOTAL	788	1012	1247	1175	1372	1454	1527	1587	1644	1701	1768	1825	1880	1937

Figure 5-Cost of merchandise and subcontracts of Mota-Engil

Third Party Supplies and Services- The category of third party supplies and services has a considerable amount of variables. The estimates for this category relied on the weight that each variable of third party supplies and services had on 2010. Basically, the whole amount of third party supplies and services projected until 2020 was allocated to each variable recurring to the weight that each variable had on 2010 in the category of Third Party supllies and services.

(€million)	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Leases/rents	75	106	118	110	136	144	151	157	163	169	175	181	186	192
Special works	36	60	63	51	63	67	70	73	75	78	81	84	86	89
Transport	28	37	47	41	51	54	56	58	61	63	65	67	69	71
Maintenance	21	25	28	32	40	42	44	46	47	49	51	53	54	56
Fuel	12	17	16	19	23	25	26	27	28	29	30	31	32	33
Insurance	10	9	12	10	12	13	14	14	15	15	16	16	17	17
Commissions	10	10	10	8	10	10	11	11	12	12	13	13	14	14
Water/electricity	7	9	9	8	10	10	11	11	12	12	13	13	14	14
Utensils	5	7	8	11	14	14	15	16	16	17	18	18	19	19
Vigilance	4	6	7	8	10	10	11	11	12	12	13	13	14	14
Communications	7	8	5	6	7	8	8	9	9	9	10	10	10	10
Advertising	1	2	2	3	4	4	4	4	4	5	5	5	5	5
Other	29	48	34	33	41	43	45	47	49	51	53	54	56	57
TOTAL	245	344	359	340	421	444	466	484	503	521	543	558	576	591

Figure 6-Third party supplies and services of Mota-Engil

Staff Costs- In the category of staff costs is included two types of costs: remuneration and social security charges. The estimates used on the dissertation assumed that the largest share of staff costs would be attributable to remuneration. Social security charges are basically pensions and other benefits conceded. Since, it is assumed that the company will grow, it was also assumed that the number of workers of the company would also grow in the future and as a consequence, the staff costs would also vary in relation to the amount of revenues of the company.

(€million)	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Remuneration	204	242	242	279	318	337	354	368	381	395	410	424	436	449
Social security charges	53	67	72	79	90	95	100	104	108	111	116	119	123	127
TOTAL	257	309	314	358	408	432	454	472	489	506	526	543	559	576

Figure 7-Staff Costs of Mota-Engil

Appendix 14- Historical values of Gross fixed assets, Depreciation and Net Fixed assets; Historical values of CAPEX and Historical values of NWC

14.1 Gross fixed assets

Million €	2004	2005	2006	2007	2008	2009	2010	AVERAGE
Gross intangible assets	21	16	14	64	68	300	336	
Growth rate		-25%	-8,3%	341%	5,1%	343%	12,2%	**-4%**

Figure 1- Historical gross intangible assets Source: Mota-Engil

Million €	2004	2005	2006	2007	2008	2009	2010	AVERAGE
Gross tangible assets	754	826	735	803	904	1107	1145	
Growth rate		9,6%	-11%	9,3%	12,5%	22,4%	3,5%	**2,8%**

Figure 2- Historical gross tangible assets Source: Mota-Engil

In relation to the gross intangible assets, the years of 2007 and 2009 were not considered to compute the average growth rate since there have been some modifications of the company's structure and the growth rates of the gross intangible assets were too high. The same argument applies for the gross tangible assets in 2009. Moreover, for the gross tangible assets, the value of 2007 was considered because the growth rate was in line with the growth rates of previous years. However, in the case of the gross tangible assets, it was excluded the growth rate of 2008 because it represented a considerably higher value than the ones of previous years.

14.2 Depreciation

€million	2004	2005	2006	2007	2008	2009	2010	AVERAGE
Depreciation in Intangible assets	1,8	2,3	1,5	3,3	3,8	10,2	12	
% of the gross intangible assets	8,7%	14,2%	10,4%	5,1%	5,6%	3,4%	3,6%	**3,5%**
Depreciation in Tangible assets	52,6	53	50,5	87,7	99,8	67,1	74	
% of the gross tangible assets	7%	6,4%	6,9%	10,9%	11%	6,1%	6,5%	**6,5%**

Fig.3- Historical Depreciation Source: Mota-Engil

Millions €	2011E	2012E	2013E	2014E	2015E	2016E	2017E	2018E	2019E	2020E
Depreciation of EC	57,2	58,3	59,4	60,6	61,9	63,2	64,5	65,9	66,6	67
Depreciation of ES	31,2	31,7	32,4	33	33,7	34,4	35,1	35,9	36,3	36,5

Figure 4- Forecast of Depreciation by segment

14.3 Net Fixed Assets

The historical values of net assets of the last seven years were not completely respected. In fact for the net intangible assets, only the percentages of the last two years were considered and in relation to the net tangible assets, only the last four years were considered. The explanation relies on the fact that only those years correspond to the recent trends that the net assets have evidenced in relation to the gross assets.

	2004	2005	2006	2007	2008	2009	2010	AVERAGE
Net intangible assets	4,5	5	3,5	47	46	239	265	
% Gross Int assets	21%	31,7%	24%	73%	68,2%	79,8%	78,8%	**79,3%**
Net tangible assets	331,3	388	341,8	408,7	476,2	574,5	569,1	
% Gross Tan. assets	44%	47%	46,5%	50,9%	52,7%	51,9%	49,7%	**51,3%**

Figure 5- Historical values of Net Assets

The net assets by segment were estimated taking into consideration the historical values of the net assets by segment as a percentage of the total net assets (net assests of Engineering and Construction and net assets of Environment and Services, excluding other net assets and eliminations). After computing the historical average percentage of both types of net assets in both segments in relation to the total net assets, those percentages were used for the period 2011-2020, in order to allocate the net assets by segment. Despite analyzing the historical values from 2005 until 2010, only the values from 2007 to 2010 were taken into consideration to estimate the average percentage of net assets of each segment.

	2005	2006	2007	2008	2009	2010	AVRG
Total Net intangible assets	3,3	2,4	45,4	44,4	237,5	282,3	
Net Int. assets of EC	2,7	2	2,2	1,8	2	21,4	
% of the total	82,3%	81,7%	4,8%	4%	1%	7,6%	**4,3%**
Net intangible assets of ES	0,6	0,4	43,2	42,6	235,5	260,9	
% of the total	17,7%	18,3%	95,2%	95,6%	99,2%	92,4%	**95,7%**

Figure 6- Historical values of Net Assets by segment

	2005	2006	2007	2008	2009	2010	AVERAGE
Total Net tangible assets	297,6	277,7	385,4	454,6	556,1	546,5	
Net tangible assets of EC	246,8	248,1	280	350,1	380,3	404,5	
% of the total	82,9%	89,3%	72,7%	77,1%	68,4%	74%	**73%**
Net tangible assets of ES	50,8	29,6	105,4	104,1	175,8	142	
% of the total	17,1%	10,7%	27,3%	22,9%	31,6%	26%	**27%**

