Universidade do Minho
Escola de Economia e Gestão

Ana Clara da Conceição Borrego

Tax compliance and tax complexity in Portugal: essays on the perception of tax professionals

outubro de 2014

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Tese de Doutoramento em Contabilidade

Trabalho realizado sob a orientação da
Prof. Doutora Cidália Maria da Mota Lopes
e do
Prof. Doutor Carlos Manuel dos Santos Ferreira

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Declaro ter atuado com integridade na elaboração da presente tese. Confirmo que em todo o trabalho conducente à sua elaboração não recorri à prática de plágio ou a qualquer forma de falsificação de resultados.
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Assinatura:_____

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October, 2014

Tax compliance and tax complexity in Portugal: essays on the perception of tax professionals

Abstract

This thesis aims to understand the perception of tax professionals in Portugal (*TOCs*), regarding tax compliance and tax complexity. To this end, three essays are presented.

The first essay reports a literature review of tax noncompliance. We verify that there are two main lines of research relating to tax noncompliance - firstly, we have studies which try to explain tax noncompliance and taxpayers' attitudes towards taxation, and secondly, we find those research that are seeking to quantify it.

The second essay presents a literature review of the role that tax professionals play in the areas of tax complexity and tax noncompliance. According to the literature, tax professionals tend to use their tax knowledge to solve problems caused by tax complexity, which results in an increase in tax compliance. However, in more complex situations, they have a propensity to use their knowledge of the tax system to take advantage of fiscal complexity in benefits of their clients.

The third essay characterizes Portuguese tax professionals and their perception of tax system complexity and its relation with their tax compliance. This essay presents results based on a survey applied to Portuguese tax professionals (*TOCs)*, in 2013.

TOCs perceived the Portuguese tax system to contain a high level of fiscal complexity, suggesting that it could have a negative relation with their performance concerning to their compliance tasks. We can also conclude that there are a relation among *TOCs*' perception of tax system complexity, their tax knowledge index, and their index of legislative tax complexity. Moreover, gender, the index of legislative tax complexity and the perception of tax complexity may explain some non-aggressive tax noncompliant behaviour of Portuguese tax professionals. Moreover, the professionals' age and their standard of tax morality, the index of legislative complexity and their fear of losing customers are the variables that most explain the tax aggressiveness of tax professionals in Portugal.

These results show that the perception of tax complexity can influence tax professionals' attitudes towards tax compliance in Portugal**.**

O cumprimento fiscal e a complexidade fiscal em Portugal: ensaios sobre a perceção dos profissionais fiscais

Resumo

Esta tese tem como objetivo analisar a perceção dos profissionais fiscais (TOCs) em relação à complexidade fiscal e ao incumprimento fiscal em Portugal. Para atingir este objetivo elaboraram-se três ensaios.

No primeiro ensaio apresenta-se uma revisão de literatura sobre o incumprimento fiscal. Esta análise permitiu-nos verificar a existência de duas grandes linhas de investigação: os trabalhos que tentam identificar as determinantes do incumprimento fiscal dos contribuintes; e os estudos cujo objetivo é a sua quantificação.

O segundo ensaio apresenta uma revisão da literatura sobre o papel dos profissionais fiscais no contexto da complexidade e do incumprimento fiscal. Verificámos que, em geral, os profissionais tendem a contribuir para o aumento do cumprimento fiscal, resolvendo problemas provocados pela complexidade tributária. Todavia, em situações mais complexas, os profissionais fiscais têm propensão para fazer uso do seu conhecimento fiscal, em benefício dos seus clientes.

No terceiro ensaio pretende-se analisar a perceção dos profissionais fiscais portugueses em relação à complexidade do sistema fiscal, e a sua relação com o cumprimento tributário. Este ensaio apresenta os resultados de um questionário, que foi aplicado aos profissionais fiscais Portugueses (TOCs) no ano de 2013.

Verificámos que a maioria dos TOCs percecionam elevados níveis de complexidade fiscal e estabelecem uma relação negativa entre a complexidade e o cumprimento fiscal. Verificámos, ainda que o seu índice de complexidade legislativa e do conhecimento fiscal estão relacionados com a sua perceção da complexidade do sistema fiscal. Também o género, o índice de complexidade legislativa e a perceção de complexidade fiscal podem explicar alguns comportamentos incumpridores, não agressivos, dos TOCs. A idade e a moralidade fiscal daqueles profissionais, o índice de complexidade legislativa, bem como o receio de perder os seus clientes são as variáveis que explicam alguns comportamentos de agressividade fiscal.

Estes resultados mostraram que a perceção de complexidade fiscal pode influenciar a atitude fiscal, mais ou menos agressiva, dos profissionais da fiscalidade portugueses em relação ao cumprimento tributário.

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List of acronyms

ATO	-	Australian Taxation Office
A-S theory	-	Allingham and Sandmo theory
BC	-	Before Christ
B-On	-	*Biblioteca do Conhecimento online*
CATPCA	-	Categorical Principal Component Analysis
CPA	-	Certified Public Accountants
EC	-	European Commission
EU	-	European Union
FTA	-	OECD's Forum on Tax Administration
GAO	-	Governmental Accountability Office
GDP	-	Official Gross Domestic Product
H	-	Hypothesis or Hypotheses
INE	-	*Instituto Nacional de Estatística*
IRC	-	*Imposto Sobre o Rendimento das Pessoas Coletivas*
IRS	-	Internal Revenue Service
IVA	-	*Imposto sobre o Valor Acrescentado*
KMO	-	Kaiser-Meyer-Olkin
MF	-	*Ministério das Finanças*
MIMIC model	-	Multiple Indicators Multiple Causes model
NAS	-	National Academy of Sciences
NTA	-	National Taxpayer Advocate
OECD	-	Organization for Economic Cooperation and Development
OTOC	-	*Ordem dos Técnicos Oficiais de Contas*
PAYE	-	Pay-as-You-Earn
PCA	-	Principal Component Analysis
SCT	-	Special Consumption Tax
SCR	-	Skin Conductance Responses
s.d.	-	Standard Deviation
SGI	-	Sustainable Governance Indicators
SME	-	Small and Medium Enterprises
TCMP	-	Taxpayer Compliance Measurement Program
TIGTA	-	Treasury Inspector General for Tax Administration
TOCs	-	*Técnicos Oficiais de Contas*
TY	-	Tax Year
UK	-	United Kingdom
UN	-	United Nations
US	-	United States of America
VAT	-	Value Added Tax

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Introduction

Background

This dissertation addresses the perception of tax professionals concerning the level of tax complexity and its relation on tax compliance in Portugal. This subject is important from several points of view.

Nowadays tax noncompliance is a universal problem which attracts the attention of tax authorities, governmental and non-governmental institutions and researchers. All over the world, this phenomenon, which has a strong relationship with the levels of the shadow economy, has gained significant proportions. For instance, Schneider (2012) has estimated the values of the shadow economy for 2012 to be around 18.4% of Gross Domestic Product [GDP] on average in the 27 EU [European Union] countries.

