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Impact of fiscal policies in companies' decision towards operational leases

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Abstract

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The need for capital financing is an on-going issue affecting individuals, organizations and ultimately the economy of a country. Leasing is considered an asset based financing. It allows the lessee to pay the leasing rentals through the cash flows generated from the use of the asset in the business operations. In this context operational leases can be seen as an alternative for companies to broaden their options regarding assets acquisition.
Leaseurope annual report for 2011 depicts significant differences in leasing usage across countries. The reasons for the decision making between leasing and purchasing are very different across the countries in the report. So, the aim of the thesis is to study one of the factors that may impact the decision making by challenging operational leases as an alternative to purchase, from a fiscal perspective. Research intends to determine if there is any evidence that fiscal rules are a critical factor in the choice for operational lease. To examine the relation between leasing usage and fiscal rules, a cross sectional study across European countries was performed. Findings show that there is no evidence that fiscal rules play a determinant role in the choice to use operational leases. The results also show that leasing usage follows the GDP growth trends. As GDP growth increases, leasing usage shows higher levels of growth than total investment growth. This means that as the percentage of GDP growth rises there is an increase preference for operational leasing.

A necessidade de financiamento é uma questão central e constante que influencia indivíduos, organizações e, por fim, a economia de um país. A locação é considerada uma forma de financiamento com base em activos, permitindo ao locatário satisfazer os custos da locação através de proveitos gerados a partir do uso desses activos nas suas operações comerciais. Neste contexto as locações operacionais podem ser vistas como uma alternativa para as empresas ampliarem as suas opções para aquisição de activos.
O relatório anual da Leaseurope para 2011 evidência diferenças significativas no uso de locação entre os países. As razões subjacentes à decisão de locação versus compra são muito diferentes entre os países considerados no relatório. Assim, o objectivo da tese é desafiar a locação operacional enquanto alternativa à compra do ponto de vista fiscal. O estudo pretende determinar se existem evidências de que as políticas fiscais constituem um factor crítico para escolha da locação operacional. Para analisar a relação entre o uso de locação e as políticas fiscais, foi realizado um estudo seccional entre países europeus. Os resultados mostram que não existem evidências de que as políticas fiscais tenham um papel determinante na escolha de locação operacional. Evidenciam ainda, que o uso de locação segue as tendências de crescimento do PIB. Com o aumento de crescimento do PIB, o uso de locação apresenta um crescimento mais acentuado do que o investimento. Isto significa que à medida que o crescimento do PIB é mais significativo observa-se uma preferência pela locação operacional.

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Table of Contents

1. Introduction

Capital financing assumes a central role in society and is a fundamental tool for economic growth. Considering the need and impact of funding, which starts at an individual decision point, develops into an organizational level and culminates in an economic effect, it becomes relevant to study available options for access to financing. When exploring funding options, companies should consider more than the financial side since funding decisions are, actually, closely linked to a company's strategy.

Many factors impact the lending and borrowing behaviour and nowadays on top of everyone's mind is the economic crisis. However, other factors are key as well, namely market imperfections, a timeless and structural issue, that arise from uncertainty and asymmetric information between the demand and the supply sides (Kraemer-Eis and Lang, 2012).

In the context of capital financing, leasing can be seen as an alternative for companies to broaden their access to short and medium-term financing; yet in this thesis the aim is to challenge leasing as an alternative to purchasing.

The decision of purchasing versus leasing from a corporate finance perspective is examined on the basis of Modigliani and Miller (1958) theory of perfect capital markets (where companies' capital structure is irrelevant for the calculation of the firm value). Akerlof (1970) pointed out in their research that market imperfections are part of reality and ignoring them is introducing an error that significantly changes the outcome. This means that market imperfections are not a cause neither a result of economic crisis, actually they are prevalent in the financial markets. Based on this, it is pertinent for business and economic environment that companies try to diversify their funding options and uncover ways to substitute traditional sources of financing (Akerlof, 1970).

Fletcher *et al* (2005) clarifies the notion of leasing by saying that it is based on the assumption that profits are generated by the lessee through the use of the asset since no cash is provided from a credit entity but only the asset (as opposed to a loan). Moreover, International Accounting Standard (IAS) 17 dating from march 2010, states that "a lease is an agreement whereby the lessor conveys to the lessee, in return for a payment or series of payments, the right to use an asset for an agreed period of time". Leasing is here denoted as an asset based financing and it can be said that leasing allows the lessee to generate cash flows from the business operations and asset exploitation (asset turnover) to afford the lease payments. In fact any type of leasing fit that concept, however it is important to differentiate and

characterized leasing alternatives. Leasing agreements can be divided into two major categories, financial leases and operational leases. Financial lease is defined by the IAS 17 as "a lease that transfers substantially all the risks and rewards incidental to ownership of an asset. Title may or may not eventually be transferred". On the contrary, as lessors retain ownership, operational leases separate the legal ownership of an asset from its economic use and so the asset is an inherent form of collateral in that type of contracts (Graham *et al*, 1998; Steven and Hein, 1995).

Specifically, the focus of the thesis is on operational leases which are mostly known for their non-monetary advantages. Those advantages may be hard to quantify but they probably constitute the most interesting features (from the lessee standpoint) arising from an operational lease plan. Some non-monetary benefits are the ability to finance 100% of the asset without guarantees or collateral; the flexibility towards customer needs such as the variety of contractual provisions or equipment renewal; the agility to easily adapt to the fluctuations of the demand; the capacity to improve working capital management by spreading payments over the asset's life time and, because of the dispersal the cash outflows the lessee might be able or willing to lease more expensive goods since the risk associated with asset turnover and demand fluctuations are reduced (Leaseurope annual report, 2011).

In this dissertation, leasing is studied from a fiscal perspective. The reason behind the decision to study tax implications in leasing versus buying decision was due to the fact that non-monetary benefits are somehow transversal across European countries, so what could explain the differences in the level of assets under leasing agreements across Europe? Is it part of a business culture, unawareness or is the leasing strategy by some fiscal means a disadvantage? The baseline of this research is to determine if fiscal rules can explain the differences observed in the percentage of assets under operational leasing contracts across European countries. Is there evidence that fiscal rules are a critical factor in the choice for operational leases?

To examine the relation between fiscal rules and operational leases, a cross sectional study was performed in order to capture the differences across European countries for a given point in time.

The first step to study the possible relation between operational lease in terms of fiscal policies and operational lease usage by European country is to quantity the cost associated with that type of leasing. The cost of operational lease is the sum of scheduled payments made by the lessee to the lessor. However, it is impossible to directly observe the amount paid for the operational leases as they are off balance sheet items; yet for the thesis purpose it is

acceptable to assess the cost of operational lease by comparing the cash flows from the leasing payments with the cash flows from purchasing. In practical terms, we equate the cost of operational leasing to the cost of buying, taking into account the timeline where those cash flows occur and discounting them to the present value.

For the metric's composition, data regarding fiscal policies and risk/cost was collected for the year of 2011 since this was the most recent year for which more information across European countries was available. Fiscal rules were collected for the 26 countries in the sample from existing work from auditing/consulting companies (see KPMG and Deloitte research reports[1]). Concerning the depreciation method and rate allowed for tax purposes it is essential to define a category of assets to be compared throughout the sample. For that, equipment/machinery were selected as they represent a considerable cost for companies and involve more than only the acquisition cost such as maintenance and rapid technology improvement. For the measurement of the purchasing cost the intention is to replicate, as much as possible, the reasoning behind companies decision to buy. Therefore two methods have to be considered: acquisition through internal funds or debt issuance. Metrics' results were tested against four variables that measure countries' economic performance. Results from the correlations tested intend to examine countries' behaviour towards leasing from a fiscal perspective but also to evaluate if leasing usage is linked with countries need for financing or with the development level, where technology plays a determinant role in highly competitive markets.

In the following sections, it will be presented the literature review that supports the relevance of the thematic and shows the key findings up to the date about leasing. Next, it will be described the methodology used to measure operational lease cost as well as the data collected. Results precede main conclusions and further research where the findings of the study will be presented and discussed.