Figure 7- Historical values of Net Tangible Assets by segment

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
EC	21,4	11,3	10,8	10,4	10	9,6	9,2	8,8	8,4	8,1	7,8
Variance		-10,1	-0,5	-0,4	-0,4	-0,4	-0,4	-0,4	-0,4	-0,3	-0,3
ES	261	250	240	230,3	221	212	203,5	195,2	187,3	180	172,5
Variance		-11	-10	-9,7	-9,7	-9	-8,5	-8,3	-7,9	-7,3	-7,5

Figure 8- Forecast of Intangible Assets by segment

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
EC	404,5	429,1	441	453,4	466,1	479,2	492,6	506,4	520,6	527,2	532,5
Δ		24,6	11,9	12,4	12,7	13,1	13,4	13,8	14,2	6,6	5,3
ES	142	156,3	160,7	165,2	170	174,5	179,4	184,5	190	192	194
Δ		14,3	4,4	4,5	4,8	4,5	4,9	5,1	5,5	2	2

Figure 9- Forecast of Tangible Assets by segment

14.4 Capital Expenditures

CAPEX	2007	2008	2009	2010
EC	111	119	113	75
ES	42	66	84	83
TOTAL	153	185	197	158

Figure 10-Historical values of CAPEX

14.5 Non-cash Working Capital

	2005	2006	2007	2008	2009	2010	AVERAGE
Inventory	174	161	166	232	233	203	
Customers	474	514	539	533	807	1008	
Other debtors	111	121	121	221	189	304	
Other current assets	93	115	246	262	101	128	
Suppliers	319	324	326	429	451	482	
Sundry creditors	150	178	277	305	354	441	
Other current liabilities	150	184	201	243	261	471	
NWC	234	224	268	271	264	249	
NWC	17%	17,1%	19,2%	14,5%	13,4%	12,4%	**15,6%**
(% of the revenues)							

Figure 11- Historical values of NWC

Appendix 15- Debt and Financial costs of Mota-Engil

Historical Debt	2004	2005	2006	2007	2008	2009	2010
Non-current debt	281	455	493	1628	1590	560	697
Current debt	177	130	136	288	241	552	519

Figure 1- Historical Debt of Mota-Engil

Mota-Engil has four different types of debt:

- Non-convertible bond loans
- Amounts owed to credit institutions
    - Bank loans
    - Overdraft facilities
    - Guaranteed accounts
- Other loans obtained
- Commercial paper issues

Historical values of Current Debt

Current Debt (€million)	2005	2006	2007	2008	2009	2010
Non-convertible bond loans	4	4	43	19	31	7
Bank loans	87	70	118	229	115	124
Overdraft facilities	23	32	62	132	168	218
Guaranteed Accounts	15	25	60	55	85	127
Commercial paper issues	0	0	0	0	121	30
Other loans	2	6	5	6	33	4

Figure 2- Historical values of Current Debt

Historical values of Non-current debt

Non-current Debt (€million)	2005	2006	2007	2008	2009	2010
Non-convertible bond loans	99	96	57	64	73	75
Bank loans	268	238	1270	1186	234	285
Commercial paper issues	75	132	295	329	226	335
Other loans	13	28	6	10	28	3

Figure 3- Historical values of Non-current Debt

The current debt was assumed to be used to repay the non-current debt of the company. A plan for the future debt of the company was elaborated based on the assumption that the future level of debt would be reduced and that the composition of debt will reflect the tendency of Mota-Engil in the recent years, regarding its composition.

Debt	2011E	2012E	2013E	2014E	2015E	2016E	2017E	2018E	2019E	2020E
Non-current debt	704	704	673	603	712	695	674	693	612	613
Current debt	560	494	486	520	418	377	366	321	372	325

Figure 4-Debt forecast of Mota-Engil (€million)

Debt composition for the period 2011-2020

Non-current	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Bond loans	25	-	50	50	50	50	50	50	50	50
Bank loans	342	304	253	263	357	370	319	338	287	318
Com. paper	317	325	295	215	275	275	305	305	275	245
Other loans	20	75	75	75	30	-	-	-	-	-

Figure 5- Forecast of Non-Current Debt (€million)

Current	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Bond loans	50	25	-	-	-	-	-	-	-	-
Bank loans	130	154	160	100	148	141	152	130	148	109
Overdraft facilities	188	179	168	110	117	106	113	102	100	100
Guaranteed accounts	137	136	110	88	108	100	101	89	94	86
Commercial paper	55	-	30	219	-	-	-	-	30	30
Other loans	-	-	18	2,5	45	30	-	-	-	-

Figure 6- Forecast of Current Debt (€million)

Interest Expenses on Debt

There is not much visibility regarding the indexing conditions of the debt of Mota-Engil. As a consequence of that fact, the first step taken to compute the interest expenses was to look at the historical average interest rates supported by the company. For the year of 2011 it was assumed a higher level of interest rates, due to the difficulties that Portuguese companies are facing regarding funding.

Historical Average Interest rates

Average rates (%)	2005	2006	2007	2008	2009	2010	Average
Bond loans	4,02	4,80	5,27	6,06	3,71	3,93	4,63
Bank loans	3,85	4,40	5,49	6,15	4,64	3,33	4,64
Overdraft facilities				6,11	3,86	4,09	4,69
Guaranteed Accounts				5,74	2,78	3,28	3,93
Commercial paper	3,84	4,41	4,62	4,66	1,87	1,63	3,51
Other loans						4,68	4,68

Figure 7- Historical average interest rates

The average historical Interest rates were used to estimate the Interest expenses of Mota-Engil on debt for the time period of 2012-2020. In 2011, it was assumed that the interest rates would be on average 1% higher than the historical average rates of the past six years, due to the particularly difficult situation that Portuguese the companies are currently facing, despite assuming that it would not represent a major problem for Mota-Engil. The company is expected to manage its level of debt with particular success. In relation to other financial costs and Interest expenses on factoring and leasing, it was assumed that in 2011, they would see an increase, stabilizing from there on.

Financial costs and losses

(€million)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Interest on Debt	44	60	51	49	47	49	45	44	43	42	40
Other Financial costs	70	82	82	82	83	82	83	83	83	83	86
Factoring and leasing	16	21	22	24	26	26	28	30	34	39	41
TOTAL	130	163	155	155	156	157	156	157	160	164	167

Figure 8- Financial costs and losses of Mota-Engil

Appendix 16- Fundamentals used for the Relative Valuation

Management Effectiveness

In order to have similar values of Management Effectiveness to the ones of Mota-Engil and consequently filling the requirements of one of the variables for being in the peer group, companies should at least have similar values of two of the four ratios presented above in the component of Management Effectiveness.