The growing concern regarding tax noncompliance is related to the schemes devised by taxpayers to find ways of minimizing their taxes on the one hand, and the mechanisms established by Tax Authorities for combating tax noncompliance on the other. The sophistication of the mechanisms used by taxpayers results mostly from the increasing complexity of the business relations phenomena. In response, Tax Authorities have introduced increasingly complex anti-abuse tax rules; as a result tax systems now suffer from high levels of tax complexity.

This has led to international studies which conclude that excessive tax complexity fosters conditions for increasing the levels of tax noncompliance. Furthermore, tax complexity created to serve as a barrier against tax fraud, tax evasion and other ways of reducing or entirely avoiding one's commitment to pay taxes ultimately often becomes a springboard for the realisation of these same schemes of tax noncompliance, by exploiting the ambiguities and loopholes that tax complexity provides. This is a vicious circle, in which tax compliance and tax complexity nowadays frequently emerge as cause and effect of one other.

This situation captures greater attention not only from international institutions such as the Organisation for Economic Co-operation and Development [OECD], the World Bank and the EU, but also from tax authorities and governments of several countries, which in recent decades have made repeated efforts to simplify their tax systems. Although this concern has only gained considerable significance in recent decades, Smith (1776) in his book *An Inquiry into the Nature and Causes of the Wealth of Nations*, had already highlighted tax simplicity as one of the four maxims of a good tax system.

This context, common to most countries, is even more worrying, because in the majority taxation is based on self-assessment[1] of taxpayers, such as in the United States of America [US], Australia, New Zealand, Spain, Japan, Malaysia, Portugal, and others. Moreover, there have been major changes in taxpayers' declarative compliance, due to technological advances (Kasipillai & Hanefah, 2000).

Nonetheless, these changes do not mean that taxpayers become more tax autonomous. Actually, we believe that self-assessment and the implementing of new technologies augment the perception of complexity among taxpayers and the burden of compliance costs, because they transfer to taxpayers the obligation to declare and calculate their tax liabilities. As a result, many taxpayers, in order to comply with their tax obligations correctly, resort to the use of paid tax professionals. In consequence, a new "player" has been introduced into the traditional tax relationship: State *versus* taxpayer. Nowadays, more than ever, the tax professional is an important player in this relationship, which is now in general tripartite.

The international literature review highlights an important, but sometimes contradictory, role of tax professionals[2] in dealing with taxpayers' tax compliance, depending on two factors - on the one hand, tax law complexity and ambiguity, and on the other hand, tax professionals' use of their tax knowledge.

Accordingly, the development of tax systems, which have had to adapt to the new paradigms of contemporary societies, has significantly amplified the importance of the actions of paid professionals in the tax context**.** However, the international literature has paid more attention to the role of taxpayers in tax systems than to the paid tax professionals' role.

The need to understand the impact of their activity on tax compliance started in the '80s in the United States, later extending to other countries, particularly to the Anglo-Saxon ones. The effect of the work of these professionals on tax (non)compliance, particularly in an aggressive tax planning context, came to be recognised by the OECD, in 2006, in the Seoul Declaration[3] (OECD, 2008).

In Portugal, the tax system, based on self-assessment, is very complex, with a high level of tax law ambiguity and "volatility"**.** According to the World Bank, Portugal is ranked as a leading country for tax complexity and bureaucracy (World Bank, 2011a,

[1] This "[…] is essentially an approach whereby taxpayers are required by law to determine their taxable income." (Palil, 2005, p.8).
[2] The international literature also refers to them as tax agents, tax advisers, tax preparers, tax practitioners, tax intermediaries and tax accountants.
[3] Promoted by the FTA [OECD's Forum on Tax Administration].

2011b; 2013a; 2013b). In connection with this, the OECD (2010a) also classifies as problematic the increasing levels of tax system complexity, caused by the frequent changes in tax laws.

Regarding the *Grupo de Trabalho para a Simplificação Fiscal* (Working Group on Tax Simplification) - MF [*Ministério das Finanças*][4] (2007), and the *Grupo de Trabalho para o Estudo da Política Fiscal* (Working Group on Tax Policy) - Santos and Martins (2009)**,** a tax system as complex as the Portuguese provides greater opportunities for tax evasion and tax planning.

In fact, according to a study carried out by the British consultancy «Tax Research Consultant», Portugal lost €12 thousand million *per* year[5] in taxes due to the shadow economy, which according to Schneider (2012) represents 19.4% of GDP. In addition, it is the seventh worst case in the "ranking" of EU countries with regard to the tax gap[6/7].

This problem in the area of taxation, and its consequences for the extent of tax noncompliance, make the study of these problems more relevant in the case of Portugal.

In addition, Portuguese tax professionals, known as *Técnicos Oficiais de Contas* [*TOCs*],[8] play a crucial role in ensuring compliance with the Portuguese tax system. In Portugal, companies and the largest self-employed are required, by law, to hire tax professionals to comply with their tax obligations. They are also hired by many individual taxpayers to comply with their need to fill out their income tax forms. Therefore, the *TOCs* comply with business and individual tax obligations and the corresponding taxes are charged through them, so that as a result they feel the effects of tax complexity more than taxpayers. Thus, their perceptions, attitudes and decisions, in the context of their professional activity, may have an effect on the tax compliance of their customers or employers. As a result, in the case of Portugal, to study the role of tax professionals with regard to tax complexity and its consequences for tax compliance has become an important issue in tax policy.

Purposes

The main goal of our research is to understand tax complexity as perceived by Portuguese professionals and its relation with their tax compliance tasks.

[4] Portuguese tax authority.
[5] Data from tax year [TY] of 2009. Tax Research Consultant. [online]. Available at: europeansforfinancialreform.org/en/system/files/ 3842_en_richard_murphy_eu_tax_gap_en_120229.pdf [Accessed 30th September 2013]
[6] *Idem*.
[7] Difference between the estimated tax charge and the tax actually collected.
[8] They are the Portuguese chartered accountants and the certified tax professionals in Portugal.

The role that Portuguese tax professionals play in the relationship between State and taxpayers has become increasingly crucial in Portuguese tax system. It is therefore important to explain how tax professionals play a central role in the process of complying with tax obligations, as well as to understand how their perceptions of tax system complexity influence on tax compliance.

The several studies about tax knowledge, tax complexity and tax compliance, examined in the literature review, supported our question whether a relationship exists between all these variables, in the context of the decisions of Portuguese tax professionals (*TOCs*), who are responsible for the extent to which businesses comply with their tax obligations. It gives us the basis to formulate our research questions.

Thus, taking into account our general objective outlined above, we draw up the following research question**:**

*Does the perception of tax complexity influence tax professionals' attitudes towards tax compliance in Portugal**?***

This can be addressed by considering the following specific research questions:

Question 1: How do *TOCs* perceive the tax system, with regard to the level of complexity?