[1] Deloitte (2012). "International tax: Bulgaria Highlights 2012".
Deloitte (2012). "International tax: Estonia Highlights 2012".
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2. Literature Review

International Accounting Standard (IAS) 17 dating from 2010, states that "a lease is an agreement whereby the lessor conveys to the lessee in return for a payment or series of payments the right to use an asset for an agreed period of time."

Steven and Hein (1995) and Graham *et al* (1998) following IAS 17, differentiate leasing agreements into finance leasing and operating leasing. Finance leasing consists of "a lease that transfers substantially all the risks and rewards incidental to ownership of an asset. Title may or may not eventually be transferred". Ownership risks and costs include accountability for loss, wear and tear, and obsolescence, whereas ownership benefits encompasses the right of use, gains from asset value appreciation and possession of the property title. Conversely, operating lease is a contract other than a finance lease and separates the costs and benefits of ownership from the costs and benefits of asset usage (Graham *et al*, 1998; Steven and Hein, 1995).

The purpose of this dissertation is to approach leasing from a fiscal perspective; hence it is relevant to highlight fiscal definition about the different types of leasing agreements. Accordingly, when the lessor preserves ownership, the contract is considered to be a "true" lease. If the lessee holds ownership, it is said to be a lease "intended as security", and in this case lessor's claim is basically the same as for a secured debt (Steven and Hein, 1995).

Indeed, arguments in favour of operating leasing partially derive from firms' ability to keep the leased assets and the corresponding financial obligations off their balance sheet and so, improving financial ratios. Under current accounting standards criteria to distinguish between the types of leasing relies on ownership risks, with lessees of operating leases bearing insufficient risk to treat the leased item as an asset and the respective obligations as liabilities, and so assets are kept off balance sheet. Critics of this accounting treatment defend that since lessees have to be in compliance with specific rules to determine who bears the risks of ownership, they can structure contracts in a way that ensures off balance sheet treatment for the leased assets (Dhaliwal *et al*, 2011; Monson, 2001).

The truth is that operating leases have interesting characteristics for many companies and that is why it became the largest type of off balance sheet items, one of the major sources of corporate financing and various studies consider it significantly more important than finance leases (Dhaliwal *et al*, 2011; Graham *et al*., 1998).

Nonetheless, Dhaliwal *et al* (2011) found that the positive relation between the implied cost of equity and the effect of operating leases on the debt-to-equity ratio has decreased

noticeably in recent years. These results are consistent with the hypothesis that the increased scrutiny from investors and regulators has compelled lessees to increase compliance with lease accounting rules meaning the lessee must disclose in notes in the profit and loss account the amount charged under the leasing agreement in the present year and the amount of the payments to which the entity is committed until the end of the agreement (Dhaliwal *et al*, 2011).

It is important to highlight the most relevant features of leasing (accounting and fiscal treatment of leases) but in this dissertation we suggest to take a closer analysis of the decision between buy and lease in terms of the corporate tax rate lessees are subject to.

2.1 Tax implications in leasing versus purchasing

Doing business imply frequent decision making. When a firm is confronted with the need to acquire assets, one of the questions that may arise is "How?"

Donaldson (1961), in what was described as the Pecking-Order Theory detected that managers preferred to fund investment from retained profits/internal funds rather than use external financing tools (in Beattie *et al*, 2000).

Eisfeldt and Rampini (2009), based on the argument that leasing allows for a higher debt capacity, inferred that "*leasing ratio is increasing in firm's financial constraints, characterized as firms having low internal funds or having a return on internal funds exceeding the market interest rate*". This leasing model denotes a pecking order of external funds determined by financial constraints: more financially constrained firms prefer to lease while less constrained firms purchase (through internal funds or debt). When leasing is available, the decision between purchase and lease can be motivated by cost differences which is a pure finance choice, or by asset characteristics that make leasing or purchasing a more attractive option in asset acquisition (Eisfeldt and Rampini, 2009; Beattie *et al*, 2000).

Several studies explore the relation between leasing and debt financing, however empirical evidence is controversial. Finance theory generally predicts that leasing and debt are substitutes to some extent. Marston and Harris (1988), Adedeji & Stapleton (1996) and more recently Yan (2006) found that a greater lease proportion leads to less new debt issued, suggesting a substitutability relation between debt and leasing. Nevertheless, Ang and Peterson (1984) and Lewis and Schallheim (1992) showed that a larger use of debt is accompanied by a larger use of leasing, indicating some level of complementarity.

More specifically, Beattie *et al* (2000) show in their study that leasing and debt are somewhat substitutes but not in the same proportion with £1 of leasing displacing, on average, £0.23 of non-lease debt. This finding is consistent with the idea that lessors bear some risks which does not happen in debt financing.

Despite these contradictory conclusions managers must decide whether to use leasing or debt, although evidence shows it is not a linear comparison, neither a straight forward decision (Erickson, 1993; Beattie *et al*, 2000).

An exhaustive characterization of just the tax implications of the lease-versus-buy decision and its interaction with a firm's overall capital structure, even under the assumption of complete markets, can be quite complex (Lewis and Schallheim, 1992; Steven and Hein, 272, 1995).

In perfect financial markets, the cost of raising capital for a new investment is purely the rate of return that investors would expect to receive in the financial market for investments with similar risk. Hence, in the absence of imperfections, all capital sources have the same costs, indicating that the value of the firm is kept unchanged no matter the proportion of equity, debt and leases in the its capital structure. However, bankruptcy costs and asymmetric information are imperfections that make different sources of financing to have different costs and different effects on the value of the firm (Ezzell and Vora, 2001).

Many theories of capital structure imply that, all else the same, the incentive to use debt increases with a firm's marginal tax rate due to the tax deductibility of the interest expense. Similarly, leasing models generally predict that firms with low marginal tax rates use relatively more leases than firms with high marginal tax rates. The reasoning is that leases allow for the transfer of tax shields from firms that cannot fully utilize the associated tax deduction (lessees) to firms that can (lessors) (DeAngelo and Masulis, 1980; Graham *et al*, 2006; Modigliani and Miller, 1963; Myers *et al*, 1976; Smith and Wakeman, 1985).

Most studies address the relation of leasing and taxes considering marginal tax rate which is the amount of tax paid on an additional dollar of income. In this dissertation we propose to approach the lease versus purchase problematic comparing European countries effective tax rate. The effective tax rate for a corporation is the average rate at which its pre-tax profits are taxed. As research based of effective tax rate is few and despite the different concepts between marginal and effective tax rate, it is acceptable to expect the relation to be the same.

Despite theoretical deductions, empirically testing for tax effects is difficult because a bogus relation exists between the financing decision and many commonly used tax proxies. Specifically, both interest expense and lease payments are tax deductible. Thus, a firm that

finances its operations with debt or leasing reduces its taxable income, potentially lowering its expected marginal tax rate. If not properly considered, this feature of the tax rate can bias an experiment in favour of finding a negative correlation between leasing and taxes and against finding a positive relation between debt and taxes. However, corporate tax rate is not potentially reduced by a lower taxable income because it is the same for all companies, thus no bias is introduced as described for the marginal tax rate (Graham *et al*, 1998).

The tax saving in terms of present value creates gains to leasing. The leasing models generally predict that low tax rate firms should lease more than high tax rate firms. Consistent with this prediction, Graham *et al* (1998) show a negative association between operating leases and the corporate marginal tax rate. On the other hand, several studies demonstrate that leasing may motivate a firm to use more debt than it would not otherwise since leasing offers the lessee the opportunity to transfer some non-debt tax shields to another firm (the lessor), who values these tax deductions more and "buys" these tax shields by reducing the leasing payments. (DeAngelo and Masulis, 1980; Ezzell and Vora, 2001; Lewis and Schallheim, 1992; Miller and Upton, 1976; Myers *et al*, 1976).

