

COMPLIANCE COSTS OF CORPORATE INCOME TAXATION IN PORTUGAL

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ABSTRACT

The evaluation of taxpayers' compliance costs has grown in significance within tax research over the last years. In 2007, a survey questionnaire of business taxpayers was conducted in Portugal to evaluate compliance costs for the fiscal year of 2004. This paper presents the findings of that survey, as well as the main determinants of business compliance costs in Portugal. Specifically, its goals are threefold: to estimate the magnitude of the cost of complying with the Portuguese corporate income tax; to investigate the determinants of these costs, including both aspects of the firm's operations and aspects of the tax system and, finally, to discuss the policy implications of the findings. The results show that compliance costs of corporate income taxation are related to the size of enterprises, the market where they operate as well as the complexity variables.

Keywords: *taxation, compliance costs, corporate income tax*

I. INTRODUCTION

The purpose of this paper is to present empirical evidence on the importance of compliance costs related to the corporate income tax in Portugal. Firstly, we analyze the amount of compliance costs borne by businesses as well as the main components of compliance costs incurred, based on a random sample of 897 surveyed businesses. Secondly, we identify the determinants of business compliance costs, such as the size, the activity sector, the market and the complexity tax variables, which we will refer to later on.

We believe that this paper contributes to the literature by presenting new evidence for a country where there is no prior study that quantifies the compliance costs of taxation for corporate income tax and the main factors that influence them. It also shows that the main conclusions of our analysis do not differ from other studies in this area, such as Slemrod and Blumenthal (1992), Slemrod and Blumenthal (1996), Sandford (1989), Evans (2000), Slemrod and Veskatesh (2002).

The paper is organized as follows: section 2 presents a brief review of literature; section 3 introduces the methodology used to evaluate business compliance costs in Portugal; section 4 calculates Portuguese business compliance costs; section 5 analyses the results of the research and section 6 concludes.

II. LITERATURE REVIEW

According to Sandford et al. (1989:13) tax compliance costs are defined as those costs "incurred by taxpayers, or third parties such as businesses, in meeting the requirements laid upon them in complying with a given structure and level of tax." In the same source, the cost of compliance is also referred to as a private sector cost.

Our first concern is to define business compliance costs, which according to different authors are divided into two different categories: internal and external compliance costs. (See for example, Sandford and Hasseldine, 1992; Slemrod and Blumenthal, 1992; Slemrod and Blumenthal, 1996; Blumenthal and Slemrod, 1995; Slemrod and Blumenthal, 1996)

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Regarding the internal costs, that is, those incurred inside the company, we follow the definition by Sandford and Hasseldine who consider them to be those spent in the compliance of fiscal tasks and evaluated by wage rate of employees. These are the costs with staff which refer to time spent with the compliance of corporate income tax. It does not include any accountancy task preceding the tax compliance obligations. These internal costs also include additional costs such as hardware, software, rent, buildings and others, supported by the companies (Walpole et al 1999; Tran-Bram et al, 2000).

As regards external costs, we consider that these are the ones supported outside the company, when they required the external help of tax specialist in order to comply with their taxes obligations (Slemrod and Blumenthal, 1996).

In the international literature some authors also distinguish voluntary and involuntary compliance costs. The first are the costs of fiscal planning supported by the taxpayers so as to reduce taxes and the second are those that the taxpayers inevitably need to support to comply with their obligations. According to Sandford (ed.) (1995), the information and calculations presented by different studies on the subject seldom show this difference.

Some authors also emphasize the difference between gross compliance costs and net compliance costs (Walpole et al., 1999; Tran-Nam et al., 2000), the latter which include cash flow benefits. These benefits mean that the company gets a free loan from the government free of charges, to which one associates a certain opportunity costs from a public sector. Actually, certain taxes are associated to certain cash flow benefits, which result from the fact that the companies use the amount of taxes for a while before paying it to the government.

In our study, when we use the term “compliance costs” with no further specification, we refer only to compliance costs gross, that is, we do not consider the designated cash flow benefits.

Measuring and evaluating compliance costs is by no means an easy task, which requires careful interpretation of the data gathered (Sandford, 1995). Some costs incurred by taxpayers such as the fees paid to tax experts, the travel expenses, are determined easily, while others suggest measurement problems.

In business, special in Small and Medium Enterprises (SME), in many cases, tax work is done within an accounting department would continue be needed if there were no taxation. In this case, is very difficult to calculate the marginal costs caused by the imposition of a particular tax. However, the problem of measurement of compliance cost is not so evident in the biggest companies. Actually, the largest businesses may have offices maintained exclusively for fiscal and accounting purposes.