Question 2: What are, in their perspective, the main areas of tax system complexity?

Question 3: How many dimensions of tax complexity do Portuguese professionals perceive?

Question 4: What are the main determinants of *TOCs*' perception of tax complexity?

Question 5: Does the perception of Portuguese tax professionals tax complexity influence their tax compliance?

Question 6: What is the profile of *TOCs'* noncompliant behaviour?

Contributions

We believe this dissertation contributes to international tax research in several ways.

At a theoretical level, the literature review, composed of two essays, contributes to a comprehensive and critical overview, divided into two fields of research: tax noncompliance; and tax complexity and the attitude of tax professionals towards tax (non)compliance.

This literature review begins with the evolution of tax noncompliance over time from the seventies to the present day. It thus begins in the '70s, when the first studies concerning the traditional theory of tax evasion were performed, and then focuses particularly on the '80s - a very important period in this regard, for three distinct reasons: firstly, the researchers introduced non - econometric variables into the study of tax noncompliance; secondly, tax complexity began to be studied as one of the determinants of tax noncompliance; lastly, the role of paid tax professionals began to be addressed.

These two essays related to the literature review reveal several knowledge gaps on the issue of tax complexity and tax (non)compliance, from which we emphasize the following - firstly, the absence of research focusing on unintentional tax noncompliance; secondly, in relation to tax complexity, the existence of a conceptual gap, *i.e.* the dearth of distinction between tax complexity and perception of tax complexity; thirdly, the lack of studies, particularly in relation to non Anglo-Saxon countries, regarding the role of paid tax professionals in tax noncompliance and their perception of tax complexity. Those gaps point us in some directions which allow us to define our goals in this dissertation, as well as other future lines of research into taxation matters.

The second part of this dissertation consists of the third essay. After exploring the profile of Portuguese tax professionals, it analyses the main determinants which influence tax complexity as perceived by Portuguese tax accountants (*TOCs*). In addition, it presents the explicative models regarding *TOCs*' behaviour in the perception of tax complexity and compliance context.

We have carried out an empirical study in which we point out some contributions to the tax literature review. Data were collected through a survey, using a questionnaire (1**,**258 answers), consisting of four main parts: (i) and (ii) characterization of tax professionals; (iii) *TOCs*' perception of Portuguese tax system complexity; (iv) *TOCs*' perception in relation to tax (non)compliance. Findings show the Portuguese tax professionals' perception of complexity and its relation to tax compliance.

Concerning the statistical methodology used to address the questions in the survey, firstly we developed a descriptive statistical analysis**;** secondly, we test our research hypothesis**,** and finally we used multivariate analysis, in particularly logistic regressions to derive our explicative models.

The statistical treatment of the questionnaire provides socio-demographic and technical characteristics of tax accountants in Portugal, such as their age, gender, region, education level, years of tax experience, ways to exercise the activity, size of customers, and the time spent in fiscal updates.

The education level of most *TOCs* is high; 75.1% have a degree, and as tax accountants they also possess wide experience**.** In Portugal, businesses are essentially micro-enterprises (78.2%), and so the Portuguese tax professional exerts his or her activity mainly through outsourcing, via offices of accountancy and taxation (69.9%).

Secondly, in this essay we analyze the perception of *TOCs* as regards tax complexity, which is quite high (89.1%), as well as their perception about the impact of fiscal complexity on their tax noncompliance, and we indentify the "volatility" of tax laws, with a frequency of 88.4%, as the most important area of tax complexity. Finally, we analyze the main determinants taken into account by *TOCs* in order to ponder their decision whether or not to participate in aggressive tax planning schemes, associated in general with ambiguity and loopholes in tax laws. Our conclusion, not in line with the international tax literature, is that the principal determinants measured by *TOCs* in coming to their decisions are not related to the burden of punishments. It seems that Portuguese tax professionals highlight moral, social and ethical factors, in order to preserve and maintain their professional reputation. Consequently, it seems that the traditional theory of tax evasion, which places emphasis on the likelihood of audits and the burden of punishment as a deterrent to tax noncompliance, does not apply to Portuguese professionals. Thus, the conclusions highlighted the burden of psychological and social motivations in tax noncompliance decisions.

Moreover, Portuguese tax accountants admitted the relation between tax complexity and tax noncompliance, particularly in relation to involuntary tax noncompliance. 45.9% related it to unintentional tax noncompliance; 12.5% admitted to using the complexity and ambiguity of tax laws in taxpayers' favour; only 0.7% of tax accountants admitted their involvement in aggressive tax planning by using tax complexity. Finally, through the explicative models we explain the perceived complexity of the tax system, the relation of their perception of tax complexity and other variables with their tax noncompliant behaviour.

We also have developed an index of tax knowledge and three indices of tax complexity from the perspective of Portuguese tax professionals. In future, these indices will allow comparisons over a period of time.

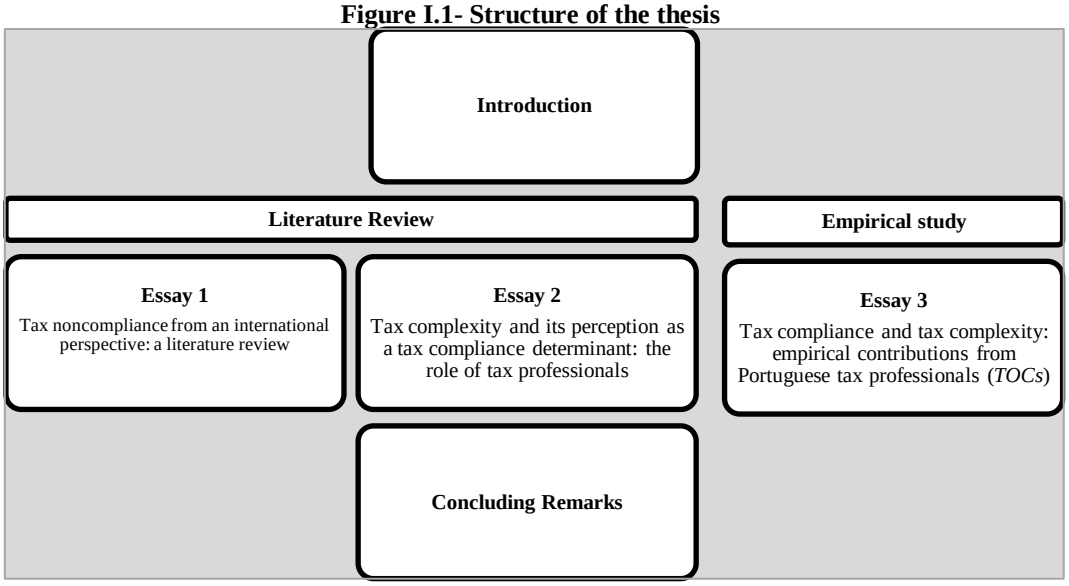
We believe these new contributions enable further understanding of the international literature, regarding the relationship between the perception of tax complexity and tax noncompliance. Moreover, this research extends our knowledge about the role of tax professionals, the third player in the relationship between State and taxpayer.