If the lessor has a lower tax rate than the owner/lessee this enhances the probable reduction of the lease payments and so increasing gains from leasing against debt financing tax shield. A more drastic situation that favours leasing is when firms with significant tax-loss carry-forwards will be tax-exhausted for a period of years, and so unable to take full advantage of the tax benefits of ownership, including those from accelerated depreciation and investment tax credits (Erickson, 1993; Ezzell and Vora, 2001; Lin, Wang, Wei Chou and Chueh, 2012; Steven and Hein, 281, 1995).

Graham *et al* (1998) summarized that leasing option for a low tax rate firm is favoured when (i) depreciation tax shield is higher in early years, (ii) taxable gain on the disposal of the asset is smaller, (iii) larger lease payments occur later in the lease term, or (iv) before-tax discount rate is high. Notwithstanding, it is possible to observe situations where a high tax rate firm is the lessee. In general, tax legislation and the use of accelerated depreciation plans tend to favour conditions under which the low tax rate firm is the lessee.

Overall, researchers conclude that as effective and marginal tax rate decrease, tax shield from debt falls and the relative gains from reduced lease payments increase. So, lessee's tax rate is found to be negatively related to lease usage, since the tax benefit of asset ownership increases as the lessee's marginal tax rate increases. Sharpe and Nguyen (1995) observed consistent results with this prediction where a firm's propensity to lease is negatively related to the proxies for its effective tax rate.

2.2 Other factors potentially affecting leasing and purchasing cost

For many years leasing was viewed as a function of firm's tax status (Myers *et al*, 1976; Lewellen *et al*, 1976; Miller and Upton, 1976). In the absence of taxes neither lease nor purchase could be shown to dominate. In the late 1980s, research shifted to non-tax incentives for leasing. One possible key factor for that change in focus was the Tax Reform Act of 1986 which substantially reduced the tax shelters of asset ownership. Market imperfections such as asymmetric information, costs of information gathering, differential tax rates, costs of financial distress and bankruptcy costs, potentially affect the relative costs of leases and debt and consequently the preference between leasing versus borrowing (Erickson, 1993).

2.2.1 Information asymmetries

Informational asymmetries between managers and investors can lead to both adverse selection and moral hazard costs. Myers and Majluf (1984) establish that if managers are able to issue safe debt, adverse selection problem is largely mitigated. For that reason, a pecking order of financial securities arises. Because lease payments are senior to payments on debt, Myers and Majluf (1984) model suggests that leasing can reduce costs related to the adverse selection problem. Consistent with this prediction, gains from leasing are greater for lessees in the high information asymmetry group. The reasoning is in line with studies revealing that lease rates will be lower than borrowing rates for low information firms (Erickson, 1993; Ezzell and Vora, 2001).

2.2.2 Financial distress

A firm with a high probability of entering financial distress is likely to be able to ex ante arrange lease financing on more favourable terms than other forms of financing. The trade off theory of capital structure suggests that firms will ex ante balance the tax benefits of debt against the expected costs of financial distress. This implies that firms with higher ex ante expected costs of financial distress should use less debt (Beattie *et al*, 2000).
Sharpe and Nguyen (1995) suggest that cash-poor or lower rated firms, those likely to face higher contracting costs, tend to lease more.

2.2.3 Bankruptcy costs

In relation to secured debt, leasing has the possibility to reduce costs of bankruptcy because of the different treatments given to leases and secured debt in the event of bankruptcy. However, the prospective of leasing to have a positive impact on bankruptcy costs will only be realized for firms that have a low credit quality and so greater probability of bankruptcy (Ezzell and Vora, 2001).

In case of default, as repossession is easier for a lessor than for a secured lender, as leasing enables for a stronger form of collateral. Due to the stronger claim protection for a lessor provided by retention of asset ownership, the predicted impact on lease rates is smaller than the effect on debt rates. Thus, the price differential should favour leasing for financially weaker firms (Erickson, 1993; Lin *et al*, 2012; Rampini and Viswanathan, 2013).

2.2.4 Asset factors

Smith and Wakeman (1985) highlight asset specific characteristics that may be important in the decision to lease. They recognize that assets sensitive to use and maintenance decisions, and assets where it is difficult to detect misuse are more likely to be owned. Similarly, highly specialized assets are more likely to be owned (Erickson, 1993).

Several authors discuss that tangible assets are a key determinant of corporate debt capacity. Based on the need to collateralize loans with tangible assets, research shows that as leasing amounts to a stronger form of collateralization due to the relative ease of repossession, firms with low tangible assets will lease more and borrow less (Lin *et al*, 2012; Rampini and Viswanathan, 2013; Smith and Wakeman, 1985).

Smith and Wakeman (1985) suggest that firms are more likely to buy than lease assets which are highly specific to the firm (Beattie *et al*, 2000).

3. Methodology

In this section there is a detailed description of the methods used in the dissertation to approach the main research question.

The starting point was to searched for a measurable relation between operating leasing in terms of fiscal policies and the percentage of assets under operating leasing agreements by European country. Operating leasing cost is a sum of scheduled payments made by the lessee to the lessor. According to the IFRS rules those payments can be recorded as expenses on an accrual basis, reducing the taxable income. However, it is not possible to directly observe the amount paid for the operational leases since they are off balance sheet items. Since leasing comprises a series of cash payments, we can compare the operational leasing and purchasing costs by matching the present value of the leasing cash flows to the purchasing cash outflows. In practical terms, a company that chooses to lease an asset under an operating leasing agreement rather than purchasing will avoid paying the full price immediately. However, such lessee is not entitle to depreciate the asset and so loses the tax shield benefit given to the owner.

Myers *et al* (1976) illustrate the difference between lease and purchase strategies and define it as being equal to the incremental cash-flows discounted at the after-tax interest rate. Accordingly, the present value of the difference between leasing and purchasing is summarized by Myers *et al* as:

$$V = A - \sum_{t=0}^{H} \frac{P\ (1-T)+bT}{(1+kd(1-T))\hat{}t} \quad (1)$$

where *A* is the purchase price of the asset; *P* is the lease payment in year t; *b* stands for the depreciation of the leased asset in the period t, *T* is the company's marginal tax rate and *kd* is the required rate of return on debt (interest paid on the loan). In this model the company's tax rate is assumed to be constant over time.

Although Myers *et al* (1976) model considers marginal tax rate, it is fair to infer the same relations between the variables in the case where T stands for corporate tax rate since, as discussed in the literature review, the relevant variables are the same and the behaviour follows the same pattern (even though the variation in terms of value may differ). In that situation, the difference between the alternative financing strategies is still equal to the incremental cash-flows, discounted at the after-tax interest rate (Myers *et al*, 1976).

In 1985, Smith and Wakeman also summarized the present value of the difference in the total tax expense between purchasing and leasing. The research introduces new variables, such as different tax rates between the owner/lessor and the user/lessee, as well as, profit arising from the disposal of the asset, which is a benefit to the owner:

$$\mathrm{PV} = (\mathrm{T_0} - \mathrm{T_b})[(\mathrm{Dep} + \mathrm{Debt} + \mathrm{Maintenance}) - (\mathrm{Lease} + \mathrm{Gain})] \quad (2)$$

where T_0 is the corporate tax rate of the owner/lessor, T_b is the corporate tax rate of the user/lessee, *Dep* is the present value of depreciation, *Debt* is the present value of the interest tax shields from the loan to acquire the asset, *Maintenance* is the present value of expected maintenance costs if these expenses are covered by the lease, *Lease* is the present value of the lease payments, and *Gain* is the present value of the taxable capital gain from the eventual sale of the asset.

Based on these models, we create our own to calculate the present value of operating leasing cost. The reason for new model is due to three main points. First, both models assume that the sum of the leasing payments are an observable amount, as well as others costs namely maintenance. Second, models only reflect the option to buy through debt issuance. Third, the model presented by Smith and Wakeman in 1985 (2) highlights the differences in the corporate tax rates of the lessor and the lessee. In our model that difference will not be considered because we are determining leasing cost from the lessee perspective. This means that the difference in corporate tax rates is not a direct gain for the lessee but a negotiable margin for the lessor.