Bearing in mind these difficulties of measurement and evaluations of business compliance costs, we analyze, in table 1, some results obtain in international tax literature, which results are more comparable.

Table 1 Comparison of business income taxes and compliance costs

Countries	Australia	Australia	UK	New Zealand
Researchers	ATAX	Pope	Sandford	Hasseldine
Year	1995	1990	1982	1990
Compliance Costs of business income tax relative to tax revenue from business income tax (%)	15,8	22,9	2,2	19,6
Compliance costs of business income tax relative to GDP (%)	1,08	0,86	0,08	1,80

Fonte: Walpole et al (1999: 265); Tran-Nam et al (2000: 320)

Previous research has been undertaken in Australia (Pope, 1993), in the United Kingdom (Sandford et al, 1989) and in New Zealand (Sandford and Hasseldine, 1992) in this area. The nature of the different studies makes direct comparison difficult. For one hand, the Pope study and the Sandford study considered companies separately from personal income tax and it is impossible to identify, from those studies, the compliance costs relating to business income tax imposed on business other than companies. On the other hand, the ATAX and Hasseldine studies encompass all business entities and do not include non-business individuals.

Despite these complications, the table raises some interesting points. The United Kingdom appears to have significantly lower compliance costs, both by reference to revenue collections and GDP. Otherwise, there is a remarkable consistency between the two Australian studies and the New Zealand study.

Accordingly to Walpole et al (1999), the reasons that induce higher compliance costs in Australia and New Zealand, when compare with UK tax system, are related with the self-assessment income tax system as well as historical and culture factors.

However, we could also attribute those differences to others factors. Firstly, Sandford took cash flow benefits into account but none of the others researchers did. Secondly, the United Kingdom study took place several years earlier than the others studies, when taxes were possible fewer complexes than it became in the 1990s years. In addition, efficiency of tax depends on the rates of tax which are imposed as well as the costs of compliance. Then if tax rates are higher in the United Kingdom than in Australia and New Zealand, then the compliance cost ratio will appear lower.

One interesting conclusion in respect to business tax compliance costs is the regressiveness of those costs. A comparison with results obtained in international studies is given in table 2 which presents international evidence on cost-to-tax-sales ratios.

Table 2 Comparative analyse of relative burden of business compliance costs measured as compliance costs over sales

Australia		New Zeland		United Kingdom	
1990/91		1990/91		1989	
Turnover	CC % Turnover	Turnover	CC % Turnover	Turnover	CC %Turnover
<0.5	3.0	<0,03	13.15	<0,05	0.77
		0,03-0,1	4.31		
0.5 – 1	0.8	0,1-0,25	2.12	0,05 – 0,1	0.20
1-2	0.8	0,25-0,5	1.35	0,1 – 0,5	0.17
2-5	0.2	0,5-1	0.78	0,5 – 1	0.07
5-10	0.1	1-2	0.79	1 – 10	0.03
10-20	0.02	2-10	0.28		
20-50	0.01	10-50	0.04	> 10	0.01
>50	0.02	> 50	0.03		

Source: Pope (1995)

The table 3 shows the results of the recent study of European Tax Survey (2004).

Table 3 Relative burden of business compliance costs measured as compliance costs over sales

	Compliance costs mean (1 000 Euro)	Compliance costs % tax paid	Compliance costs % of turnover
Small and Medium Enterprises	203	30,9	2,6
Largest Enterprises	1 460	1,9	0,02

Source: European Comission (2004:23)

The cost-to-sales ratio estimated in the European Tax Survey (European Commission, 2004) for small and large companies (2, 6% and 0, 02%) is in line with ratios calculated in those studies.

Another interesting point in international tax literature of business compliance costs is the sector of activity as a main determinant of compliance cost. In USA, Slemrod and Blumenthal (1992, 1996), concluded that compliance costs differ between the activity sector. According to these authors, the retail and gross commerce are the business that had less compliance costs while the petrol and gas sector had higher compliance costs. The European Commission (2004) was in line with those authors.

Blumenthal and Slemrod (1996) investigate also the main determinants of business compliance costs and they concluded that companies who had foreign – source income had higher compliance costs. According to these authors, the main determinants of business compliance costs were: transfer pricings; foreign income tax; and the calculation of credit foreign tax. For these companies, it will be important in the future tax reform improvement those aspects of the USA tax system to reduce their compliance costs.

The European Commission in his study of 2004 concludes in line with Blumenthal and Slemrod. Therefore, when a company has operations not only in national market but also in European or foreign market the compliance costs of this compliance will be higher, as a result of complexity of different tax laws and different tax interpretations.