Structure

This research is organized into three essays, apart from this introduction and general conclusion.

The general introduction, which briefly presents the problem, the main motivations, objectives, research questions and expected contributions of the thesis, is followed by the literature review component. The literature review comprises the first two essays: «Tax noncompliance from an international perspective: a literature review», and «Tax complexity and its perception as a tax compliance determinant: the role of tax professionals». The empirical contribution of this dissertation is the third essay: «Tax compliance and tax complexity: empirical contributions from Portuguese tax professionals (*TOCs*)» (see Figure I.1).

Figure I.1- Structure of the thesis



The first essay presents the international tax literature review of the several lines of research regarding tax noncompliance, starting in the ‘70s and presenting its evolution over time. The essays were organized into lines of study, countries, decades and

methodologies. From this analysis we instance some knowledge gaps and suggest some lines of future research.

The second essay begins by exploring the difference between tax complexity (an objective concept) and perception of tax complexity (a subjective concept), which are two different concepts with different meanings and distinct forms of measurement, leading us to question the lack of distinction being made between the definitions of these concepts in the international literature. This literature review has also focused on tax complexity as a determinant of tax noncompliance, and in the role of tax professionals. We can corroborate that the literature review reports a non-consensual relationship between professionals' tax knowledge and their capacity to deal with tax complexity, in order to comply or not comply.

The last essay is devoted to the empirical contributions. It is based on the results of a survey, applied in Portugal in the 2013, regarding Portuguese tax professionals' perceptions of tax system complexity. We also try to understand the relation of their perception of tax system complexity on their levels of tax noncompliance, and other determinants which explain it, besides their perception of tax complexity.

This essay also aims to characterize *TOCs* according to demographic, professional and technical perspectives, and draw their profile regarding the higher perception of tax complexity, as well as the increasing trend towards tax noncompliance.

The general conclusion provides an overview of all the main findings, and allows us to discuss the main results and limits of this research, as well as to suggest some lines of future research.

We would also point out that the essays which comprise this dissertation are based on works previously presented and published during the undertaking of this research. Those works have brought contributions to the research from multiple reviewers and peers (see Table I.1).

Table I.1- Essays that constitute the thesis and related publications

Essay	Title of the contribution
Essay 1	Borrego, A. C., Lopes, C. M. and Ferreira, C. "The Tax Noncompliance in International Perspective: A literature Review", Observatory of Economics and Fraud Management in: *Interdisciplinary Insights on Fraud and Corruption*, University of Oporto, Portugal, 13th to 15th September 2012. Published in the Conference booklet.
	Borrego, A. C., Lopes, C. M. and Ferreira, C. (2013), "Tax Noncompliance in an International Perspective: a Literature Review", *Revista de Contabilidade e Gestão*, 14, pp. 9-41.
Essay 2	Borrego, A. C., Lopes, C. M. and Ferreira, C. "The role of tax agents on taxpayers' tax compliance: Literature Review", in: *Management Studies International Conference Algarve 2012*, University of Algarve, Portugal, 21th and 22th November 2012. Published in the Book of Abstracts.
	Borrego, A. C., Lopes, C. M. and Ferreira, C. (2013), "A Perceção da Complexidade Fiscal e o Recurso à Ajuda de Profissionais Fiscais no Cumprimento das Obrigações Tributárias", pp. 310-332, In A. Santos e C. Lopes (eds.), *Fiscalidade – Outros Olhares*. Porto. Vida Económica, ISBN 9789727887750.

Essay	Title of the contribution
Essay 3	Borrego, A. C. "The influence of the perception of tax complexity in Portuguese Tax Compliance: Tax Agents and Tax administration perspectives", in: *Doctoral Colloquium of the XV Encuentro ASEPUC*, University of Cádiz, Spain, 5th and 6th June 2012. Published in Actas.
	Borrego, A. C., Lopes, C. M. and Ferreira, C. "The Influence of Tax complexity's perception in Portuguese Tax Compliance: Literature Review and Empirical Study Methodology", in: *2nd Workshop on Current Research in Taxation*, University of Münster, Germany, 2nd and 3rd July 2012. Digital publication in the *European Institute for Advanced Studies in Management.*
	Borrego, A. C., Lopes, C. M. and Ferreira, C. "The influence of Portuguese Tax Agent's tax knowledge on tax complexity's perception and its impact on tax compliance", in *I Workshop de Investigação em Contabilidade*, University of Minho and University of Aveiro, Portugal, 13th July 2012.
	Borrego, A. C., Loo, E., Lopes, C. M. and Ferreira, C. "Tax Preparers' perception of Tax System Complexity: Some Empirical Evidence from Portugal", in: *11th International Conference on Tax Administration*, University of Sidney, Austrália, 13th and 14th April 2014. Published in the Conference booklet.
	Borrego, A. C., Lopes, C. M. and Ferreira, C., "The perception of tax complexity and tax compliance: an overview of Portuguese chartered accountants and some previous findings" in: *Management Studies International Conference Algarve 2014*, University of Algarve, Portugal, 26th to 29th November 2014. It will be published in the Book of Abstracts.

Essay 1 - Tax noncompliance from an international perspective: a literature review

1.1 Introduction

Tax noncompliance is a serious problem that has worried tax authorities, academia and nongovernmental organizations all over the world, as stated by Kastlunger *et al.* (2013, p. 36) "[…] tax non-compliance has increased over the last decades and, thus, gained attention in policy making and research."

It is noteworthy that one of the causes of this wide tax gap is the shadow economy, which has reached worrying levels. Schneider (2012) has estimated values for the year 2012 to be around 18.4% of official Gross Domestic Product [GDP] on average in the 27 EU [European Union] countries, and 8.53% of GDP on average for the United States of America [US], Australia and New Zealand.

Nowadays, the causes of growing concern regarding tax noncompliance are the high levels of such noncompliance, and the increasingly sophisticated schemes of tax evasion, tax fraud, abusive tax planning and other mechanisms leading taxpayers to practise tax noncompliance. Furthermore, the difficulty of collecting the taxes which tax evaders have avoided paying, and the difficulties in imposing penalites in cases where tax noncompliance has been detected, are beginning to be a cause of considerable concern (Galmarini *et al.*, 2014). The international concern over this issue is related to the urgent need for countries to reduce its level, in order to increase their collection of public revenue**.** Consequently, "[…] it becomes important to undertake research to understand taxpayer behavior." (OECD [Organisation for Economic Co-operation and Development], 2010b, p. 7)

The aim of this paper is to analyze the evolution of the research into taxpayers' tax noncompliance, over the last five decades, in order to understand the current situation and identify knowledge gaps in the international tax literature review. This analysis is particularly relevant in the present context of the world economic crisis, since it is important to understand taxpayers' tax behaviour and the phenomenon of tax noncompliance, in order to increase public tax revenues.