Test 1 – Management Effectiveness

Companies	ROI (TTM)	ROE (TTM)	ROI (5Y Average)	ROE (5Y Average)
OHL	3,95	17,3	4,31	21,1
ACS	6,18	7,38	25,64	6,45
Soares da Costa	2,1	11,59	2,17	7,67
Ferrovial	5,21	52,15	0,63	15,76
FCC			4,63	17,37
Hochtief	2,25	3,35	8,69	8,26
Eiffage	1,83	9,18	3,23	17,72
Vinci	5,87	16,06	5,84	18,16
Impregilo	5,37	9,86	7,23	14,82
Sacyr	1,88	6,41	1,26	7,24
Koninklijke Bam Groep	0,89	2,55	4,24	14,15
Balfour Beatty	6,01	13,5	10,09	23,63
Bouygues	5,39	10,22	7,52	17,25
Bilfinger Berger	4,76	11,95	4,31	10,72
Skanska	32,89	41,77	15,12	19,39
Strabag	3,82	5,98	4,83	7,56
Astaldi	6,28	15,51	5,55	14,05
Persimmon PLC	5,41	6,85	3,09	4,2
Interserve PLC	12,21	21,02	10,3	23,55
Keller Group Inc.	2,28	3,54	13,91	21,68
Galliford	3,82	4,96	5,27	8,13
Mota-Engil	**5,62**	**10,32**	**3,68**	**16,99**

Figure 1- Management Effectiveness of the companies Source: Reuters

Test 2 and 3- Growth and Profitability

Companies	Sales Growth Rate (5 year Average)	EBITDA Margin
OHL	16,21	14,98
ACS	4,61	9,12
Soares da Costa	10,35	8,4
Ferrovial	7,73	22,18
FCC	11,72	12,72
Hochtief	8,13	4,47
Eiffage	9,8	13,60
Vinci	9,48	15,23
Impregilo	-2,55	9,1
Sacyr	3,37	8,8
Koninklijke Bam Groep	0,5	2,87
Balfour Beatty	19,21	3,01
Bouygues	5,39	10,86
Bilfinger Berger	4,8	4,61
Skanska	-0,4	4,44
Strabag	12,15	5,01
Astaldi	14,91	11,06
Persimmon PLC	-7,24	8,89
Interserve PLC	9,04	3,95
Keller Group Inc.	7,89	10,78
Galliford	11,2	2,92
Mota-Engil	8,18	12,72

Figure 2- Growth and Profitability indicators of the companies Source: Reuters

The approach followed was to select for the peer group, the companies that would have similar fundamentals than the ones of Mota-Engil. The companies that ended up in the peer group of Mota-Engil are: OHL, Ferrovial, FCC, Eiffage, Vinci, Bouygues, Astaldi and Soares da Costa.

Appendix 17 -Transport concessions

Ascendi is a recent partnership agreed by Mota-Engil and Banco Espírito Santo in the Transport Concessions segment. In the past, this segment has been consolidated in Mota-Engil's company reports, but since 2009, it is not and it is seen as an equity investment of the company. In relation to the Transport Concessions segment, the valuation approach used was the Discounted Cash Flow, but in this case, it was used the Free Cash Flow to Equity method. This segment is currently not reported on the financial reports of Mota-Engil and as a consequence, the visibility of this segment is very low nowadays. Despite that fact, an equity valuation was conducted, using data provided by the company and following a valuation approach with similar assumptions to the assumptions made by Millennium Investment Banking. Moreover, some of the variables and assumptions made were taken from the company report of Millennium Investment Banking. The other data was provided by Mota-Engil.

The table with the portfolio of concessions (Appendix) was provided by Mota-Engil and looking to the table, it is evident that only the concessions that have equity values will be evaluated. Moreover, it was decided to evaluate Lusoponte jointly with the Portuguese concessions that have equity values in the table above, since it represents a considerable amount of revenues for Ascendi and also because there is data available for the circulation in the Lusoponte roads. Regarding Marechal Rondon Leste and Copexa, those two concessions do not have much visibility, so the equity values of those concessions will be assumed to be equal to the values given below.

Concessions	Country	Expiry Date	Length (Km)	Investment (€M)	Equity (€M)	Stake
Marechal RL	Brazil	2039	415	470	34	40%
Copexa	Mexico	2038	60	389	36	50%
Estradas do Zambeze	Moz.	2040	701	151		40%
Concessão Norte	Portugal	2029	175	1273	27	54,3%
Costa de Prata	Portugal	2030	110	499	21	58,5%
Beira Litoral e Alta	Portugal	2031	173	1130	48	58,5%
Grande Porto	Portugal	2032	56	842	27	58,5%
Grande Lisboa	Portugal	2036	91	290	27	66%
Douro Interior	Portugal	2038	242	931	0	80,8%
Pinhal Interior	Portugal	2040	520	1429	0	80%
Scutvias	Portugal	2029	178	812		22,2%
Beira Interior	Portugal	2025	44	390		4,8%
Lusoponte	Portugal	2030	20	897		38%
Metro Sul do Tejo	Portugal	2032	20	338		24,9%
Auvisa	Spain	2033	75	210		50%

Madrid-Toledo	Spain	2040	81	600	15%
Madrid 407	Spain	2035	12	64	50%
Aullasa	Spain	2038	74	141	40%
TOTAL			**3046**	**10.855**	**220**

Figure 1- Portfolio of concessions

Valuation: Portuguese Concessions of Mota-Engil

Concessions	km	ADT in 2010 (vehicles)	Traffic in 2010 (vehicles)	Circulation (km*traffic)
Ascendi Norte	175	9.881	3.606.565	631M
Ascendi Grande Lisboa	85	55.169	20.136.685	1698M
Ascendi Costa de Prata	105	35.184	12.842.160	1342M
Ascendi Grande Porto	55	35.602	12.994.730	711M
Ascendi Beiras LA	173	13.650	4.982.250	860M
Lusoponte	24	85.346	31.151.290	748M

Figure 2- Portuguese Concessions of Mota-Engil Source: INIR

Assumptions in the Valuation of Transport Concessions

It was assumed for simplicity that the Net assets of Ascendi would be completely amortized in 2034 and the revenues were estimated until 2036, which is the expiry date of the last concession from the figure 2 that Ascendi is allowed to explore (Grande Lisboa-2036). In relation to the gross assets, it was assumed that they would grow at 1% a year until 2033, a higher rate than the one used by Millennium BCP.

Given the lack of visibility of this segment, the estimates for the values of 2011 of the Gross Assets, Net Assets, Capital Expenditures and of Net Debt were provided by the report of Millennium BCP. The depreciation was assumed to be 5% of the value of gross assets for each year and capital expenditures were calculated adding the change of the net assets of the year to the respective depreciation of that same year. Net Debt was assumed to be 90% of the Net Assets in each year. Regarding depreciation, it was assumed to be slightly higher than the historical percentage (3,1%), but the Transport Concessions segment only had consistent values of depreciations for the years of 2007, 2008 and 2009, since earlier than that date, depreciations were too low and after 2009, Transport Concessions started not being reported by Mota-Engil.