However, what emerges from the literature review is a growing sensitiveness of academics to the business compliance costs imposed by complying with tax systems as well as investigating the main determinants of these costs. Therefore, quantifying compliance costs has an important role in the process to discuss the policy implications of the findings.

III. RESEARCH METHODOLOGY

The purpose of this paper is to present an evaluation of compliance costs of income corporate tax incurred by businesses as well as the determinants of business compliance costs in Portugal. We evaluated compliance costs for the year 2004 using a survey applied in 2007. The reasons for evaluating compliance costs for corporate income tax alone were as follows:

- i) Corporate income tax represents, in Portugal, one of the important sources of tax revenue, alongside personal income tax, VAT and social security contributions²;
- ii) Major international research on compliance costs has also covered corporate income tax.

III.1 Research Hypothesis

According to the literature review, there are some determinants of compliance costs, such as the size of enterprise, the activity sector, the market (national, European and International) as well as the variables that measure the perception of tax complexity.

Therefore, we ought to state the following hypotheses.

Hypothesis 1 – Size of firm

Prior compliance cost studies reported that the absolute amount of compliance cost is statistically higher for larger firms in all cases. In examining the income tax compliance for big business in the USA, by Slemrod and Venkatesh (2002), the study found that on average costs per unit of size are lower for large firms. The hypothesis suggests that company size, measured by company's sales value, is a predictor of a company's compliance costs, as follows:

H1 There is a positive relationship between company size and a company's compliance costs.

Rejection of this hypothesis will be antithetical to established findings in all studies to date. Therefore, we expect to reject the null hypothesis of no relationship.

Hypothesis 2 – Activity sector

The international literature suggested that the activity sector could be a determinant of business compliance costs (See Slemrod and Blumenthal (1996); European Union (2004)).

² In 2009, the major source of taxes was the VAT with 28%, following Personal Income Tax and Corporate Income Tax, with 17% and 9%, respectively. (Ministry of Finance, 2010)

H2 The business compliance costs are different between the activity sector.

Hypothesis 3 – Business Market

Some studies in business compliance costs conclude that compliance costs are higher for business with foreign – source income, such as Blumenthal and Slemrod (1995). Therefore, we want to see if business compliance costs became higher as business grow up from the national market to European market or International market.

H3 The business compliance costs increase as business change his market from national to European or international market.

Hypothesis 4 – Tax Complexity

Prior research in compliance costs suggested that perception of fiscal complexity could influence the business compliance costs (See Green (1994), Slemrod (1997), Mckerchar (2001), Slemrod and Venkatesh (2002). Then, we will try to find out if compliance costs vary in the direct raison of perception of tax complexity.

H4 The compliance costs vary according to perception of tax complexity.

III.2 Survey design and administration

A mail survey was used in this study for estimating the average compliance cost and its components in Portugal. This research method is well – established and has been widely used in similar studies in countries such as USA, United Kingdom, Australia and New Zealand (See Slemrod and Blumenthal, 1996; Slemrod and Venkatesh (2002); Sandford et al, 1989; Pope, 1995; Sandford e Hasseldine, 1992).

The survey included questions about the time spent, for business, preparing information and filling in tax forms, consultancy costs and other expenses. Before the survey was conducted, the questions were piloted on some business in Coimbra District with a view to improving the questionnaire. The main purpose of piloting was to make the survey more understandable and easier to answer. The final survey instrument was completed in June of 2006.

The questionnaire is divided into four parts. Part 1 inquiries about general characteristics of Portuguese corporate companies, such as the number of employees, the activity sector, the amount of turnover, the fiscal regime and so on. Part 2 and 3 inquire about the internal and external costs of complying with corporate income tax. Compliance costs are broken down according to source (in-house personnel, in-house non-personnel, and external) and function (keeping records and filing returns; research and planning, audits and appeals and litigation). Part 4 inquires about the respondent's attitudes and suggestions for reform. The respondents are asked to identify the aspects of the current tax system that are most responsible for the cost of compliance, and to suggest ways to simplify compliance with corporate income tax.

In our research, data was collected from *Datawarehouse*, a business data base from Portuguese Fiscal Administration, and from a population of 353 637 business taxpayers, 897 businesses were selected. We have chosen the three biggest companies of each sector of activity and of each district of Portugal. The main reason to select the three biggest enterprises results from the fact that those companies are, generally, well organized than Small and Medium Enterprises (SME), and then more interested in answers about questions of compliance income tax costs. In respect to business in the sample selected, we are not aware of another possible bias.

The questionnaires were sent, firstly, between June and July 2006, after business taxpayer's finish to filling their corporate tax forms, with a cover letter encouraging participation and emphasizing that individual replies are confidential.