This study is divided into five parts, apart from this introduction. Firstly, we describe the methodology. Secondly, we define the concept of tax noncompliance and its origin. Thirdly, we conduct a literature review on the various explicative theories relating to tax noncompliance, followed by another review of the studies which attempt to quantify it. Next, we give some consideration to the intentions behind taxpayers'

behaviour, linking this to the published literature. Finally, we draw our main conclusions as well as making some suggestions for future research.

1.2 Methodology

This literature review analyzes different studies with regard to tax noncompliance. We have summarized the most well-known academic works on the subject, from the first studies conducted on this topic, dating from the early '70s, to the present.

We have mainly used papers from scientific tax journals and academic fiscal publications, found on international data bases, such as *B-On* and *Proquest*. We have also obtained several secondary sources of information, such as scholarly publications and some reports from international institutions, *e.g.* the OECD, the World Bank and the Internal Revenue Service [IRS].

We have divided our analysis into two main areas, those studies which attempt to explain tax noncompliance, and those works that quantify and measure tax noncompliance. Moreover, these studies have been arranged according to date, country and research methodology.

This study points out as a limitation the lack of tax authorities' estimates beyond those provided by the US Federal Reserve. As a result, we have noticed a lack of academic research on this topic, in international tax literature review.

1.3 Tax noncompliance: international tax literature review

1.3.1 Concept of tax noncompliance

We cannot find a main and consensual definition of tax noncompliance, as Devos (2005, p. 223) pointed out "[…] there is no standard all-embracing definition of tax (non)compliance adopted across all tax compliance studies." The main reason for this, pointed out by several authors, is the multiplicity of perspectives and methodologies, as well as the use of a variety of concepts with different meanings, for instance "[…] "evasion," "noncompliance," "misreporting," and "tax gap."" (Slemrod, 2007, p. 26), "cash economy" (NTA [National Taxpayer Advocate], 2007, p. 10), shadow or informal economy (OECD, 2009; Schneider, 2011, 2012).

Therefore, in our study, we start by presenting the definition of tax compliance. According to the OECD (2010c), the compliant taxpayer is the one who meets all the

following four requirements: (i) being registered for tax purposes; (ii) filing tax returns in time; (iii) reporting his/her correct tax liabilities, and (iv) paying tax dues in time. Consequently, we can say that the noncompliant taxpayer is the one who does not meet at least one of those conditions. This concept helps us to understand that the study of tax noncompliance is much more complex and broader than the study of tax evasion (and tax fraud), tax avoidance[9], tax planning[10], tax shelters[11], tax flight[12], shadow economy[13] or cash economy.[14]

Kirchler and Wahl (2010, p. 333) state that "[…] tax avoidance is legal. Taxes are intentionally reduced by legal means through taking advantage of loopholes in the law […]", but we include it in the tax noncompliance definition, as well as tax planning and tax flight, because in some more aggressive forms of these phenomena, there is a very thin boundary between legality and illegality. In relation to this subject, Slemrod (2007, p. 26) argues that "[…] nor can they, in complicated areas of the tax law, precisely distinguish the illegal from the legal".

To sum up, tax noncompliance includes all those intentional schemes to default on tax payment, such as failing to fill in and delaying filling in tax returns and payment, as well as unintentional ones, *e.g.* making mistakes and committing other unintended faux pas.

In the next section, we will commence the literature review by explaining the origin of the phenomenon of tax noncompliance.

1.3.2 Tax noncompliance: a historical perspective

The phenomenon of tax noncompliance is as old as the origin of tax collection itself (Andreoni *et al.*, 1998; Torgler, 2006)[15]. There are several quotations relating to taxes and tax collection throughout the History of Humankind. However, the exact moment

[9] Tax evasion violates tax rules, while tax avoidance takes advantage of tax-loopholes. For a detailed review of these issues see Kirchler *et al.* (2003) and Slemrod (2007).
[10] Systematic and thorough analysis of taxes, benefits, and obligations of a tax system, in order to minimize the present tax burden, as well as for future periods. It could lead to an economy of tax paid, as well as to the decrease in associated compliance costs. For a detailed review of this issue see Stainer *et al.* (1997), Sanches (2006) and Armstrong *et al.* (2012).
[11] Standardized schemes of very aggressive tax planning, involving, as a rule, large amounts, very commons in the US, designed and sold, to their clients, by the investment banking, lawyers and tax advisors (Bankman, 2004).
[12] Relocation of companies aiming at tax savings. For a detailed review of this subject see Kirchler, *et al.* (2003).
[13] "[The]Shadow economy includes all market-based legal production of goods and services that are deliberately concealed from public authorities for the following reasons: to avoid payment of income, value added or other taxes, to avoid payment of social security contributions, to avoid having to meet certain legal labour market standards […], to avoid complying with certain administration procedures […]" (Schneider, 2005, p. 600).
[14] "[…] taxable income from legal activities that is not reported […]" (NTA, 2007, p.10).
[15] See also Siqueira and Ramos (2005).

when the phenomenon of tax noncompliance was first noted and measured by policy makers is unclear.

Comments on this subject date as far back as Ancient Greece, when Plato himself wrote"[…] when there is an income tax, the just man will pay more and the unjust less on the same amount of income." (Plato, 380 BC as cited in Porcano, 1984, p. 619). There are also references in the Biblical Age. For instance, in Matthew (22, vv.17-21), the Phariseeswe asked Jesus: ""Tell us then, what is your opinion? Is it right to pay the imperial tax to Caesar or not?" But Jesus, knowing their evil intent, said, "You hypocrites, why are you trying to trap me? Show me the coin used for paying the tax." They brought Him a denarius, and he asked them, "Whose image is this? And whose inscription?", "Caesar's," they replied. Then He said to them, "So give back to Caesar what is Caesar's, and to God what is God's.""

Nevertheless, the research regarding this subject is quite recent, as stated by the OECD (2010b, p. 11) "Scientific research on tax [non]compliance and taxpayers' behavior is a relatively new area. […] It started in the 1970s with simple economic models and has since then expanded with a broader behavioral perspective and more complex explanations."

Recently, according to the OECD (2010b), studies into tax noncompliance have undergone significant development. However, the main question remains unanswered: Why do people pay or not pay taxes? (Feld & Frey, 2007).

In the following section, we summarize the main studies carried out so far, which present an attempt to explain why people pay or do not pay taxes.

1.3.3 Tax noncompliance's explicative studies

1.3.3.1 Taxpayers' noncompliant behaviour

These studies mainly attempt to answer the questions as: to which taxpayers comply or not with their tax affairs, and why they do or do not. To answer the question "why?" we will present studies which identify the determinants of tax noncompliance. Concerning the issue of "which?" we will analyze works describing tax evaders' profiles.