Considering cash outflows as negative values and cash inflows as positive values, we suggest the following equations for the option of purchasing cost through internal funds (PC1) and through debt issuance (PC2).

$$\mathrm{PC1} = -\mathrm{Inv}(1 - \mathrm{T}) + \sum_{\mathrm{i}=0}^{\mathrm{n}}[\mathrm{Dep} * \mathrm{T} + \mathrm{BV} * (1 - \mathrm{T})] \quad (3)$$

Where *–Inv(1-T)* is the investment taken by the company to acquire the asset through internal funding eased by a lower tax payment as a consequence of a lower cash base for tax collection; *Dep*T* reflects the present value of depreciation tax shield that the owner is entitled which reduces the total cost of purchasing; lastly *BV*(1-T)* stands for the after tax disposal value of the asset that the owner benefits and that potentially decrease the cost of

buying (potentially because it is only materialized once the option of selling is realized). Finally, the present value of the buying option will be calculated by discounting cash-flows at the weighted average cost of capital (WACC).

$$PC2 = \sum_{i=0}^{n}[-\frac{1+Kd(1-T)}{n} + Dep * T] \quad (4)$$

When asset acquisition is made through debt issuance, investment in t=0 can be ignored since it is an external source of funding that will support the initial cost and that the owner will repay along the years. The impact of this is due to the fact that cash-flows are realized in different points in time and, considering differential analysis, there is no difference in terms of company's cash before or after debt issuance in t=0. Scheduled payments comprise the principal plus the interest divided by the agreed repayment period: $\frac{1+Kd(1-T)}{n}$, which is an average rental payment. For the dissertation purpose the loan repayment period is assumed to be equal to the depreciation time length. Average rental payments divide debt reimbursement into equal amounts along several periods. This reasoning introduces an error associated with time value of money as companies can choose to pay different amounts along the years. Even being aware of the limitation of using an average, it is not possible to cover all possibilities for the scheduled payments.

As for any other purchase option, the owner has the benefit given by the depreciation tax shield *Dep*T*. Finally, the present value of the buying option will be calculated by discounting cash-flows at the weighted average cost of debt (WACD).

For the leasing analysis the suggested equation is:

$$\text{Leasing Cost} = \sum_{i=0}^{n} -L * (1 - T) \quad (5)$$

Where *L* represents the leasing payments/rent reduced by the tax shield. This tax allowance is a result of the decrease in the taxable income as a consequence of leasing being recorded as an expense on the balance sheet.

Considering that the purpose of the dissertation is to assess and evaluate the relation between fiscal policies and leasing usage across European countries and as it is not possible to assess directly the amount of leasing cost, we examined the difference between leasing and purchasing cost. The rationale is to infer what is the total cost of leasing if it is equal to the cost of buying? In theory it would be expected that as the inferred leasing cost become larger

(meaning that for the leasing to be equal to the purchasing cost a greater amount must be spent on leasing) a great percentage of leasing usage would be observed. Therefore, the present value of the leasing cost for the lessee is achieved through the equation:

$$\text{Leasing cost} = \text{Purchasing Cost} \tag{6}$$

The present value of leasing is calculated by solving the equation in function of L (Leasing expense). Cash-flows are discounted at the cost of debt or cost of capital depending on the source of financing (debt or internal funds, respectively).

For the sake of clarity and as final notes, it is important to reinforce the notion that the metric does not translate the real cost of leasing but aims to deduct the cost of leasing in comparison with the purchasing cost.

4. Data Collection

Data collection aims to portray the data screened to answer the research question and to guide the reader throughout the reasoning of information selection.

4.1 Fiscal Policies

In this dissertation, leasing is studied as being more than a mere alternative to external funding options. A great majority of previous research have analysed leasing versus debt, placing leasing as an external financing strategy. Contrary to those studies (extensively presented in preceding sections) the purpose of the current study is to challenge leasing as opposed to purchasing and assess if there is any pattern across European countries that depict a relation between fiscal policies and the penetration of leasing in the market.

The rationale behind the focus of the analysis in European countries is to gather a homogenous sample in terms of business culture. Moreover, variables such as cultural patterns are very difficult to accurately translate in numbers and even more challenging to incorporate in a metric with financial purposes. Consequently, the data collected comprises only European countries both members and non-members of the European Union (EU), in a total of 26 countries, 23 being EU members and 3 Non-EU members (see table 3 in appendix)

Information concerning fiscal policies was collected resorting to available compilation works done by auditing/consulting companies, that provided in a standardized and comparative format, fiscal policies concerning leasing across European countries (see KPMG and Deloitte research reports[2]) The total number of countries in the sample was restricted by the available information regarding fiscal policies, total investment level and new leasing production for each country. Therefore, the number of securities under observation from EU countries is 2550 and from Non-EU countries is 549, totalizing 3099 securities.

Information was collected and treated following some guidelines/assumptions that are described in the following lines.

4.1.1 Depreciation

To compute the depreciation rate two pieces of information were fundamental: tax depreciation rate and depreciation method allowed for tax purposes.

Concerning the tax depreciation rate it was important and necessary to define a type of asset that could be compared throughout the sample. For that purpose industrial equipment/machinery was selected. Those types of assets represent a considerable cost for companies and involve more than only the acquisition cost: maintenance, fast wear and tear, great and rapid technology improvements that demand frequent updating.

Considering the depreciation tax rate, information collected comprises the depreciation allowed to the owner which represents the depreciation tax shield in the case of purchasing.

Since the aim of the dissertation is not to assess the real cost of leasing but to measure that cost in a comparative manner and, as information about residual value was not available, equipment/machinery was completely depreciated which means the final book value was zero. Accordingly, the timeline under analysis was defined by the book value, being the last year the one where book value is equal to zero.

In relation to the depreciation method allowed for tax purposes, some countries set just one possibility and others make it more flexible and present more options. In those cases the depreciation method chosen was the one that most benefit leasing, which means higher depreciation rate in the first years. The rationale behind this is to replicate how options are

[2] Deloitte (2012). "International tax: Bulgaria Highlights 2012".
Deloitte (2012). "International tax: Estonia Highlights 2012".
Deloitte (2012). "International tax: Netherlands Highlights 2012".
Deloitte Touche Tohmatsu Limited (2012). "Taxation and Investment in Italy 2012: research, relevance and reliability".
Leaseurope and KPMG (2012), "European Leasing", Asset Finance Tax Network Publication

confronted in a real situation and to fully represent the potential benefits from leasing. Information collected is summarized in table 4 in appendix.

4.1.2 Corporate Tax Rate

Corporate tax rate was preferred over specific marginal or categorized corporate tax rates. The corporate tax rate used refers to the main category of tax rate provided by KPMG and Deloitte research studies for the individual countries.

Given that the final objective is to analyse the country as a unit, corporate tax rate was a better proxy than marginal tax rate. Marginal tax rate defines tax levels within the country according to the profit generated as opposed to corporate tax rate which is a standard tax rate applied to all companies (independent on the profit level). Tax rates collected are summarized in table 5 in appendix.

4.1.3 Exceptions

For some countries the above mentioned guidelines do not fit the information available. In these situations some adjustments were made having in mind the applicability of the metric, the purpose of the study and the minimization of bias.

Estonia has a peculiar tax system where since the year 2000 there is no corporate tax rate and income is only taxed at the moment it is distributed (dividends). Accordingly, tax depreciation is not necessary which means no tax depreciation rate is defined by the authorities. The impact of this situation in the study is due to the fact that the book value is derived from the depreciation rate (1-Sum of the depreciation) meaning that the asset would have a constant book value of 100%, which is clearly unreal. Moreover, accounting depreciation is also not available and so the valid decision that kept the cohesion of the study was to go back in time, before the new tax regime, and consider the tax depreciation rate previous to year 2000. For the dissertation purpose the tax depreciation rate for industrial equipment/machinery was consider to be 40% in the first year, declining until book value is equal to zero.