To increase the response rate, the questionnaires were sent, again, in September 2006 and after two months, the evaluation of compliance costs was made on the basis of 148 responses. The response rate is therefore approximately 16, 4%, which is within the range of response rates for business compliance burden surveys performed in other countries (See Slemrod and Blumenthal, 1996; Sandford et al, 1989; Pope, 1995; Walpole et al, 1999). Because of monetary reasons, no attempt was made to finding out reasons for non-response, for example by attempting further contact with non-respondents by telephone or by mail.

Table 5 Distribution of enterprises from sample statistic and firms responding

Turnover (million of Euro)	Sample Statistic (selected firms)	Sample Statistic (in percentage)	(Frequency and percentage)	
			Real Sample (firms responding)	Response Rate (in percentage)
<2	306	34,1	61	41,2
≥2 – <10	265	29,5	42	28,4
≥10 – <50	186	20,7	28	18,9
≥50	140	15,6	17	11,5
Total	897	100	148	100

The table above shows the distribution of responding firms, and, as we can noted, our sample is constituted by 41, 2% of Small and Medium Enterprises responding firms, which is line with Portuguese business population.

Respondents firms had the following characteristics: 77% were independent companies; 15,5% were filial of foreign enterprises; and 7,4% were the mother company of the group of firms; 67,6% had Portugal as only market; and 30% of business had not only Portugal but also European and International market.

IV. EVALUATION OF BUSINESS COMPLIANCE COSTS IN THE PORTUGUESE TAX SYSTEM

After collecting the data, we prepared its analysis, using the version 14 of the software Statistical Package for the Social Sciences (SPSS). To achieve our goals, we calculated first the business compliance costs regarding the business income tax. After that, and in order to determine the factors associated to higher compliance costs, we used several other statistical techniques.

At first our aim is focused on the calculation of the compliance costs of businesses, considering the definition introduced previously and which we now present:

Compliance costs (CC) = internal costs + external costs

CC = (costs with time + other costs) + (professional fees regarding the business income tax)

Firstly, we must reinforce that this definition of compliance costs does not include the distinction of voluntary (or fiscal planning) from involuntary costs of compliance, neither the distinction of net from gross compliance costs, that is, with or without cash flow benefits, respectively.

We will analyse each of the different components of the compliance costs: internal and external. In order to calculate the internal costs associated with time, the companies were questioned about the time spent by different professional categories in complying with fiscal related tasks regarding the business income tax – directors, employees and other staff inside the company. We could see that the companies from our sample spend about 52 hours a month in the complying of their fiscal obligations in matters of the business income tax. The companies spend in average 622 hours a year doing business income tax related tasks internally, that is inside the company. The employees were the professional category with the higher number of hours dedicated to these tasks, with 29 hours a month and 349 hours a year. The company board of directors, or similar positions, followed, with 14 hours a month and 173 hours a year. Lastly, there were other members of staff who spent 8 hours a month and 101 hours a year doing those tasks. The companies were then asked to value each hour spent internally, according to the professional category of the collaborators involved in those tasks. By multiplying the total of hours spent by the value given to them, we could obtain in Euro the amount of costs with time spent internally in complying with all fiscal obligations in matters of the business income tax. The results were as follows:

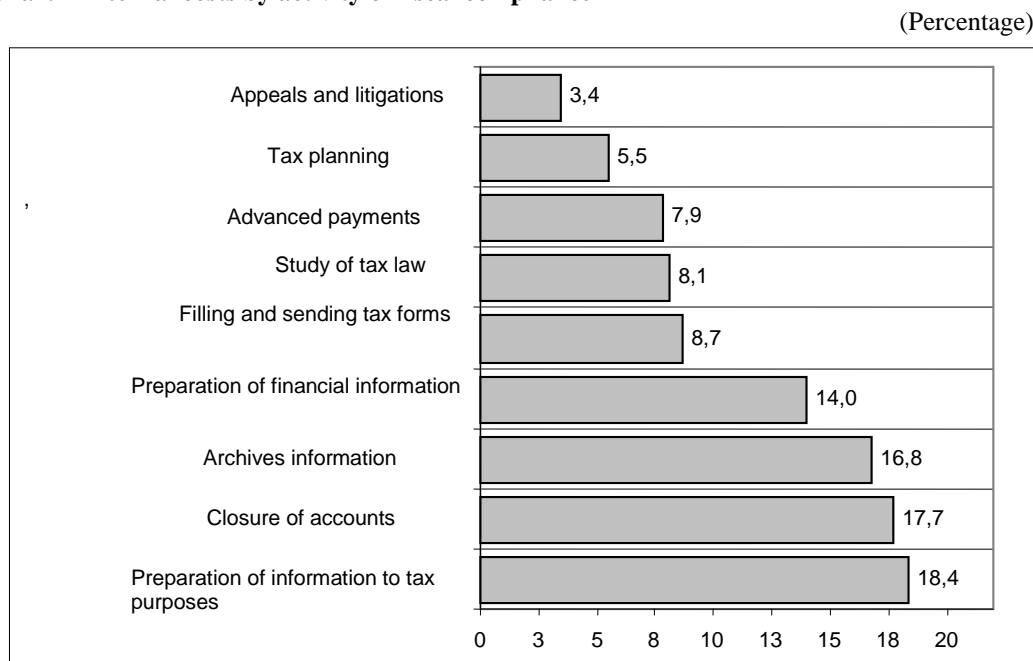
Table 6 Time Compliance Costs of Portuguese Business Taxpayers