Portuguese Concessions	2011E	2012E	2013E	2014E	2015E	2020E	2032E	2033E
Gross Assets	2918	2947	2977	3006	3036	3191	3596	3632
Net Assets	2918	2791	2664	2537	2410	1775	251	124
Change in Net Assets		-127	-127	-127	-127	-127	-127	-127
Depreciation	146	147	149	150	152	160	180	182
CAPEX	19	20	22	23	25	33	53	55
Net Debt	2626	2512	2398	2283	2169	1598	226	112
Net Debt change	-134	-114	-114	-114	-114	-114	-114	-114

Figure 3- Key variables of the Portuguese Concessions

The revenues were estimated according to the following procedure:

The first step was to look at the values of the Portuguese concessions of Ascendi in 2010. From 2011 until 2016 and using the data regarding inflation and GDP growth rate provided by the IMF, the revenues were calculated by:

- Estimating the annual traffic (multiplying the traffic of the previous year by the estimate of the annual GDP growth rate of the year in question)
- Estimating the annual price (price of the previous year*annual inflation rate)

From 2016 until 2036, the revenues were assumed to grow at half of the last inflation rate estimated by the IMF in 2016 (0.9%). In relation to the EBITDA margin, it was considered an EBITDA margin of 90%, which is the historical EBITDA margin of Ascendi .The value, might be high, but Mota-Engil expects to maintain that value or even having an EBITDA margin of 92%, which was the value considered by Millenium Investment Banking.

Ascendi Norte	2010	2011E	2012E	2013E	2014E	2015E…	2029E
Annual Traffic (millions of vehicles)	3,6	3,5	3,5	3,6	3,6	3,6	4,1
Km	175	175	175	175	175	175	175
Price per km	0,081	0,083	0,084	0,085	0,087	0,088	0,1
Revenues	**50,8€M**	**51,4€M**	**51,9€M**	**53,1€M**	**54,6€M**	**56,2€M**	**65€M**

Figure 4- Revenues of Ascendi Norte

Ascendi Grande Lisboa	2010	2011E	2012E	2013E	2014E	2015E...	2036E
Annual Traffic (millions of vehicles)	20,1	19,8	19,7	19,9	20,1	20,4	23,6
Km	85	85	85	85	85	85	85
Price per km	0,006	0,006	0,006	0,006	0,006	0,006	0,008
Revenues	**10€M**	**10,2€M**	**10,3€M**	**10,5€M**	**10,8€M**	**11,1€M**	**14€M**

Figure 5- Revenues of Ascendi Grande Lisboa

Ascendi Grande Porto	2010	2011E	2012E	2013E	2014E	2015E	2032E
Annual Traffic (millions of vehicles)	13	12,8	12,7	12,9	13	13,1	14,9
Km	55	55	55	55	55	55	55
Price per km	0,13	0,13	0,13	0,13	0,13	0,14	0,17
Revenues	**89,4€M**	**90,6€M**	**91,5€M**	**93,6€M**	**96,3€M**	**99€M**	**118€M**

Figure 6- Revenues of Ascendi Grande Porto

Ascendi Costa de Prata	2010	2011E	2012E	2013E	2014E	2015E	2030E
Annual Traffic (millions of vehicles)	12,8	12,6	12,6	12,7	12,8	13	14,5
Km	105	105	105	105	105	105	105
Price per km	0,06	0,06	0,06	0,06	0,07	0,07	0,08
Revenues	**82€M**	**83,1€M**	**83,8€M**	**85,8€M**	**88,3€M**	**90,8€M**	**106€M**

Figure 7- Revenues of Ascendi Costa de Prata

Ascendi Beiras LA	2010	2011E	2012E	2013E	2014E	2015E	2031E
Annual Traffic (millions of vehicles)	5	4,9	4,9	5	5	5,1	5,7
Km	173	173	173	173	173	173	173
Price per km	0,17	0,17	0,18	0,18	0,18	0,18	0,22
Revenues	**145€M**	**147€M**	**148€M**	**151€M**	**156€M**	**160€M**	**189€M**

Figure 8- Revenues of Ascendi Beiras Litoral e Alta

Lusoponte	2010	2011E	2012E	2013E	2014E	2015E	2030E
Annual Traffic (millions of vehicles)	31,2	30,7	30,5	30,8	31,1	31,5	37,7
Km	24	24	24	24	24	24	24
Price per km	0,10	0,10	0,10	0,11	0,11	0,11	0,14
Revenues	**74,8€M**	**75,4€M**	**76,1€M**	**77,8€M**	**80,1€M**	**82,4€M**	**96,2€M**

Figure 9- Revenues of Lusoponte

Cost of Equity

The risk free used for the valuation of this segment corresponds to the long-term default-free government bond of Germany with maturity of twenty years (4.75%). The beta used was equal beta of

Mota-Engil provided by Damodaran and used in the two other segments of the company and the market risk premium was given by the total risk premium of the Portuguese country (6.25%), also provided by Damodaran.The cost of equity used for the discount of the cash flows was 13.25%.

Ascendi (€million)	2011	2012	2013	2014	2015…	2020….	2036
Revenues	457	461	464	468	472	494	12,5
EBITDA	412	415	425	437	450	480	0
(-) Depreciation	146	147	149	150	152	160	0
EBIT	266	268	276	287	298	321	0
(-) Interest charges and others	213	178	171	163	154	112	0
(-) Taxes	0	9,8	12,4	15,3	18,1	32,9	0
Net Income	**52**	**59**	**71**	**85**	**98**	**144**	**0**
(-) CAPEX	15,4	16,3	15,7	16	15,6	15,4	0
(+) Net Debt Change	-134	-114	-114	-114	-114	-114	0
FCFE	0	0	84	98	111	157	0
Discounted Cash-flow	0	0	57	59	60	45	0
PV	723						

Figure 10- Equity Value of the Portuguese Concessions of Ascendi

In order to find the equity value that belongs to Mota-Engil in Ascendi, it was first estimated the value that each concession had on the equity value of 723€M. The method used was to compute the average percentage that each concession had on the total revenues of each year. After finding the average over the years of each concession, the value of 723€M was allocated to each concession, according to the percentage that each one had. After estimating the values for each concession, it was found the percentage that Mota-Engil had in each concession, through Ascendi.

Concession	% of the Revenues	Equity Value
Ascendi Norte	8,2%	59€M
Ascendi Grande Lisboa	17,7%	128€M
Ascendi Grande Porto	14,1%	102€M
Ascendi Costa de Prata	20,1%	145€M
Ascendi Beiras Litoral e Alta	27,1%	196€M
Lusoponte	12,8%	93€M
TOTAL	**100%**	**723€M**

Figure 11- Equity value of each Portuguese Concession

Concession	Stake of Ascendi	Stake of Mota-Engil (60% of the stake of Ascendi)	Equity Value
Ascendi Norte	74,87%	44,92%	27€M
Ascendi Grande Lisboa	80,20%	48,12%	62€M
Ascendi Grande Porto	80,20%	48,12%	49€M
Ascendi Costa de Prata	80,20%	48,12%	70€M
Ascendi Beiras LA	80,20%	48,12%	94€M
Lusoponte	38,02%	22,81%	21€M
COPEXA	-	-	36 €M
Marechal RL, SP	-	-	34 €M
Ascendi Net Debt (Holding)	100%	60%	76
TOTAL			**317€M**

Figure 12- Equity value of the Transpot Concessions segment

Appendix 18- Comparison of each segment with MIB

18.1 Engineering and Construction- Main Cash Flow Drivers

In relation to the Engineering and Construction segment, the revenues estimated by Millennium Investment Banking are relatively lower than the ones estimated in the Dissertation. The first reason to explain that fact is that MIB does not take into consideration the estimates for the revenues of the other African countries, where Mota-Engil operates. In fact, MIB considers that Angola will continue to generate the majority of the revenues in Africa, which is something that this Dissertation also considers, but MIB also gives a relatively weak importance to the other African countries like Mozambique or Malawi, where Mota-Engil currently has an interesting order book. The second reason to explain the differences regarding revenues is the low growth rates that MIB expect that Mota-Engil will have in the next few years in Latin America. For 2012 and 2013, MIB expects 0% of revenues growth, something that was not assumed in this Dissertation.