1.3.3.1.1 The determinants of taxpayers' noncompliance.

There are two types of studies explaining the determinants of tax noncompliance - the Traditional Economic Deterrence Models and the Social and Psychological Tax Models (McKerchar, 2001, 2002a; Loo *et al*., 2009; McKerchar & Evans, 2009).

1.3.3.1.1.1 Traditional economic deterrence models

One of the first and most well-known studies on tax noncompliance research is the Allingham and Sandmo (1972)[16] mathematical model, also known as the A-S theory. This model only uses econometric variables («actual income - *W*»; «tax rate - θ»; «declared Income - *X*»; «the probability that the taxpayer will be subject to investigation by tax authorities - *p*»; «penalty rate - π»). As stated by Tran-Nam (1999, p. 502) "There is […] a considerable body of economic literature on tax compliance-evasion behavior dating from the pioneering work of Allingham and Sandmo." (see Table 1.1).

Table 1.1- Studies based on the A-S theory

Years	Studies / Countries	New variables
'70s	Yitzhaki (1974)/ Israel	Proportionality between tax evasion and penalty.
	Pencavel (1979)/US	Labor supply; Linear income tax schedules; New forms of penalties.
'80s	Sandmo (1981) /Norway	Labor supply; Equity-Evasion Tradeoff.
	Cowell (1981) /UK [United Kingdom]	Labour supply.
	Fishburn (1981)/Australia	Inflation and taxes with proportionality.
	Cross and Shaw (1982)/UK	New schemes of tax evasion.
'90s	Pommerehne and Weck-Hannemann (1996)/Switzerland	Practical application on income tax in Switzerland.
	Bernasconi (1998)/Italy	Different levels of risk aversion explains by Prospect theory (evaluation of risk).
21st century	Sandmo (2005)/US	«Refreshing» of his own theory.
	Siqueira and Ramos (2005)/Brazil	Summary of major articles based on this theory.
	Gideon (2009)/Israel	Tax Compliance Demand Curve – It serves to predict Taxpayers' reaction(s) to changes in Allingham and Sandmo's model.

According to the above, the taxpayer bases his decision on purely rational thought, comparing the costs and benefits of whether to comply with tax law or not. This analysis is made by taking into account the risk or the probability of detection by the authorities, as well as the severity of punishment associated with behaviour contrary to tax law [theory of crime (Becker, 1968)]. In general, on the one hand, the higher the level of income and tax rates, the higher the gains of not complying, while on the other hand, the stronger the penalties, the less the incentive not to comply and greater the risk involved.

[16] Performed by a North American and a Norwegian.

In this context, many studies adopting a positivist approach began to appear, seeking to provide a theoretical framework to the problem of tax noncompliance (see Table 1.1). Those conducted between the '70s and '90s are all based on this mathematical model of Allingham and Sandmo (1972). However, some, as stated by Slemrod (2007, p. 36) "[…] extended this model in a number of dimensions, including allowing an endogenous probability of detection, analyzing evasion jointly with the labor supply decision." As we can see below in Table 1.1, the variables added remain econometric ones, and the one most used was «labour supply», which means undeclared or unofficial work (such as labor at weekends and in the evening)[17].

More recently, some studies in Italy and Greece have again focused on the probability of the detection and burden of penalties (Galbiati & Zanella, 2012; Tagkalakis, 2013).

Although the A-S theory has played an important role in helping to understand the tax noncompliance phenomenon, the traditional economic deterrence theory began to be increasingly questioned, since it became too restrictive to explain the complexity of tax evasion in a social and global context. At the same time, the increase in sophisticated mechanisms of tax noncompliance has resulted in it being more difficult to detect.

In this context, some studies on tax morality have strongly criticized the traditional model of tax evasion (for instance, Alm *et al*., 1992a; Cullis & Lewis, 1997), because in general the levels of tax compliance are higher than the forecast based on the traditional theory of tax evasion (Graetz & Wilde, 1985; Alm *et al.*, 1992a; Feld & Frey, 2007; Bobek *et al*., 2007). Within this ambit, Alm and Torgler (2011, p. 635), combining that evidence with the low level of effective tax auditing in the US, state that "[…] the real puzzle [of tax compliance] is why there is so little cheating."

However, to explain taxpayers' behaviour, the variable of punishment is still present in the Social and Psychological Tax Models, as stated by Fischer *et al.* (1992). Therefore, this theory continues to be the main basis for tax authorities' courses of action (Alm *et al*., 2010)[18].

[17] Pommerehne and Weck-Hannemann (1996) undertook an empirical study applying the A-S theory to data of the Swiss Bureau of Taxation.

[18] For a detailed review on current studies which concluded that the taxpayer is less likely to enter into tax noncompliance in face of the presence of the tax authority, see Trivedi, V., Shehata, M. and Lynn, B. (2003) Impact of personal and situational factors on taxpayer compliance: An experimental analysis. *Journal of Business Ethics*, 47(3), pp. 175-197. and Cadsby, C. B., Maynes, E. and Trivedi, V. U. (2006) Tax Compliance and Obedience to Authority at Home and in the Lab: A New Experimental Approach. *Experimental Economics*, 9(4), pp. 343–359.

Additionally, as stated by the OECD (2010b) report, referring to data from a survey, the probability of detection and the severity of punishment are the first determinants of tax compliance to be mentioned by most taxpayers, when questioned about it.

1.3.3.1.1.2 Social and psychological tax models

The traditional tax theory is not sufficient to explain tax noncompliance. Alm *et al*. (1992a, p. 22) highlighted the fact that "[…] there are numerous factors other than detection and punishment that affect the decision to pay taxes." In this context, Feld and Frey (2002, p. 5) emphasized that it is "[…] impossible to account for tax compliance [only] in terms of expected punishment." More recently, OECD (2010b, p. 11) pointed out that "[…] recent studies of tax compliance have a stronger focus on sociological and psychological factors."

Hasseldine and Bebbington (1991, p. 304) state "[…] whereas economic deterrence models have been formulated deductively, fiscal psychology models inductively examine the attitude and beliefs of taxpayers in order to predict actual behavior." In turn, McKerchar and Evans (2009, p. 7) pointed out that "[…] social psychology models are concerned with the prediction and understanding of human behavior, or how people make decisions […]" and they are mostly based on Ajzen and Fishbein's «Theory of Reasoned Action». According to that theory, each person decides whether or not to comply according to three different determinants: his/her personal values, social influences, and the economic gains of complying with tax law. After all, taxpayers decide whether to comply or not by also taking into account subjective factors such as personal goals, values, beliefs and ideas (Rosa *et al.*, 2012).