A different problem appeared in the analysis of the Czech Republic's and Poland's tax system. As explained before, when more than one depreciation method was allowed, we considered the one that depreciates a higher percentage in the first years. However, we had to break this rule for these two countries. In the Czech and Polish tax systems the higher percentage method are specific transformations of the accelerated and declining balance methods, respectively. These transformations imply that the depreciation rate is determined

by the residual value, which is not available information. Hence in these countries, we had to resort to straight-line depreciation, where we depreciate less in the first years than with the accelerated or declining balance methods.

4.2 Weighted Average Cost of Capital (WACC)

Weighted Average Cost of Capital (WACC) is mainly used for financial purposes and reflects the risk undertaken and the return demanded by firms when an investment is considered.

As explain before, one of the parameters for the dissertation is to test leasing as opposed to purchase and not just an alternative to debt. Accordingly, a proper analysis of leasing versus purchasing should reflect the higher risk and return that the acquisition through internal funds represents for a company. Consequently, WACC is a great proxy as it mirrors firm's cost of capital by incorporating all capital sources and proportionately weighting them.

As the metric (developed and explain previously in the methodology) intends to replicate companies' conditions under decision making, the appropriate risk/return rate is the one that companies face, as opposed to the country rate. Hence, WACC was collected for all companies register in the stock market screened by country.

Data was extracted through Bloomberg and reflects the values of WACC in the period concerning 01/01/2011 to 31/12/2011. As financial results may vary widely with little changes, for homogeneity and robustness reasons, all information was collected for the same year.

WACC values were integrated in the metric to reflect the cost of the purchase option as well as to discount to present values the cash outflows incurred in the future. The summary of the information regarding WACC is displayed in table 6 in appendix.

4.3 Weighted Average Cost of Debt

The Weighted Average Cost of Debt (WACD) is a financial tool that captures the return demanded (interest) on external financing sources. Therefore, it reflects the total additional cost the firm must incur besides the principal payment.

A great number of studies have approached leasing as an alternative to debt. However, this dissertation challenges operational leasing versus purchasing. When companies evaluate the acquisition option, resorting to debt should be considered since it can be beneficial, as

financial theories claim (capital structure theory). So, in order to replicate that reasoning, debt versus operational leasing could not be disregarded.

WACD was collected for all companies register in the stock market and screened by country. In accordance with the explanation given for the WACC values collected, WACD follows the same logic and tests the leasing strategy at a company level. For this, the appropriate rate of return demanded by external funding entities is the one that companies face, as opposed to the country rate.

Data was extracted through Bloomberg and reflects the values of WACD from 01/01/2011 to 31/12/2011. The summary of the information gathered is shown in table 7 in appendix.

WACD values were integrated in the metric to reflect the cost of the purchase option through external funding as well as to discount to present values the cash outflows incurred in the future.

5. Variables Tested

This section describes the variables selected and tested to answer the research question and to reach important and significant conclusions.

5.1 Leasing Penetration Rate

Leasing Penetration Rate (LPR) is a ratio that represents the incremental leasing usage for equipment/machinery in relation to the total investment. LPR constitutes in our perspective a better proxy for leasing usage than considering simply leasing production. The reasoning is that it mitigates the differences in market size across countries.

It is important to bear in mind that operating leasing benefits go beyond fiscal advantages and as the report of the Leaseurope for 2011 shows, companies have different reasons to use leasing. Nevertheless, it is acceptable to believe that fiscal policies can motivate companies to adjust the number of assets under operating leasing and for that, testing the correlation between LPR and the present value of operating leasing calculated through the metrics can depict significant reasons for operating leasing choice rather than purchasing.

LPR is calculated by dividing *new leasing production* of a specific year by *gross fixed capital formation* for the same year. The result illustrates how much of the investment in that period

was financed through leasing (percentage of leasing relative from total investment in fixed capital).

Information for the *new leasing production* in million Euros was extracted from Leaseurope Annual report 2011 for the 26 countries in the sample. Concerning total investment, data selection was narrowed down to investment in fixed capital in line with the depreciation for industrial equipment/machinery. Data for *gross fixed capital formation* in million Euros for the year 2011 and the yearly growth (in relation to 2010) was collected through the available information in Eurostat[3].

Table 8 in appendix summarizes the information extracted for both variables and the result of leasing penetration rate for each country in the sample.

5.2 Gross Domestic Product Growth

Data concerning GDP was gathered from Eurostat for the year of 2011 for all countries in the sample and is displayed in table 10 in appendix. The percentage growth reflects the variation of GDP in volume from previous year (2010). We will later alert to the fact that GDP includes gross investment as one of its components, which will have implications in our correlations analysis.

5.3 Investment Growth

Investment growth is a variable closely related with GDP however, as GDP is influence by different factors, it is important to analyze in isolation how investment behaves across the countries in the sample.

For the dissertation purpose, it is pertinent to test if a correlation between the investment growth and the usage of leasing can be found. The importance relies on the detailed information that can be extracted by making a direct link between investment growth and the percentage of new investment in leasing from the total investment in fixed capital (leasing penetration rate).

Information for investment growth was collected from Eurostat for the year of 2011, reflecting the variation from the previous year, and is summarized in table 9 in appendix.

[3] Eurostat (2011), European Economic Indicators [Online] (Updated 15 May 2013) Available at http://epp.eurostat.ec.europa.eu/portal/page/portal/euroindicators/peeis [Accessed 16 May 2013].

5.4 Investment as a percentage of GDP

Finally, and to avoid differences due to market size, it is important to use a variable that assesses the representativeness of the investment level in each country in the sample. For that, the differences in market size are minimized by dividing the total investment by the GDP (both in million euros), reflecting the impact of the investment in the production level of a country (table 10 in appendix).

This variable is fundamental to examine if there is any relation between the fiscal policies and the level of investment in comparison to the GDP.

6. Results' Analysis and Discussion

This section will examine the results obtained through SPSS regarding the research question. Before critically explore the results and discuss their impacts in the study, it is important to highlight once more, that the dissertation aim to assess a possible relation between the choice of operating leasing over purchasing (whether the acquisition is made through internal funds or debt issuance) and the fiscal policies across a sample of 26 European countries. For that, a cross sectional study was performed as it involves the observation of a subset of the population, which in this case is a sample of all the European countries, in a specific period in time. Cross sectional studies are characterized by describing a feature of the population and so, they are descriptive studies where variables are measured simultaneously. However, this type of research method does not test or establish a cause and effect relationship.

6.1 Present value of operating leasing as a function of the purchasing cost

The present value of operating leasing as a function of the purchasing cost (PVOL) was calculated through the metrics described in the methodology section. Since the results refer to cost, they are presented as a negative cash flow (cash outflow).

Looking at the descriptive statistics displayed in table 1, the average result for the PVOL is not that different between the option of acquiring through internal funds or through debt issuance; -1,432 and -1,349 respectively. Differences in the estimated values for PVOL across countries in the sample are the lowest within the variables under study, as can be seen in table 11 in appendix, where standard deviation is 0,978 for PVOL as a function of purchasing through internal funds and 0,994 for PVOL as a function of purchasing through debt.

Perhaps the most relevant fact to be highlighted is the one concerning Turkey where the results show positive values for the cost of leasing through internal funds and debt. These results raise the possibility of operational leases represent an advantage over purchasing from a fiscal policy point of view. Nevertheless, the results for the Pearson's correlation coefficient show that there is no significant correlation between PVOL for both purchasing options (internal funds or debt) and the variables considered in the study, which means there is no evidence that fiscal rules play a determinant role in the choice to use operational leases.

Table 1 – Descriptive statistics for the variables under study.

	Statistics					
	Number of Countries in the sample	Mean	Standard Deviation	Range	Minimum	Maximum
Present Value of Leasing as a function of purchasing through internal funds	26	-1,432	0,978610	4,57	-4,48	0,094
Present Value of Leasing as a function of purchasing through debt	26	-1,349	0,9934	4,163	-3,89187	0,27
Leasing Penetration Rate for 2011	26	19,51	25,65	99,12	0,0303410	99,15
Investment Growth for 2011	26	4,305	11,85	50,75	-19,5	31,25
GDP Growth for 2011	26	2,109	3,1025	17,35	-7,15	10,20

6.2 Leasing Penetration Rate

Leasing penetration rate (LPR) for the year 2011 displays the greatest results within the variables under study for both standard deviation and range, as can be seen in table 1. LPR shows the greatest difference between the lowest and the highest value observed, with a range of 99,123 and the larger value for the standard deviation (25,653), meaning that LPR is the variable where values across the countries in the sample show the highest level of dispersion.