The EBITDA margin of MIB varies over the years, while in the Dissertation is fixed, but that is not such a great difference in the two approaches. Capital expenditures are assumed to be lower on the Dissertation. The reason behind that fact is that Mota-Engil is not expected to invest much more abroad in the Engineering and Construction segment, at least in other countries and as a consequence, it was assumed that capital expenditures would be relatively lower than in the past. Despite that, the difference is relatively low to the MIB. The differences in working capital are justified by the fact that the Dissertation considered Non-cash working capital, instead of Working capital.

MIB									
	2011E	**2012E**	**2013E**	**2014E**	**2015E**	**2016E**	**2017E**	**2018E**	**2019E**
Revenues (Mn)	1625	1656	1695	1737	1788	1833	1896	1958	2019
Revenues (YoY)	4%	2%	2%	2%	3%	3%	3%	3%	3%
Portugal	-7%	-5%	-5%	-5%	-3%	-3%	2%	3%	3%
Central Europe	11%	6%	6%	6%	6%	5%	4%	4%	3%
Africa/Angola	11%	8%	8%	7%	6%	5%	4%	3%	3%
USA, Peru & Others	96%	0%	0%	5%	5%	5%	5%	5%	5%
EBITDA (YoY)	12%	-1%	0%	1%	-1%	0%	1%	0%	0%
EBITDA Mg	10,4%	10,1%	9,9%	9,7%	9,4%	9,1%	8,9%	8,7%	8,4%
Portugal	6,0%	5,5%	5,3%	5,5%	5,5%	6,0%	6,0%	6,0%	6,0%
Central Europe	4,3%	5,0%	5,5%	5,5%	5,5%	5,5%	5,5%	5,5%	5,5%
Angola	18%	17%	16%	15%	14%	12,6%	12,1%	11,6%	11,1%
EBIT (YoY)	17%	-3%	-1%	0%	-1%	0%	1%	0%	0%
EBIT Mg	6,4%	6,1%	6,0%	5,8%	5,6%	5,4%	5,3%	5,2%	5,0%
CAPEX (YoY)	-1%	-3%	-3%	-4%	-3%	3%	3%	3%	3%
% of Revenues	4,8%	4,5%	4,3%	4,0%	3,8%	3,8%	3,8%	3,8%	3,8%
Working Capital (Mn)	341	331	322	313	304	293	284	274	283
% of Revenues	21%	20%	19%	18%	17%	16%	15%	14%	14%

Figure 1- Millenium Investment Banking predictions regarding EC

DISSERTATION									
	2011E	2012E	2013E	2014E	2015E	2016E	2017E	2018E	2019E
Revenues (Mn)	1810	1924	2022	2100	2170	2243	2330	2403	2475
Revenues (YoY)	6%	6%	5%	4%	3%	3%	4%	3%	3%
Portugal	-8%	-7%	-5%	-5%	-4%	-3%	2%	2%	3%
Central Europe	7%	6%	5%	5%	5%	4%	4%	3%	3%
Africa/Angola	11%	15%	10%	7%	6%	6%	5%	4%	3%
Other in Africa	20%	15%	10%	7%	5%	5%	3%	3%	3%
Mexico/Peru	30%	15%	12%	10%	7%	5%	5%	3%	3%
EBITDA (YoY)	0,3%	6%	5%	4%	3%	3%	4%	3%	3%
EBITDA Mg	9%	9%	9%	9%	9%	9%	9%	9%	9%
Portugal	9%	9%	9%	9%	9%	9%	9%	9%	9%
Central Europe	9%	9%	9%	9%	9%	9%	9%	9%	9%
Angola	9%	9%	9%	9%	9%	9%	9%	9%	9%
EBIT (YoY)	14%	9%	7%	5%	4%	4%	5%	4%	4%
EBIT Mg	6%	6%	6%	6%	6%	6%	6%	6%	6%
CAPEX (YoY)	-4%	-2%	2%	2%	2%	2%	2%	2%	-9%
% of Revenues	4%	4%	4%	3%	3%	3%	3%	3%	3%
Working Capital (Mn)	235	231	243	252	260	247	256	264	272
% of Revenues	13%	12%	12%	12%	12%	11%	11%	11%	11%

Figure 2- Dissertation predictions regarding EC

18.2 Engineering and Construction- Main Assumptions

Engineering and Construction		
	MIB	Dissertation
Risk Free Rate	5,75%	3,25%
Market Premium	5,0%	8,6% *
Levered Beta	1,50	1,36
Cost of Equity	13%	14,9%
Debt Spread	3,00%	5%
Cost of Debt	8,75%	8,25 %
Corporate Tax Rate	26,5%	29%
After Tax Cost of Debt	6,4%	5,86%
Leverage	35%	50%
WACC	10,9%	10,5%
Perpetuity Growth Rate	4,50%	2,1%
Real Perpetuity Growth Rate	1,50%	1,2%
LT Inflation	3,00%	1,8%**
WACC-G	6,36%	8,4%

Weighted average of the different countries where Mota-Engil has operations

** It was assumed half of the LT inflation for the perpetuity growth rate**

Figure 3- Main assumptions of Engineering and Construction

The main assumptions of both approaches differ considerably. The risk-free rate assumed by the bank was the Portuguese 10 year maturity bond, while the Dissertation considered the German government bond, since Portugal belongs to the euro zone; it seemed to be more appropriate. In relation to the market premium, the Dissertation did a weighted average of the market premiums of the different

countries where Mota-Engil operates, instead of the traditional market premium of 5%, which by the way does not incorporate the country risk premium.

The level of debt was assumed by MIB to be lower to the one assumed by the Dissertation, explaining the fact of the debt spread of Mota-Engil being relatively lower to the one estimated in the Dissertation. The leverage of 35% is also considerably lower, especially because Mota-Engil does not establish a target of 35% and even if it established, it would seem to be unrealistic in a sector that usually demands higher levels of leverage, especially Mota-Engil, which has historically high levels of debt. Finally, the perpetuity growth rate assumed by the bank (4.5%) is much higher than the one predicted by the Dissertation. The bank considers a long-term inflation (3%) much higher than the 1.8% of the Dissertation and the bank also assumes that in perpetuity, the company will grow more than Portugal, the country where Mota-Engil is headquartered.