We can conclude that "[…] fiscal psychology models draw on both the economic deterrence and the social psychology models and generally view tax enforcement as a behavioral problem, one that can be resolved by co-operation between taxpayer and tax collector." (McKerchar & Evans, 2009, p. 8)

We can see from Table 1.2, which presents the Social and Psychological Tax Models, the predominance of North-American studies. Although the traditional theory of tax evasion is co-authored by a North-American, it was precisely the researchers from that country who criticized it most, and who have opened up the explicative

models to new variables, the non-econometric ones (for instance, Alm *et al.*, 1992a, 1992b, 2010).

Table 1.2 - Social and psychological tax models

Years	Studies / Countries
'80s	Spicer and Becker (1980)/US; Porcano (1984)/US; Milliron (1985) /US; Jackson and Milliron (1986)/US; Long and Swingen (1988)/US; Hessing *et al.* (1988)/Netherlands; Cialdini (1989)/US
'90s	Alm *et al.* (1992a,1992b)/US; Blumenthal and Slemrod, (1992)/US; Collins *et al.* (1992)/US; Fischer *et al.* (1992)/US; Sheffrin and Triest (1992)/US; Smith (1992) /US; Carlozzi (1997)/US; Cullis and Lewis (1997) - UK; Andreoni *et al*. (1998) – US
21st century	Scholz and Lubell (2001)/US; Feld and Frey (2002)/Germany; Torgler (2003, 2004, 2006)/US; Soares (2004)/Portugal; Marques (2004)/Portugal; Slemrod (2007)/US; McKerchar (2001, 2002a, 2002b, 2007)/Australia; Devos (2005, 2008)/Australia; James and Edwards (2008)/UK; McKerchar *et al*. (2008)/US/Australia/New Zealand/UK; Chau and Leung (2009)/Hong Kong; Loo *et al*. (2009, 2010)/Australia/Malaysia; Alm *et al.* (2010)/US; Coricelli *et al*. (2010)/France; Maciejovsky *et al.*(2012)/Austria; Lopes (2007, 2008, 2013)/Portugal; Soares and Marques (2013)/Portugal; Sá and Martins (2013)/ Portugal; Andrei *et al.* (2014)/US; Pellizzari and Dino (2014)/Italy; Coricelli *et al.* (2014)/France

Spicer and Becker (1980), authors of the first study presented, concluded that the feeling of inequity increases taxpayers' tax noncompliance.

Jackson and Milliron (1986) identified fourteen tax compliance variables that influence tax noncompliance, namely: age, gender, education, income level, income source, occupation, peer influence, ethics, fairness, complexity, IRS contact, probability of being detected, penalties and tax rates.

Throughout the following decades, using those determinants identified above, several authors have set out the explicative models of tax compliance, such as Fischer *et al.* (1992) and Chau and Leung (2009). Fischer *et al.* (1992) divided the determinants of tax compliance, described by Jackson and Milliron (1986), into groups, and built a model with interactions between the various classes of determinants. In turn, Chau and Leung (2009) reviewed the previous model, by incorporating the factor «culture» into the model presented by Fischer *et al.* (1992), as well as the relationship between «noncompliance opportunity» and the «tax system structure».

Furthermore, some institutional organizations, such as the OECD (2010b), identify five determinants of taxpayers' tax compliance, namely: deterrence, norms (personal and social), opportunity (to comply or not comply), fairness, and trust and interactions (how the other variables interact with each other).

We have also been able to witness the development of research into fiscal sociology, particularly studies concerning tax morale (for instance, Alm *et al.*, 1992a; Cullis & Lewis, 1997; Torgler, 2003, 2004, 2006). The objective of these studies was to explain that the reason why the taxpayers do not enter into the tax noncompliance scheme is their intrinsic motivation to pay taxes. According to Torgler (2006, p. 82), tax

morale is precisely the "[…] intrinsic motivation to pay taxes", and Kornhauser (2007, p. 142) defines it as "[…] taxpayers' attitudes and beliefs – not behaviors […]". In turn, Feld and Frey (2007) argue that tax morale is a psychological tax contract between taxpayers and State, with rights and duties for both parties. As regards Kornhauser (2007, p. 139), the deterrence theory is not sufficient to answer the question "[…] if people hate taxes so much why do they pay them?" Some authors, such as Feld and Frey (2007), point out that the response to that enigma is tax morality. Finally, Torgler (2006, p. 82) argues that "Tax morale might be an influencing factor for tax compliance and is therefore central to this new research focus."

Recently, Coricelli *et al*. (2014, p. 540), in some laboratory experiments, using a technique known as SCR [Skin Conductance Responses], "found higher SCR when participants evaded, and higher arousal and negative effects associated with being audited."

We can conclude from Table 1.2 above that social and psychological models, which appeared in the US in the '80s, far from being abandoned, have remained updated until now**.** However, it was not until the twenty-first century that they began to attract the interest of other researchers.

Table 1.3 summarizes the methodologies used in the studies analyzed.

Table 1.3 - Methodologies applied in the social and fiscal psychology models

Methodology's type	Studies / Countries
Laboratory experiments	Spicer and Becker (1980)/US; Porcano (1984)/US; Milliron (1985)/US; Jackson and Milliron (1986)/US; Alm *et al*. (1992a,1992b)/US; Smith (1992)/US; Scholz and Lubell (2001)/US; Feld and Frey (2002)/Germany; Alm *et al.* (2010)/US; Coricelli *et al.*(2010/2014)/France
Surveys	Long and Swingen (1988)/US; Blumenthal and Slemrod, (1992)/US; Collins *et al.* (1992)/US; Sheffrin and Triest (1992)/US; Torgler (2003, 2004, 2006)/US; Devos (2005, 2008)/Australia; Maciejovsky *et al.* (2012)/Austria; Lopes (2007, 2008, 2013)/Portugal
Surveys-Interviews	Hessing *et al.* (1988)/Netherlands; Soares (2004)/Portugal
Critical analysis of the literature and/or the tax laws	Cialdini (1989)/US; Cullis and Lewis (1997)/UK; Andreoni *et al.* (1998)/US; Marques (2004)/ Portugal; Slemrod (2007)/US; McKerchar (2007)/Australia; James and Edwards (2008)/UK; McKerchar *et al.* (2008)/US/Australia/New Zealand/UK; Soares and Marques (2013)/Portugal; Sá and Martins (2013)/ Portugal
Analysis of tax reforms' consequences	Carlozzi (1997)/US
Models that establish relationships between variables, based on Jackson and Milliron's (1986) study	Fischer *et al.* (1992)/US; McKerchar (2001)/Australia; Chau and Leung (2009)/Hong Kong
Mixed method[19]	McKerchar (2002a, 2002b)/Australia; Loo *et al.* (2009, 2010)/Australia/Malaysia
Agent-based theory	Andrei *et al*, (2014)/US; Pellizzari and Dino (2014)/Italy

From the table 1.3 we can see both the diversity of methodologies used in those models, and also the preponderance of the use of laboratory experiments and surveys.

[19] Laboratory experiments, surveys and case studies combined.