Specifically Estonia show a peculiar percentage of leasing penetration rate, with 99,12% of equipments under operating leasing contracts from all the investment in gross fixed capital, as opposed to Turkey that exhibits the lowest level of leasing penetration rate with 0,03%. Despite opposite realities in terms of leasing usage, Estonia and Turkey show the most favourable amounts regarding the cost of leasing as a function of the purchasing cost. Turkey is the single country in the sample showing a clear advantage for leasing over purchase in terms of fiscal policies but Estonia is immediately after, even though it does not show a clear benefit. This clear disparity between variables put in evidence that company's choice between

leasing and purchasing may not be related with fiscal rules as it can be seen in table 2, where no significant correlation was established between the present value of operating leasing cost as a function of the purchase cost and the leasing penetration rate.

Though, the analysis of Pearson's correlation coefficient suggest a significant and positive correlation at the level of 0,05 between the leasing penetration rate and the GDP growth with Pearson's r equal to 0,410. These results indicate that, for European countries, as the percentage of GDP growth rises, there is an increase preference for operational leasing translated by a greater penetration rate. However, it cannot be said that there is a cause and effect relation.

Table 2 - Findings for the Pearson's correlation analysis performed through SPSS for all the variables under study. Pearson's correlations significant at the level of 0,01 and 0,05are emphasised as indicated in the legend.

		Correlations					
		Present Value of Leasing as a function of purchasing through internal funds	Present Value of Leasing as a function of purchasing through debt	Leasing Penetration Rate for 2011	Investment Growth for 2011	GDP Growth for 2011	Investment as a percentage of GDP for 2011
Present Value of Leasing as a function of purchasing through internal funds	Pearson Correlation	1	0,812 [a]	-0,132	0,160	0,231	0,227
	Significant Level (2 tailed)		0,000	0,520	0,434	0,256	0,255
Present Value of Leasing as a function of purchasing through debt	Pearson Correlation	0,812 [a]	1	-0.127	0,082	0,188	0,037
	Significant Level (2 tailed)	0,000		0,536	0,690	0,357	0,857
Leasing Penetration Rate for 2011	Pearson Correlation	-0,132	-0.127	1	-0,348	-0,410 [b]	0,046
	Significant Level (2 tailed)	0,520	0,536		0,082	0,038	0,823
Investment Growth for 2011	Pearson Correlation	0,160	0,082	-0,348	1	0,882 [a]	0,560 [a]
	Significant Level (2 tailed)	0,434	0,690	0,082		0,000	0,003
GDP Growth for 2011	Pearson Correlation	0,231	0,188	-0,410 [b]	0,882 [a]	1	0,547
	Significant Level (2 tailed)	0,256	0,357	0,038	0,000		0,004
Investment as a percentage of GDP for 2011	Pearson Correlation	0,227	0,037	0,046	0,560 [a]	0,547 [a]	1
	Significant Level (2 tailed)	0,255	0,857	0,823	0,003	0,004	

a - correlation is significant at 0,01 level

b - correlation is significant at 0,05 level

6.3 Total Investment Growth

Concerning total investment growth for the year 2011, nine countries (Bulgaria, Cyprus, Czech Republic, Greece, Italy, Portugal, Slovenia, Spain and United Kingdom) show a negative growth regarding total investment. Negative values indicate that between the year of 2010 and the year of 2011 there were a decrease of the investment level in fixed capital in those countries.

Total investment growth also shows the greatest range between the minimum and the maximum values observed within the sample. However, the most relevant fact concerning this variable is again related to Turkey.

Turkey shows the lowest level of leasing penetration rate for the year 2011 even though it has the most favourable results concerning the present value of operating leasing as a function of the purchasing cost, for both acquisition options – internal funds or debt issuance - with positive values for both purchasing strategies. Moreover, Turkey has the highest growth level regarding total investment in fixed capital throughout the sample. Those facts illustrate a situation where investment is highly sustained through purchase. We cannot assess or explain the relation between the favourable results achieved for the present value of operating leasing and the low levels of leasing usage in a country with the highest investment growth, nevertheless it is an important fact for the analysis and it may be addressed in future studies.

Moreover, examining Pearson's correlation coefficient, we can observe a positive and significant correlation at the level of 0,01 between investment in fixed capital growth and GDP growth as it is expected by the expenditure method to compute the GDP. Even though the correlation between GDP growth and investment growth was not surprising, it becomes relevant for the dissertation when interpreted with the results for the leasing penetration rate that are also positively correlated with GDP growth. This means that as GDP growth increases across the countries in the sample, leasing penetration rate shows greater levels of growth in comparison to the investment in fixed capital. So, operational leases have a higher representativeness in total investment in fixed capital as GDP growth escalates.

6.4 Gross Domestic Product Growth

As explained previously, GDP is a great indicator of a country's economy. Regarding GDP growth for the year 2011 statistics indicate an average of 2,109% and a standard deviation of 3,109. Extremes values are characterized by two countries, Greece and Portugal, that show negative values, -7,15% and -1,55% respectively, which means that between 2010 and 2011

the economy of those countries was in recession. In contrast, Turkey displays the highest GDP growth with 10,2% in line with the high level of investment.

6.5 Investment as a percentage of GDP

Investment as a percentage of GDP is a variable that illustrates the impact of investment in the GDP and so eliminates the variances in investment and GDP across countries arising from differences in the maturity/development of the economy.

The results indicate that on average, 20,47% of the GDP of the countries in the sample, is due to investment in gross fixed capital for the year 2011 and differences across the sample measured by standard deviation are significantly lower than for total investment growth, with a value of 3,016 in opposite to 11,854.

The highest value observed for this variable belongs to Romania which has a low percentage of leasing usage with 0,178% for the leasing penetration rate in 2011.

7. Main conclusions and Future Research

The aim of this dissertation is to study the role of fiscal policies in the decision making between operational leasing and purchasing across European countries from the lessee point of view. Conclusions about cause and effect relation cannot be drawn from the results as this is a cross sectional study. Nonetheless, important correlations can provide a direction and contribute for future research.

One of the main objectives of this study is to be a reliable portrait of the present situation. Therefore, information was collected for the year 2011 as it is the most recent period for which European countries already had published information.

Findings show that there is no evidence that fiscal rules play a determinant role in the choice to use operational leases. However, there are some interesting results that should be discussed. In line with what was described in the results section, is not possible to assess or explain the inconsistency between the favourable results observed in the present value of operating leasing for Turkey and the total investment in fixed capital growth, which are the highest in the sample and that contrast with the low levels of leasing usage.

It is also interesting and perhaps relevant to observe how leasing usage follows GDP growth trends. It was expected, based on theory, to observe a positive correlation between GDP

growth and total investment growth. However, a not so obvious correlation stood out and revealed that as GDP growth increases across the countries in the sample, leasing usage (LPR) shows higher levels of growth than total investment in fixed capital. This means that as the percentage of GDP growth rises there is an increase preference for operational leasing translated by a greater penetration rate. Still, it cannot be said that there is a cause and effect relation since no temporal analysis was performed.

Results must be discussed considering the limitations present in the study and future research should try to overcome them. One of the limitations is a consequence of information not being collected or disclosed for some countries, reducing the sample to 26 countries. Another limitation has to do with operational leases usage. Available information includes in one single value the amount of equipment under operating leasing and hire purchasing (a type of financial leasing) agreements without enough figures to distinguish the amounts corresponding to each type. This may have influenced the results because introduces information concerning a type of leasing that is not being studied and the percentage corresponding to operational leases from the total amount is probably different for each country. The third limitation is related to the assumption of average rental payments. To address the issue of debt reimbursement, it was assumed that companies would pay an equal amount along the repayment period. These equal amounts are actually an average that introduces an error as a consequence of the time value of money. Even though, the error affects all the countries, the impacts have different proportions (depending on the value of the discount rate) and the effect may be positive or negative depending where a higher amount is repaid (sooner or later).