Time Costs	Minimum	Maximum	Average Total Compliance Costs	(Euro)
Time Costs (per month)	50	15 040	1 676,89	
Time Costs year	600	180 480	20 122,70	

In our sample, the average cost with time reaches 1 676, 89 Euro a month and 20 122,70 a year. In both situations, whether a month or a year, we could see that there is a great variation in the data collected. The costs go from 50 to 15 040 Euro a month and from 600 to 18 080 Euro a year.

As we mentioned above, the costs with time spent in doing business income tax related tasks are costs with personnel valued in Euro. These costs differ according to the functions or activities of fiscal compliance, as we can see in the chart below.

Chart 1 Internal costs by activity of fiscal compliance



On one hand, from the reading of the chart, we notice that the archive, the closure of accounts, the preparation of financial information and the filling in of tax returns represent 66,9% of the cost spent with the personnel inside the company in the whole process of fiscal compliance. On the other hand, the situations in which a company spends less time inside its own facilities are the litigious (3,4%) and the tax planning (5,5%). This is comprehensible, once they incorporate activities which are not frequently included in the business routine and, as such, are commonly done by professional help outside the companies.

The costs of non personal nature in which the companies incur are one of fields of investigation of most difficult analysis, involving the study of compliance costs of a fiscal system.

According to Evans et al (2000), to find the parcel of costs aimed at exclusively fiscal compliance purposes is no easy task and, most of the times, it presents itself as only a rough estimate of the value of those costs.

According to Sandford (ed) (1995), these non labour costs may not be considered in studies which involve only small businesses, as they are costs of a residual nature, when compared to the costs with time spent by the personnel inside the company. However, according to the same author, in the case of larger companies, not to consider these additional costs would be to underestimate the compliance costs of these companies. Thus, not to include the additional costs in our estimate of compliance costs would imply to underestimate the value of the costs supported by our companies.

To sum up, it is hard to distinguish additional costs supported by the companies, in particularly, for small and medium enterprises (SME), solely to match fiscal purposes from those which have other non fiscal purposes as well. For instance, is the purchase of particular accounting software mainly attributable to tax compliance, or would it be required for management information as well?

This subject in compliance costs tax research is a new topic and has been recently studied in Australia. According to Lignier (2009; 2010), 37,5 per cent of small business in Australia used their tax based financial

statements for internal management purposes and 28 per cent for reporting to lenders and bankers. However, these results depend on the perception of compliance of the proprietor of the business.

Notwithstanding these differences between accounting and tax rules, we have decided to consider the additional costs in our analysis. Then, the average additional cost of the companies surveyed is 5 271, 21 Euro. Nevertheless, there is a great disparity in the data which is worth referring. The value of additional costs go from 0 to a maximum of 96 862 Euro. The following table introduces the total of compliance costs incurred by businesses internally.

Table 7 Composition of internal compliance costs

(Euro and percentage)

Average compliance costs	Turnover (million of Euros)					
	<2	≥2-<10	≥10-<50	≥ 50	Média	%
Time compliance costs (in house personnel)	7 687	22 388	27 830	46 454	20 123	79
Others monetary costs (in house non-personnel)	3 088	3 282	12 252	6 521	5 271	21
Total compliance costs	10 775	25 670	40 082	52 975	25 395	100

We may conclude then that the costs with time are the larger slice of the internal compliance costs of businesses (79%), being the other monetary costs (21%) not as significant in the total costs.

As important as internal compliance costs may be in the total costs of businesses, our analysis would not be complete if we did not consider the costs of external professional help in the compliance of fiscal obligations.

From the total sum of participants in the survey, only ten companies did not search for external help, which means that they have inside qualified staff to meet the tasks of fiscal compliance.