18.3 Engineering and Construction- MIB vs Dissertation

MIB									
€ million	**2011E**	**2012E**	**2013E**	**2014E**	**2015E**	**2016E**	**2017E**	**2018E**	**2019E**
Operating Income	105	102	101	101	100	100	101	101	101
(+) Non Cash Items	61	64	66	67	68	68	68	68	69
(-) Taxes	28	27	26	26	27	26	26	26	27
(-) CAPEX	77	75	72	69	67	69	71	73	76
(-) Working Capital change	-2	-10	-9	-9	-9	-11	-9	-10	8
Free Cash Flow to Firm	65	76	78	82	83	83	80	80	59
PV FCFF	469								
Terminal Value	425								
Enterprise Value	894								
(-) Net Debt (YE 10)	614								
(+) Financial Investments (YE10)	59								
(-) Dividend Payment	0								
Equity Value	**339**								

Figure 4- MIB equity valuation of EC

Dissertation										
€ million	**2011E**	**2012E**	**2013E**	**2014E**	**2015E**	**2016E**	**2017E**	**2018E**	**2019E**	**2020E**
Operating Income	106	115	123	129	134	139	145	151	156	162
(+) Non Cash Items	57	58	59	60	62	63	65	66	67	67
(-) Taxes	31	33	36	37	39	40	42	44	45	47
(-) CAPEX	72	70	71	73	75	76	78	80	73	72
(-) NWC change	37	-4	12	9	8	-14	10	8	8	8
FCFF	24	74	63	69	74	99	80	85	97	102
PV FCFF	430									
Terminal Value	458									
Enterprise Value	888									
(-) Net Debt	310									
(+) Fin. Investments	68									
(-) Dividend	0									
Equity Value	**646**									

Figure 5- Dissertation equity valuation of EC

The bank considered that the amount of Net Debt belonging to the Engineering and Construction segment would be much higher than the one calculated in the Dissertation.

18.4. Environment and Services-Main Cash Flow Drivers

Again, the estimates of the bank are much lower for revenues than the estimates of the Dissertation. The interesting question is that the estimates of the revenues in the Dissertation were already lower in comparison to the revenues forecasted by Mota-Engil, at least until 2013; however, the revenues forecasted by Mota-Engil were too optimistic. Contributing for the lower values of the bank is the fact of MIB did not take into consideration the consolidation of GeoVision, which will boost the revenues of the waste segment in 2011 and in the future. MIB also assumed that the water segment will decrease its revenues on 2012 and 2013, something that the Dissertation does not assume, especially because the economic environment in Portugal is now more willing to accept some privatization of the water services and consequently, enabling Mota-Engil through Indaqua to grow in this segment, as well. In the Logistic and Multi-services segments, the estimates for the revenues are relatively similar.

The EBITDA and EBIT margins are also very similar and the CAPEX is not so different too. The main difference is related to the Working Capital, once again due to the slight modification that the Dissertation has made (Non-cash working capital), but also because the working capital in the dissertation was assumed to be constant for both segments as a percentage of the revenues, which is something that might undervalue the NWC of the Engineering and Construction segment and

overestimate the NWC of Environment and Services. Despite that, it is important to mention that the revenues estimated in the Dissertation are relatively high and as a consequence working capital needs would also be higher in absolute value.

MIB	2011E	2012E	2013E	2014E	2015E…	2023E
Revenues (Mn)	446	448	463	486	507	420
Revenues (YoY)	8%	0%	3%	5%	4%	3%
Waste	8%	5%	5%	5%	5%	4%
Water	7%	-20%	-8%	5%	5%	4%
Logistic	6%	6%	6%	6%	5%	3%
Multi Services	7%	5%	3%	2%	1%	1%
EBITDA (YoY)	11%	5%	8%	7%	4%	4%
EBITDA Mg	19%	20%	21%	22%	22%	20,7%
Waste	25%	24%	24%	23%	22%	21,8%
Water	25%	27%	31%	33%	32%	29,5%
Logistic	20%	21%	22%	23%	23%	23,3%
Multi Services	6%	6%	6%	6%	6%	6%
EBIT (YoY)	12%	5%	9%	12%	7%	47%
EBIT Mg	12%	13%	13%	14%	15%	0%
CAPEX (YoY)	-62%	-3%	0%	1%	0%	3%
% of Revenues	6%	6%	6%	5%	5%	4,8%
Working Capital (Mn)	36	34	32	32	30	19
% of Revenues	8%	8%	7%	7%	6%	4,5%

Figure 6- Millenium Investment Banking predictions regarding ES

Dissertation	2011E	2012E	2013E	2014E	2015E…	2020E
Revenues (Mn)	483	505	528	552	576	688
Revenues (YoY)	18%	5%	5%	5%	4%	3%
Waste	43%	4%	4%	4%	4%	3%
Water	10%	5%	5%	5%	4%	3%
Logistic	5%	5%	5%	5%	5%	3%
Multi Services	5%	5%	5%	4%	4%	3%
EBITDA (YoY)	18%	5%	5%	5%	4%	3%
EBITDA Mg	20%	20%	20%	20%	20%	20%
Waste	20%	20%	20%	20%	20%	20%
Water	20%	20%	20%	20%	20%	20%
Logistic	20%	20%	20%	20%	20%	20%
Multi Services	20%	20%	20%	20%	20%	20%
EBIT (YoY)	41%	6%	6%	6%	5%	4%
EBIT Mg	14%	14%	14%	14%	14%	15%
CAPEX (YoY)	-58%	-25%	4%	4%	4%	0,1%
% of Revenues	7%	5%	5%	5%	5%	5%
Non-cash WC (Mn)	63	61	63	66	69	76
% of Revenues	13%	12%	12%	12%	12%	11%

Figure 7- Dissertation predictions regarding ES

18.5 Environment and Services- Main DCF Assumptions

Environment and Services		
	MIB	Dissertation
Risk Free Rate	5,75%	3,25%
Market Premium	5,0%	8,03%
Levered Beta	1,40	1,36
Cost of Equity	13%	14%
Debt Spread	3,00%	5%
Cost of Debt	8,75%	8,25%
Corporate Tax Rate	26,5%	29%
After Tax Cost of Debt	6,4%	5,86%
Leverage	35%	50%
WACC	10,5%	10%
Perpetuity Growth Rate	4,50%	2,1%
Real Perpetuity Growth Rate	1,50%	1,2%
LT Inflation	3,00%	1,8%
WACC-G	6,04%	7,9%
Minority Interests	50%	34%

Figure 8- Main assumptions of Environment and Services

The differences in the main DCF assumptions are equal to the ones justified above in the Engineering and Construction segment. The only thing that was not mentioned before is the difference in minority interests, clearly overestimated by MIB (50%).

18.6 Environment and Services-DCF comparison

MIB						
€ million	**2011E**	**2012E**	**2013E**	**2014E**	**2015E**	**2023E**
Operating Income	54	57	62	70	75	67
(+) Non Cash Items	32	34	36	35	34	20
(-) Taxes and Tax Shield on Interest	21	22	23	25	26	18
(-) CAPEX	27	26	26	26	26	20
(-) Working Capital change	3	-2	-1	-1	-1	1
Free Cash Flow to Firm	36	46	50	55	58	48
PV FCFF	416					
Terminal Value	252					
Enterprise Value	668					
(-) Net Debt (YE 10)	528					
(+) Financial Investments (YE 10)	36					
(-) Dividend Payment	0					
Equity Value	**176**					

Figure 9- MIB equity valuation of ES

Dissertation						
€ million	**2011E**	**2012E**	**2013E**	**2014E**	**2015E**	**2020E**
Operating Income	64	67	72	76	80	98
(+) Non Cash Items	31	32	32	33	34	37
(-) Taxes	19	19	21	22	23	28
(-) CAPEX	35	26	27	28	30	31

(-) Working Capital change	12	-2	3	3	3	2
Free Cash Flow to Firm	30	56	53	56	58	74
PV FCFF	346					
Terminal Value	367					
Enterprise Value	713					
(-) Net Debt (YE 11)	455					
(+) Financial Investments (YE 11)	8					
(-) Dividend Payment						
Equity Value	**266**					

Figure 10- Dissertation equity valuation of ES

18.7 Transport Concession Business- Main Cash Flow Drivers

In relation to this business segment, the equity values were almost equal and despite having been some differences throughout the method, in the end the final results are very similar. Curiously, the bank assumes that the revenues will grow at half the inflation, something also assumed in the dissertation, but only from 2017 to the end of the period in analysis.