Despite the limitations, there may be reasons other than taxes, such as economic or financial reasons, that may explain the differences in the level of operational leases across European countries. Leaseurope annual report for 2011 shows that reasons for the choice of leasing are significantly different across European countries. Reality is in fact a complex combination of dimensions that influence operational leases and that go beyond fiscal rules. The Leaseurope report describes some of those advantages:

- the ability of the lessee to finance 100% of the asset without guarantees or collateral;
- the capacity to improve working capital management by spreading payments over the asset's life time, which can ultimately be compared with purchasing through debt but that differentiates from it by alleviating the consequences linked to ownership, such as disposal value and cost of maintenance versus cost of new equipment versus technological developments;

- the flexibility to change the equipment at the end of the leasing contract or before for purposes of upgrade or cost reduction;
- the agility to easily adapt to the fluctuations of the demand.

As final considerations, it is important to emphasize that operating lease is a complex tool and certain features are very hard to quantify and can be closely linked with a company's strategy and liquidity, economic situation of a country, maturity of the industry or even competitive level. Although many studies compare it to debt and conclude they may be identical or even interchangeable, differences between them are significant and goes from accounting, strategic direction, economic cost, fiscal policies and financial situation. This thesis focused one variable, fiscal rules, however companies should try to approach all factors and match them with its business strategy. Corporate strategy is key moving companies in the choice between funding alternatives.

8. Appendix

8.1 Sample Structure

Table 3 – List of countries in the sample organized by European and Non-European Union Members in 2011.

European Union Members in 2011	Non-European Union Members in 2011
Austria	Norway
Belgium	Switzerland
Bulgaria	Turkey
Cyprus	
Czech Republic	
Denmark	
Estonia	
Finland	
France	
Germany	
Greece	
Italy	
Latvia	
Luxemburg	
Netherlands	
Poland	
Portugal	
Romania	
Slovakia	
Slovenia	
Spain	
Sweden	
United Kingdom	
Total **23**	**3**

8.2 Depreciation

Table 4 – Summary of the depreciation method and depreciation rate allowed for tax purposes for equipment/machinery. Information refers to the year 2011 and was collected through available work from auditing/consulting companies. Some countries allow only one method for depreciation others set more than one possibility. In those cases the option was to choose the one that leads to a higher depreciation rate in the first years.

Country	Depreciation Method	Depreciation Rate		
		Year 1	Year2	Subsequent Years
Austria	straight line	20%	20%	20%
Belgium	straight line or declining balance [1]	40%	24%	20%
Bulgaria	straight line	30%	30%	30%
Cyprus	no information	10%	10%	10%
Czech	straight line and accelerated [2]	11%	22,25%	22,25%
Denmark	decline balance	25,0%	18,8%	=(1-Sum_Depreciation))*0,25
Estonia	Declining balance	40%	24,00%	=(1-Sum_Depreciation))*0,40
Finland	declining balance	25,0%	18,8%	=(1-Sum_Depreciation))*0,25
France	straight line, declining balance [2]	32,14%	21,81%	=(1-Sum_Depreciation))*0,3214
Germany	straight line	14,29%	14,29%	14,29%
Greece	straight line	6,67%	6,67%	6,67%
Italy	straight line	17,50%	17,50%	17,50%
Latvia	declining balance	40,00%	24,0%	=(1-Sum_Depreciation))*0,40
Luxembourg	straight line and declining balance	30,00%	21,00%	=(1-Sum_Depreciation))*0,30
Netherlands	straight line	20%	20%	20%
Norway	declining balance	20%	16,00%	=(1-Sum_Depreciation))*0,20
Poland	straight line or reduced balance [2]	25%	25%	25%
Portugal	straight line or declining balance [2]	37,5%	23,44%	=(1-Sum_Depreciation))*0,375
Romania	straight line, accelerated or	50,00%	12,50%	12,50%
Slovakia	straight line or accelerated [2]	8,3%	8,3%	8,3%
Slovenia	straight line	20%	20%	20%
Spain	straight line	12%	12%	12%
Sweden	straight line or declining balance	30%	21%	20%
Switzerland	straight line (most used); declining	15%	15%	15%
Turkey	straight line or accelerated [2]	50%	25%	25%
United	straight line	18,0%	14,8%	=(1-Sum_Depreciation))*0,18

1. Tax law allows the companies to switch among methods along the depreciation period
2. Tax law allows different methods to depreciate the asset, however once the company choose one it cannot be changed

8.3 Corporate Tax Rate

Table 5 – Corporate tax rate for the year 2011 regarding the countries in the sample.

Country	Corporate Tax Rate in 2011
Austria	25,00%
Belgium	33% + 0.99% (crisis contribution)
Bulgaria	10,00%
Cyprus	10,00%
Czech Republic	19,00%
Denmark	25,00%
Estonia	0,00%
Finland	26,00%
France	33,33%
Germany	29,37%
Greece	20,00%
Italy	31,40%
Latvia	15,00%
Luxembourg	28,80%
Netherlands	25,00%
Norway	28,00%
Poland	19,00%
Portugal	25,00%
Romania	16,00%
Slovakia	19,00%
Slovenia	20,00%
Spain	30,00%
Sweden	22,00%
Switzerland	26,30%
Turkey	20,00%
United Kingdom	26,00%

8.4 Weighted Average Cost of Capital

Table 6 – Description of the sample examined for each country regarding the data collected for weighted average cost of capital (WACC). For each country WACC was collected for all companies in the stock market available on Bloomberg [online] for the year 2011. In the first column it is possible to see the number of securities analyzed for each country and in the next columns the descriptive statistics regarding WACC.

Country	Number of Securities	Average (%)	Standard Deviation (%)	Maximum (%)	Minimum (%)
Austria	19	9,172947	3,472173	15,00433	3,934741
Belgium	12	8,480501	1,803529	14,86373	5,798269
Bulgaria	14	6,188709	2,394694	10,73221	3,445001
Cyprus	13	10,22484	1,910002	11,85255	6,572905
Czech Republic	3	5,531031	0,523474	6,114994	5,1039
Denmark	160	7,120929	3,493399	21,05467	-4,54288
Estonia	4	12,03532	4,083296	17,8525	9,192527
Finland	36	9,717501	1,718534	11,39547	3,583766
France	154	8,252177	2,442324	13,9201	3,18313
Germany	35	9,448882	1,930593	12,48042	3,72471
Greece	302	77,98702	65,71572	586,8407	3,833068
Italy	304	8,553072	1,918296	13,16142	3,21852
Latvia	12	3,25253	2,556964	6,412572	-3,51071
Luxemburg	15	9,240637	2,677736	16,20451	6,658574
Netherlands	71	8,341531	2,538218	20,19449	3,237082
Norway	226	8,248995	3,492296	16,22078	2,795183
Poland	236	9,209176	2,609469	32,89393	3,101191
Portugal	98	11,80404	5,171684	20,40352	-24,8599
Romania	18	11,572	6,741448	21,18698	-7,67719
Slovakia	87	5,073117	3,126081	15,08441	1,366284
Slovenia	179	5,444447	5,804407	44,851	0,163005
Spain	169	8,000736	1,854002	12,74284	3,579927
Sweden	138	8,373572	4,066264	31,26299	-17,9701
Switzerland	9	11,12889	4,392489	17,69413	4,817162
Turkey	314	14,03791	1,224924	18,76863	10,64357
United Kingdom	471	9,033527	4,528371	83,20015	2,723246

8.5 Weighted Average Cost of Debt

Table 7 – The table contains the description of the sample examined for each country regarding the data collected for weighted average cost of debt (WACD). For each country WACD was collected for all companies in the stock market available on Bloomberg [online] for the year 2011. In the first column it is possible to see the number of securities analyzed for each country and in the next columns the descriptive statistics regarding WACD.