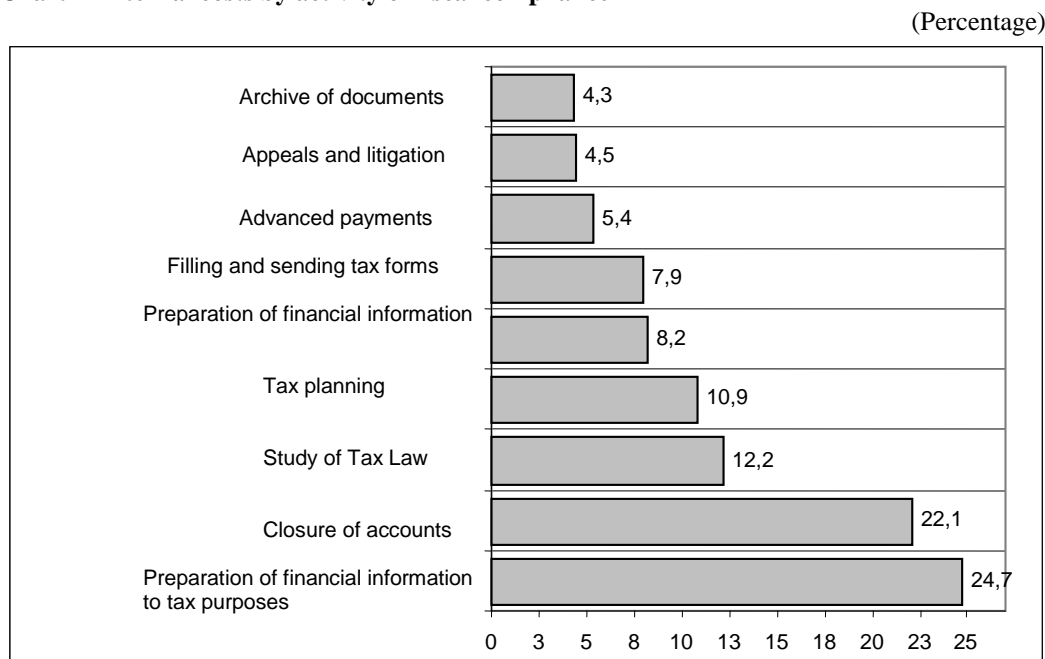
Our aim was to calculate the cost of compliance related to external help, so we inquired the companies about the value of the fees paid to each professional aid outside the company so as to comply with their fiscal obligations. The values we gathered are as follows.

Table 8 External compliance costs

(Euro)

	Minimum	Maximum	Average
Total fees paid to Professional advisers	0	525 000	21 933,84
Total corporate income tax fees paid to Professional advisers	0	393 750	10 072,28

The external costs were calculated by the sum of the fees paid to specialists outside the companies and, as we may observe from table 8, they reach high numbers, being the maximum of 525 000 Euro for the whole process of fiscal compliance and of 393 750 Euro for the compliance of fiscal obligations in matters of business income tax. To obtain the costs of business compliance costs, we asked the companies about the percentage which they would attribute to the compliance of the fiscal obligations in matters of business income tax, and then we multiplied it by the value of the total fees paid. In chart 2 below, we may see the percentage of the external costs by activity of fiscal compliance.

Chart 2 External costs by activity of fiscal compliance

On what concerns the distribution of the external costs by the different activities of fiscal compliance, we notice that the preparation of information necessary to the filling in of tax returns, the closure of accounts, the study of tax and the tax planning, with 24,7%, 22,1%, 12,2% and 10,9%, correspondingly.

The storage of information and documents is the activity which the external help professionals spend less time with (4,3%), contrary to the situation observed for the calculation of the internal costs of compliance, in which the storage together with the closure of accounts and the preparation for the filling in of tax returns occupied the most time. There is some coherence then in the answers to the questionnaire. In the calculation of the external costs we highlight the time spent in fiscal planning and in the study of fiscal legislation, which may be a qualitative indicator of the complexity inherent to the fiscal system.

We now need to calculate the total compliance costs, as well as its main components.

Table 9 Total business compliance costs by turnover

(Euro and Percentage (%))

Business Compliance costs	Turnover (million of Euros)									
	<2		≥2-<10		≥10-<50		≥ 50		Average	
	Euro	%	Euro	%	Euro	%	Euro	%	Euro	%
Internal costs	10 775	91,78	25 670	79,19	40 082	60,87	52 975	54,38	25 394	67,07
External costs	1 778	8,22	6 743	20,81	12 270	39,13	44 440	45,62	10 072	33,00
Total compliance costs	11 739	100	32 413	100	65 844	100	97 414	100	37 860	100
Ratio (internal costs / external costs)	6,06		3,80		3,26		1,19		2,52	

From table 9, we observe that the internal compliance costs stand, on average, for most of the costs (67%), being the external costs a mere 33 % of the total costs for all types of companies. This difference is of little significance in the group of businesses of larger dimension, where both internal costs (54, 38%) and external costs (45, 62%) have similar percentages.