MIB					
€ million	**Valuation**	**Implicit P/BV**	**Stake**	**Mota Engil**	**Method**
Ascendi (5Motorways)	584	1,7	47,40%	277	DCF
(-)Ascendi Debt	126		60,00%	76	
Ascendi Norte			74,87%		DCF
Ascendi Grande Lisboa			65,97%		DCF
Ascendi Costa Prata			80,20%		DCF
Ascendi Grande Porto			80,20%		DCF
Ascendi BLA			80,20%		DCF
Ascendi Eq Method			60,00%	118	
Lusoponte	339		38,02%	129	Last Deal
Ascendi Douro Interior	-3		45,93%	-1	
Ascendi Pinhal Interior	-3		45,17%	-1,4	
Estradas do Zambeze	-0,4		24,0%	-0,1	
Mexico Conc.	99		30%	30	
Brazil Conc.	100		40%	40	
Equity Value				**319**	

Figure 11- MIB equity valuation of Transport Concessions

Dissertation				
€ million	Valuation	Stake	Mota Engil	Method
Ascendi (6Motorways)	723	44,70%	323	DCF
(-) Ascendi Debt	126	60,00%	76	
Ascendi Norte		74,87%		DCF
Ascendi Grande Lisboa		65,97%		DCF
Ascendi Costa Prata		80,20%		DCF
Ascendi Grande Porto		80,20%		DCF
Ascendi BLA		80,20%		DCF
Lusoponte		38,02%		DCF
Mexico Conc.		30%	36	BV
Brazil Conc.		40%	34	BV
Equity Value			**317**	

Figure 12- Dissertation equity valuation of Transport Concessions

18.8 Transport Concession-Main Assumptions

MIB											
€ Million	**Km**	**2011E**	**2012E**	**2013E**	**2014E**	**2015E**	**2016E…**	**2030E**	**2031E**	**2032E**	**2036E**
Revenues		372	378	378	380	382	385	252	102	19	20
Y-on-Y		nm	2%	0%	0%	1%	1%	-33%	-60%	-81%	1%
Ascendi Norte	170	55	100	100	101	101	102	0	0	0	0
Ascendi CP	109	71	60	60	60	61	61	0	0	0	0
Ascendi BLA	173	155	131	131	132	132	133	152	0	0	0
Ascendi G.Porto	56	81	71	71	71	72	72	82	83	0	0
Ascendi G.Lisboa	25	10	16	16	16	16	16	19	19	19	20
EBITDA (Y-o-Y)		nm	2%	0%	0%	1%	1%	-33%	-60%	nm	1%
Mg EBITDA		92%	92%	92%	92%	92%	92%	92%	92%	0%	0%
Gross Assets		2.918	2.938	2.957	2.977	2.997	3.017	3.338	3.338		
CAPEX		19	19	19	20	20	20	26	0	0	0
% of Assets		0,65%	0,66%	0,66%	0,66%	0,66%	0,67%	0,78%	nm		
Net Assets		2918	2784	2649	2513	2376	2237	26	0	0	0
Net Debt		2566	2457	2347	2239	2135	2058	25	-1	-1	0
Debt to Assets		88%	88%	89%	89%	90%	92%	95%	nm	nm	nm
Nr. Of Km		532	532	532	532	532	532	532	nm	nm	nm
CAPEX/Km		0,036	0,036	0,037	0,037	0,037	0,038	0,049	nm	nm	nm

Figure 13- MIB main cash flow drivers of Transport Concessions

Dissertation											
€ Million	**Km**	**2011E**	**2012E**	**2013E**	**2014E**	**2015E**	**2016E…**	**2030E**	**2031E**	**2032E**	**2036E**
Revenues		457	461	472	486	500	515	518	318	14	14
Y-on-Y		nm	1%	2%	3%	3%	3%	-10%	-39%	-59%	1%
Ascendi Norte	175	51	52	53	55	56	58	0	0	0	0
Ascendi CP	105	83	84	86	88	91	94	106	0	0	0
Ascendi BLA	173	147	148	151	156	160	165	189	0	0	0
Ascendi G.Porto	55	91	92	94	96	99	102	116	117	118	0
Ascendi G.Lisboa	85	10	10	11	11	11	11	13	13	13	14
Lusoponte	24	75	76	78	80	82	85	96	0	0	0
EBITDA (Y-o-Y)		nm	1%	2%	3%	3%	3%	-45%	-59%	-90%	0%
EBITDA mg		90%	90%	90%	90%	90%	90%	90%	90%	90%	0%

Gross Assets		2918	2947	2977	3006	3036	3067	3525	3561	3596	3632
CAPEX		19	20	22	23	25	26	49	51	53	0
% of Assets		0,65%	0,73%	0,82%	0,92%	1%	1%	10%	13%	21%	0%
Net Assets		2918	2791	2664	2537	2410	2283	505	378	251	0
Net Debt		2626	2512	2398	2283	2169	2055	455	340	226	0
Debt to Assets		90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Nr. Of Km	617	617	617	617	617	617	617	617	617	617	617
CAPEX/Km		3%	3%	3,5%	3,7%	4%	4,2%	7,9%	8,3%	8,6%	0%

Figure 14- Dissertation main cash flow drivers of Transport Concessions

18.10 Ascendi 5 concessions- MIB

MIB										
€ million	**2011E**	**2012E**	**2013E**	**2014E**	**2015E**	**2016E…**	**2030E**	**2031E**	**2032E**	**2036E**
Revenues	372	378	378	380	382	385	252	102	19	20
EBITDA	342	347	347	349	351	353	232	93	0	0
Depreciations	153	154	155	156	157	158	236	26	0	0
EBIT	189	193	192	193	194	195	-5	67	0	0
Interest Charges	189	180	172	164	157	149	15	2	0	0
(-) Taxes	0	4	5	8	10	12	-5	17	0	0
Net Income	0	10	15	21	27	33	-15	48	0	0
(-) CAPEX	19	19	19	20	20	20	26	0	0	0
(-) WC change	0	0	0	0	0	0	0	0	0	0
(+) Debt change	-134	-110	-110	-107	-104	-77	-195	-25	0	0
FCFE	0	35	40	50	60	95	0	49	0	0
PV of FCFE	584									
Equity Value	584									