Country	Number of securities	Average (%)	Standard Deviation (%)	Maximum (%)	Minimum (%)
Austria	19	3,508110	0,352060	4,131300	3,067343
Belgium	12	4,403842	0,871838	5,556720	1,882527
Bulgaria	14	3,420497	0,671221	4,792321	2,369654
Cyprus	13	4,544384	1,042367	7,384709	3,360912
Czech Republic	3	4,645793	0,523474	6,114994	5,1039
Denmark	160	1,886616	1,128258	4,858357	0
Estonia	4	3,163958	4,083296	17,8525	9,192527
Finland	36	4,141004	1,625664	7,084403	1,616419
France	154	4,104293	0,964249	6,322023	1,117887
Germany	35	3,714723	0,961557	5,417555	2,215236
Greece	302	103,6093	81,61186	610,3164	1,310729
Italy	304	4,750398	1,221854	8,608718	1,864579
Latvia	12	2,078852	1,348611	3,318164	0
Luxemburg	15	5,071143	3,573191	16,42268	1,68938
Netherlands	71	3,492853	0,786086	5,492168	1,590432
Norway	226	3,196031	0,610271	4,307161	0
Poland	236	4,734158	1,763551	8,962519	0,279458
Portugal	98	11,74455	4,981518	22,17768	3,070306
Romania	18	4,921316	1,794809	8,114669	2,478915
Slovakia	87	1,358036	0,739178	2,532727	0
Slovenia	179	1,509534	0,773985	3,011369	0
Spain	169	4,571109	1,45692	11,50829	0,696441
Sweden	138	2,777106	1,046218	5,069132	0
Switzerland	9	3,343555	0,468156	4,363761	2,916815
Turkey	314	10,67418	2,232007	15,93812	0
United Kingdom	471	3,157269	1,150793	8,217354	0

8.6 Leasing Penetration Rate

Table 8 - Leasing penetration rate illustrates the amount of new investment under leasing agreements relative to all the investment made during 2011 in fixed capital. In the first two columns the information presented refers to the new production of equipment leased and hire purchased in 2011 and gross fixed capital formation in 2011, gathered from Leaseurope Annual report for 2011 and Eurostat, respectively. The last column shows the result for the relative amount of equipment under leasing agreements based on previous information.

Country	New production of equipment leased and hire purchased 2011 (Million Euros)	Gross fixed capital formation in 2011 (Million euros)	Leasing Penetration Rate 2011
Austria	5439,57	14045,6	0,38727929
Belgium	6715,45	16393,75	0,409634769
Bulgaria	543,2	1452,85	0,373885811
Cyprus	232,5	652,325	0,35641743
Czech Republic	3046,73	7508,375	0,405777548
Denmark	5366,01	9401,85	0,570739801
Estonia	744	750,35	0,991537283
Finland	3600	8368,6	0,43017948
France	33902	86305	0,392816175
Germany	45550	109698	0,415230907
Greece	256,4	7129,875	0,03596136
Italy	16832	66433,85	0,253364813
Latvia	516,66	712,025	0,725620589
Luxemburg	294	1932,075	0,152168006
Netherlands	4052	24827	0,163209409
Norway	4702,31	13158,95	0,357346901
Poland	7162,43	17670,45	0,405333763
Portugal	2350	7065,3	0,332611496
Romania	1154,27	6467,1	0,178483401
Slovakia	1694	3000,4	0,564591388
Slovenia	733,05	1486,525	0,493129951
Spain	7560,79	51943,25	0,145558663
Sweden	10254,71	15515,3	0,66094178
Switzerland	8235,8	18575,75	0,443362987
Turkey	834,12	27491,5	0,030341014
United Kingdom	37869,29	72960,425	0,51903878

8.7 Total investment growth

Table 9 – Information gathered concerning the total investment growth is summarized in the table below. The values represent the percentage growth for 2011 compared with the total investment in 2010. Nine countries show negative growth, meaning that the investment level decreased from 2010. The lowest value is observed in Portugal (-19,5%) as opposed to Turkey that exhibits the highest investment growth concerning fixed capital with 31,25%.

Country	Total investment growth (%)
Austria	14,000
Belgium	-13,050
Bulgaria	-2,775
Cyprus	-5,275
Czech Republic	2,950
Denmark	7,725
Estonia	6,550
Finland	4,100
France	7,200
Germany	-1,825
Greece	28,450
Italy	10,575
Latvia	7,375
Luxemburg	-0,600
Netherlands	3,525
Norway	-8,025
Poland	5,800
Portugal	-19,500
Romania	4,250
Slovakia	6,575
Slovenia	-10,750
Spain	7,725
Sweden	-6,250
Switzerland	6,450
Turkey	25,475
United Kingdom	31,250

8.8 GDP growth; GDP in millions and gross fixed capital formation as a percentage of GDP growth

Table 10 – In the table below is displayed information regarding variables to be tested against the metrics' results and leasing penetration rate. These variables are well known for being a great indicator of a country's economic health. They represent the production level and economic growth of a country. Data concerning GDP was gathered from Eurostat for the year 2011. Gross fixed capital formation as a percentage of GDP growth (%) avoid differences due to market size by dividing the total investment in fixed capital by the GDP (both in million euros), illustrating the impact of the investment in the production level of a country.

Country	GDP Growth (%)	GDP (Millions)	Gross fixed capital formation as a percentage of GDP growth (%)
Austria	2,75	14045,6	14,08
Belgium	1,8	16393,75	22,76
Bulgaria	1,875	1452,85	19,94
Cyprus	0,55	652,325	64,80
Czech Republic	1,925	7508,375	21,08
Denmark	1,125	9401,85	50,73
Estonia	8,35	750,35	11,87
Finland	2,85	8368,6	15,09
France	1,7	86305	23,11
Germany	3,075	109698	13,50
Greece	-7,15	7129,875	-0,50
Italy	0,375	66433,85	67,56
Latvia	5,4	712,025	13,44
Luxemburg	1,65	1932,05	9,22
Netherlands	1,025	24827	15,92
Norway	1,25	13158,95	28,59
Poland	4,5	17592,13	9,05
Portugal	-1,55	7065,3	-21,46
Romania	2,1	6483,375	8,48
Slovakia	3,25	3000,4	17,37
Slovenia	0,625	1486,525	78,90
Spain	0,425	51943,25	34,25
Sweden	3,8	15515,3	17,39
Switzerland	1,925	18575,75	23,03
Turkey	10,2	27491,5	0,30
United Kingdom	1	72940,25	51,92

8.9 Present value of the operating leasing cost as a result of the metric

Tables 11 – Results obtained for the present value of operating leasing cost as a function of the purchasing cost through internal funds and through debt issuance are exhibit in the table below. The values represent the cost of leasing and that is why they are presented as negative values. The results should be interpreted as representing how much must the present value of operating leasing cost be to equal the present value of the cost of purchasing.

	Present value of operating leasing cost as a function of the purchasing cost	
	Through internal funds (WACC)	**Through debt (WACD)**
Country	**Average**	**Average**
Austria	-1,04484	-0,85751
Belgium	-0,87966	-0,11975
Bulgaria	-0,36894	-0,1973
Cyprus	-2,72344	-3,15312
Czech Republic	-1,27802	-1,14598
Denmark	-2,39813	-1,64985
Estonia	-0,28933	-1,42768
Finland	-1,62651	-2,1229
France	-1,24889	-1,32986
Germany	-1,9278	-1,89507
Greece	-0,97310	-1,440968
Italy	-1,53157	-1,30986
Latvia	-1,3521	-1,46767
Luxemburg	-1,28626	-1,5324
Netherlands	-1,13766	-0,96624
Norway	-2,36352	-3,02964
Poland	-0,62398	-0,47686
Portugal	-0,70065	-0,83161
Romania	-0,29515	-0,42877
Slovakia	-4,47964	-3,89187
Slovenia	-1,18356	-0,94834
Spain	-2,48233	-2,48139
Sweden	-0,71979	-0,56363
Switzerland	-1,64258	-1,77158
Turkey	0,093795	0,271709
United Kingdom	-2,53649	-0,30416

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