An interesting result that emerges from the table is the increase of external costs with the turnover, since the ratio internal costs to external costs decrease with the increase of turnover. We believe this is largely due to the influence of outsourcing in the companies of larger dimension.

In the next table, we present the business compliance costs of corporate income tax in percentage of turnover.

Table 10 Total business compliance costs in percentage of turnover

	Turnover (million of Euro)				(Euros and percentage)
	<2	2-10	10-50	>50	Average
Internal costs	10 775	25 670	40 082	52 975	25 394
External costs	1 778	6 743	12 270	44 440	10 072
Total compliance costs	11 739	32 413	65 844	97 414	37 860
Compliance costs in percentage of turnover (%)	5,27	0,89	0,35	0,05	2,48

The table 10 shows that business compliance costs are regressive, since as the size of the business increases, the compliance costs decrease in percentage of the turnover, from 5,27%, in the smallest group, to 0,05% in the biggest group of companies.

Table 11 Relative burden of business compliance costs measured as compliance costs over sales: comparative analyse Portugal – European Union

Enterprises	(Percentage)	
	European Union	Portugal
Small and Medium	2,6	5,27
Largest	0,02	0,05

Source: European Commission (2004:23)

The Portuguese findings are in line with the results presented in international tax literature, as we can see in the table above, which indicate that part of these costs are fixed costs and that there are economies of scale in the process of compliance.

V. RESULTS AND DETERMINANTS OF PORTUGUESE BUSINESS COMPLIANCE COSTS

In this section, regression analysis is employed to identify what aspects of a corporate group and its tax circumstances are most responsible for compliance costs. A regression analysis is performed for the determinants of overall income tax compliance costs.

We have chosen the statistical methodology of multiple linear regression, once we need to build a model of regression which explains the businesses' compliance costs (dependent variable) according to a set of independent variables. The dependent variable is the logarithm of the total compliance costs, while the independent variables are the size, the activity sector, the market, and the fiscal complexity, which was measured by the perception of the fiscal complexity of businesses regarding the fiscal system.

Based on the data, the variables were identified and the expression to be used in the model may be represented as follows:

LOG CC4= activity sector + turnover + number of employees + market + fiscal complexity

Before we analyse the results, we need to mention that the independent variables or non metric explanatory were codified into *dummies variables*. When we do that, we need to bear in mind that the interpretation of results is

made in relation to the reference category of each variable. In our model, the reference category corresponds to the group with a higher number of observations in every variable codified (Maroco, 2003).

Actually, when in front of *dummies* variables, the interpretation of the regression coefficients is different from the one when the independent variable is a metric variable. In this case, the interpretation of the variables is based on the principle *ceteris paribus*, that is, the regression coefficients indicate the effect over the dependent variable Y of a unitary variation of X1, remaining the other independent variables, X to X, constant. In case the explanatory variables are *dummies*, we do not have the effect on the dependent variable caused by a unitary raise in the independent variable, but a difference among the average value of the dependent variable for the categories, the one of reference and the others.

Stepwise was the method chosen to estimate the parameters of the model and to select the variables. According to this method, whenever there is a new variable entering the model, we analyse the significance of each variable X and the variables which do not have the capacity for significant explanation are then eliminated. The choice over Stepwise was based on two reasons. Firstly, it allows the removal of a variable whose importance in the model is reduced by the addition of new variables. Secondly, the Stepwise method is particularly appropriate when we suspect of close connections among the independent variables, being the case of the explanatory variables in our model.

The results of the linear model of regression are presented in table 11.

Table 11 Results from linear model of regression

Independent Variables	Parameter estimate	t	P-value
Intercept	6 877,43	74,065	, 000
Turnover *	3,078	6,422	, 000
Fiscal Complexity*	1,955	3,654	, 000
Market*	1,45	2,062	, 041
R ² adjusted	0,429	-	-

*variável *dummy*

The value of R2 adjusted, which is considered to create an adequate adjustment, is rather subjective. However, the value of the determination coefficient, of 0,429, is commonly accepted as an indicator of a good adjustment and it does not part much from the values obtained in other recent studies, such as the R2 adjusted of 0,400 obtained in a study by the European Commission, in 2004, which estimated the costs of compliance of businesses and the factors which explained those same costs. The estimated final model is as follows below:

$$\text{LOG CC} = 6\,877,43 + 3,078 \text{ Turnover} + 1,95 \text{ Fiscal Complexity} + 1,45 \text{ Market}$$

We may then conclude that the variables which are most important in explaining the differences in the costs of compliance of companies are the turnover, the fiscal complexity and the market where the companies operate. The activity sector and the number of employees are not determinants of Portuguese business compliance costs.