Figure 15- MIB Equity value of Transport Concessions

18.9 Transport Concessions-Main DCF assumptions

Ascendi	MIB	Dissertation
Risk Free Rate	**5,75%**	**4,75%**
Market Premium	**5,0%**	**6,25%**
Levered Beta	**0,80**	**1,36**
Cost of Equity	**9,75%**	**13,25%**

Figure 16- Main DCF assumptions of both approaches for Transport Concessions

Balance Sheet

€Million	2007	2008	2009	2010	2011E	2012E	2013E	2014E	2015E	2016E	2017E	2018E	2019E	2020E
Assets														
Non-current														
Goodwill	158	160	133	135	167	167	167	167	167	167	167	167	167	167
Intangible Fixed Assets	47	46	239	265	261	251	241	231	222	213	204	196	188	180
Concession Assets	1.126	1.163	-	-	-	-	-	-	-	-	-	-	-	-
Tangible Fixed Assets	409	476	577	569	608	625	642	660	679	698	717	737	748	756
Financial investments	154	174	326	337	353	353	353	353	353	353	353	353	353	353
Available for sale financial investments	71	75	10	20	10	10	10	10	10	10	10	10	10	10
Investment properties	31	41	31	89	89	89	89	89	89	89	89	89	89	89
Customers and other debtors	89	84	60	81	79	79	79	79	79	79	79	79	79	79
Deferred tax assets	30	33	41	48	51	51	51	51	51	51	51	51	51	51
Non-current assets held for sale	-	29	29	68	68	68	68	68	68	68	68	68	68	68
Current														
Inventory	166	232	233	203	243	237	249	259	268	255	265	273	282	290
Customers	539	533	807	1.008	1.206	1.179	1.238	1.287	1.333	1.266	1.315	1.358	1.399	1.441
Other debtors	121	221	189	304	364	356	373	388	402	382	397	409	422	434
Other current assets	246	262	101	128	128	153	150	157	163	169	161	167	172	183
Derivative financial instruments	4	-	-	0,5	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4
Cash and cash equivalents	173	180	128	201	230	231	230	233	275	285	296	305	314	324
Total Assets	3.364	3.709	2.904	3.456	3.857	3.849	3.940	4.032	4.159	4.085	4.172	4.262	4.342	4.425

€Million	2007	2008	2009	2010	2011E	2012E	2013E	2014E	2015E	2016E	2017E	2018E	2019E	2020E
Liabilities														
Non-current														
Debt	1.628	1.590	561	697	704	704	673	603	712	695	674	693	612	613
Sundry creditors	157	229	227	231	245	255	259	272	282	296	279	279	270	273
Provisions	32	30	57	72	75	75	75	75	75	75	75	75	75	75
Other non-current liabilities	62	58	4	17	21	39	39	39	39	39	39	39	39	39
Deferred tax liabilities	28	27	31	32	33	33	33	33	33	33	33	33	33	33
Current														
Debt	288	442	552	518	560	494	486	520	418	377	366	321	372	325
Suppliers	326	429	451	482	577	564	592	616	638	605	629	649	669	689
Derivative financial instruments	4	15	14	14	14	14	14	14	14	14	14	14	14	14
Sundry creditors	277	305	354	441	527	516	542	563	583	554	575	594	612	630
Other current liabilities	201	243	260	471	563	551	578	601	622	591	614	634	653	673
Total Liabilities	3.003	3.368	2.511	2.975	3.319	3.245	3.291	3.336	3.416	3.279	3.298	3.331	3.349	3.364
Shareholders equity														
Equity capital	205	205	205	205	205	205	205	205	205	205	205	205	205	205
Reserves	13	54	65	170	186	219	261	298	334	370	408	449	487	525
Consolidated net profit of the year	97	30	73	37	59	76	67	65	65	69	74	68	69	74
Own funds attributable to the group	315	289	343	412	450	500	533	568	604	644	687	722	761	804
Non-controlling interests	46	52	50	69	88	104	116	128	139	162	187	209	232	257
Total shareholders equity	361	341	393	481	538	604	649	696	743	806	874	931	993	1.061
Total shareholders equity and liabilities	3.364	3.709	2.904	3.456	3.857	3.849	3.940	4.032	4.159	4.085	4.172	4.262	4.342	4.425

Income Statement

	2007	2008	2009	2010	2011E	2012E	2013E	2014E	2015E	2016E	2017E	2018E	2019E	2020E
Sales and services rendered	1.402	1.869	1.979	2.005	2.293	2.429	2.550	2.652	2.746	2.845	2.955	3.052	3.143	3.237
Other revenues	133	116	161	122	172	182	191	199	206	213	222	229	236	243
Cost of goods sold, materials consumed and subcontracts	788	1.011	1.247	1.176	1.372	1.454	1.527	1.587	1.644	1.702	1.768	1.825	1.880	1.936
Gross Profit	746	973	893	951	1.093	1.157	1.214	1.264	1.308	1.356	1.409	1.456	1.499	1.544
Third-party supplies and services	246	345	360	340	420	445	467	485	503	521	541	558	576	592
Wages and salaries	257	310	314	360	408	432	454	472	489	506	526	543	559	576
Other operating income/ (expenses)	5	(7)	(23)	(14)	(7)	(8)	(8)	(8)	(9)	(9)	(9)	(9)	(10)	(10)
EBITDA	248	311	196	237	258	272	285	299	307	320	333	346	354	366
EBITDA margin	17,7%	16,6%	9,9%	11,8%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%
Depreciation and Amortization	91	104	126	86	88	90	92	94	96	98	100	102	103	103
Provisions and impairment losses	9	15	6	19	12	-	-	1	1					
Operating Profit	148	193	172	132	158	182	193	204	212	222	233	244	251	263
Financial income & gains	44	53	66	79	78	78	58	54	46	44	44	43	43	43
Financial costs & losses	151	183	181	130	163	155	155	156	157	156	157	160	164	167
Gains/ (losses) on associated companies	83	8	51	7	37	37	29	21	20	20	20	0	0	0
Income tax	16	31	28	19	32	41	36	36	35	38	41	37	38	40
Consolidated net profit of the year	108	40	80	69	78	101	89	87	86	92	99	90	92	99
Attributable:														
to non-controlling interests	10	9	8	32	19	25	22	22	21	23	25	22	23	25
to the Group	98	31	72	37	59	76	67	65	65	69	74	68	69	74

Cash-Flow Statement

	2011E	2012E	2013E	2014E	2015E	2016E	2017E	2018E	2019E	2020E
EBITDA	258	272	285	299	307	320	333	346	354	366
- Δ Non-cashWorking Capital	49	-6	14	12	12	-17	12	11	10	10
= Cash Flow from Operations	209	278	271	287	295	337	321	335	344	356
- CAPEX	107	96	99	102	105	108	111	114	106	103
- Δ Net Financial Investments	16									
= Cash Flow after Investments	86	182	172	185	190	229	210	221	238	253
- Net Financial expenses	48	40	68	81	91	92	93	117	121	124
- Taxes	32	41	36	36	35	38	41	37	38	40
-Dividends	26	34	30	29	29	31	33	30	31	33
= Change in Net Debt	20	-67	-38	-39	-35	-68	-43	-37	-48	-56

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