As regards the interpretation of the regression coefficients, and considering that we are facing *dummy* variables, we must focus on the relative difference among the dependent variable for both categories, and not on the effect on the costs of the compliance variable, caused by a unitary raise in the turnover variable, for example.

Thus, if the independent variable is the turnover, in which the coefficient of regression is 3,078, that means that the value of the compliance costs for companies with a turnover over 2 million Euro is 3,078 times superior the value of the compliance costs for businesses with a turnover inferior to 2 million Euro.

As to the fiscal complexity, translated by the difficulties which are much associated to the regime of transfer prices, in which the regression coefficient is of 1,95, that means that the struggling companies face higher compliance costs, 1,95 times the value of the costs of the companies without fiscal problems.

Lastly, as to the market, to which the regression coefficient is 1,45, we may conclude that the companies with a European and an international market have compliance costs 1,45 times the value of compliance costs of companies which operate solely on Portuguese soil.

To sum up, the variables which are most important in explaining the differences in the costs of compliance of companies are, by order of importance, the turnover, the fiscal complexity and the market where the companies operate (national, European or international).

In order to explore with more detail the determinants of Portuguese corporate compliance costs, we analyse the isolated effect of each variable on the variable compliance costs through the use of statistical instruments, such as the t test or Anova.

Our analysis suggests, one more time, that firm size plays an important role in corporate income tax compliance. In fact, with $F(3,143) = 11,999$ and $p < 0,0000$, we reject the null hypothesis of no relationship between size firms and compliance costs and thus H1 is not rejected. That means there is a positive relationship between company size and a company's compliance costs. However, in the international tax literature review, business compliance costs are regressive in relation to turnover. Thus, in order to confirm these results to Portuguese business tax system, we analyze the isolated effect of dimension in compliance costs in percentage of turnover. We concluded that Portuguese compliance costs are regressive, with an $F(3,143) = 8,840$ and $p < 0,000$, as we have already seen when we calculated compliance costs.

To sum up, while larger firms experience larger compliance costs, there are also clear economies of scale since the average cost per unit of size decreases as size increases.

In relation to activity sector, with and $F(13,133) = 0,553$ and $p = 0,887$, we could not reject the null hypothesis. Thus, the Portuguese corporate compliance costs are not different between the activity sectors; however they seem to be lowering for agricultural and firms in wholesale and retail trade.

The market where the enterprise operates is a determinant of compliance costs. We reject the null hypothesis, with an $F(5,141) = 4,425$ and $p = 0,001$.

Finally, to know if business compliance costs are related with tax complexity, we asked to business if they had technical difficulties in comply with the Portuguese corporate income tax. We conclude, with an $F(41,125) = 3,483$ and $p < 0,000$ that tax complexity, measured by technical difficulties in compliance, is related with higher compliance costs.

Once again, the main determinants of business compliance costs in Portugal are the dimension of enterprise, the tax complexity and the market where business operate.

VII. CONCLUSIONS

The aim of this paper was to find the amount and analyse the costs of compliance of fiscal obligations in matters of business income tax in Portugal. In order to do that, we have chosen to send a questionnaire by mail as the preferred means of collecting data. We got a reasonable response rate of 16, 4%. However, to increase this response in future research, it would be best to send the questionnaires more than once or even to contact the businesses personally. This task requires a budget quite different from the one we had. In fact, tax administrations withheld their support in almost all the countries in which the earliest research projects into compliance costs were carried out.

The compliance costs of the businesses can be divided into two groups: internal and external. By comparing these costs, we conclude that internal compliance costs are in average the major part of the total business compliance costs in Portugal.

We could also see that business compliance costs are regressive in Portugal, since as the size of the business increases, the compliance costs decrease in percentage of the turnover. These findings meet the results presented in international tax literature which indicate that part of these costs are fixed costs and that there are economies of scale in the process of compliance.

In short, we may conclude, through the model of multiple linear regression, that the main variables which explain the main differences of compliance costs in Portugal are the size, the complexity of the fiscal system and the market (national, European and international).

In future researches, it seems useful to carry out a more detailed study of the determinants of perception of fiscal complexity for business in Portugal, which could be useful to identify the technical difficulties of business in comply with corporate income tax, in order to reduce and simplify business compliance costs.

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