We can also notice that the laboratory experiments were mainly conducted by American and Australian authors. These simulations of reality, carried out in a laboratory context[20], into the behaviour of taxpayers, come across as a methodology with great potential, despite the disadvantages associated with this method, particularly artificiality. That limitation can be compensated by the use of a mixed method, such as that suggested by McKerchar (2002a, 2002b) and Loo *et al.* (2009, 2010). Thus, we do not understand why laboratory experiments are ignored by researchers from other countries. By using this methodology, other researchers from different countries might be able to provide potentially interesting results, and more importantly, results perhaps different from those known until now. Therefore, we consider it a knowledge gap.

In the last years, «Agent-based models», which are computational models based on theory of games, and simulate the actions and interactions of autonomous agents in order to assess their effects on the system as a whole, have been used to study taxpayers' tax noncompliance behaviour (Andrei *et al.*, 2014; Pellizzari & Dino, 2014).

1.3.3.1.2 Taxpayers' noncompliance profile

With respect to the characteristics of noncompliant taxpayers, Table 1.4, presented above, summarizes the results of our literature review.

Combining the main findings, we can present a brief profile of the noncompliant taxpayer: self-employed, young, male, with a high level of income.

Table 1.4 points out that the variable "income" is the one that presents the most different and even conflicting results (Christian, 1994; Johns & Slemrod, 2010). It is important to notice that both studies refer to the same country and source of data. One reason for that conflict could be that the data correspond to two different periods of time. Additionally, the methods used are also different. While the first study makes a comment on the data contained in the TCMP [Taxpayer Compliance Measurement Program], for the year under review, the second one focuses on anomaly detection.

Despite the previous justifications, we strongly believe that the main reason for that difference may be the time gap between both studies. During that period the mechanisms adopted to tax savings, used particularly amongst higher income earners

[20] In laboratory experiments the researcher places a group of taxpayers in a room (laboratory) and gives them different fiscal case studies, as close to reality as possible. The main purpose of this kind of experiment is the controlled study of cause-effect on taxpayers' behaviour, as well as their decision-making processes. This methodology is widely used in social sciences.

have undergone increasing sophistication, which has ensured greater reliability for the results of Johns' and Slemrod's (2010) research.

Christian (1994) stated that people on low incomes evade taxes more than those on high incomes. However, Slemrod (2007, p. 30) writes "[...] the poor evade and the rich avoid".

Table 1.4 - Taxpayers' noncompliance profile

Questions	Studies / Countries	Conclusions	Profile
Source of income?	Pissarides and Weber (1989)/UK; Klepper and Nagin (1989a)/US; Baker (1993)/UK; /US; Johansson (2005); Feldman and Slemrod (2007)/US	The employees evade less than the self-employed.	Self-employed.
Amount of Income?	Nagin (1990)/US	It is inconclusive as to what kind of income results in more tax noncompliance. (Data from the TCMP [Taxpayer Compliance Measurement Program] TY [Tax Year] 1982).	It is not possible to determine.
	Mason and Lowry (1981) /US	The two most tax noncompliant groups are the lower income and the higher income beneficiaries. Taxpayers with an average income level are the most tax compliant (Data: Survey).	Low and High Income.
	Tauchen *et al*. (1993)/US	The two most tax noncompliant groups are the lower income and the higher income beneficiaries. Taxpayers with an average income level are the most tax compliant. (Data from the TCMP TY 1979).	
	Christian (1994)/US	People with higher incomes evade taxes less than those with lower incomes (Data from the TCMP TY 1988).	Low Incomes.
	Johns and Slemrod (2010)/US	People with higher incomes evade more than those with lower incomes (Data from the TCMP TY 2001).	High income.
Gender?	Vogel (1974)/Sweden; Friedland *et al.* (1978)/Israel/US, Spicer and Becker (1980) /US; Baldry (1987 as cited in Slemrod 2007) /Australia; Young (1994)/US; Hasseldine (1999)/UK; Chung and Trivedi (2003)[21] /Australia/US; Hasseldine and Hite (2003) /UK/US[22]; Cullis *et al.* (2006)/UK; Lewis *et al.* (2009)/UK/Italy; Kastlunger *et al.* (2010) /Austria/Italy; Torgler and Valev (2010) /Australia/US	Men evade taxes more than women.	Male.
	Kirchler and Maciejovsky (2001)/Austria	Self-reporting in men is higher than in women.	Female.
Age?	Vogel (1974)/Sweden; Wärneryd and Walerud (1982)/Sweden; Clotfelter (1983)/; Dubin *et al.* (1990)/US; Feinstein (1991)/US; Christian and Gupta (1993)/US; Andreoni *et al.* (1998) /US[23]; Schuetze (2002)/Canada; Erard and Ho (2003)/US	Younger taxpayers have higher levels of tax noncompliance than older ones.	*Age below 65 years old – more noncomplian; *Highest level in taxpayers between 25 and 34 years old.[24]

[21] According to those authors, this difference between men and women only occurs when the sample is convinced about why they should pay taxes.
[22] Women are more compliant and react better with respect to framing. Framing is widely used in social sciences, it studies how people interpret the information, from a perspective of positive persuasion. For their part, men are less compliant and react better to negative persuasion.
[23] The authors refer to data from the TCMP.
[24] Schuetze (2002).

With regard to taxpayer gender in the tax noncompliance context, the analyzed studies are almost unanimous in observing that women are the more tax compliant. This difference can be explained mainly by two factors: the propensity for risk is lower in women (Kastlunger *et al.*, 2010), and women over-estimate the probability of detection and punishment in an audit (Hasseldine, 1999).

In contrast, Kirchler and Maciejovsky (2001) highlighted the fact that women evade taxes more. This conclusion results not only from the difference between countries, but also from the methodology adopted. The other studies analyzed above used laboratory experiments as their methodology in the main, while Kirchler and Maciejovsky (2001) conducted a survey targeted at the self-employed and business entrepreneurs.

With respect to the source of income, the studies which have been analyzed are unanimous in pointing to the self-employed as the most tax noncompliant. This is due to the ease with which their income can be hidden from the tax authorities, in comparison with workers employed by others (Schuetze, 2002; Feldman & Slemrod, 2007).

The studies are also unanimous in their conclusions regarding the age factor: younger taxpayers are more tax noncompliant than older ones. There are a number of reasons for this, ranging from higher tax morality of older taxpayers, to the greater opportunity younger taxpayers have for tax evasion, due to the type of income they receive (for instance, Wärneryd & Walerud, 1982).

Finally, we highlight the main evidence of Canadian, Swedish and particularly American studies, based primarily on data from TCMP and other statistics worked out by the American tax authorities (Klepper & Nagin, 1989a; Clotfelter, 1983; Feinstein, 1991; Christian, 1994; Andreoni *et al.*, 1998; Feldman & Slemrod, 2007). In this context, we can conclude that the lack of estimates from the tax authorities of other countries does not allow us to create a clear noncompliant taxpayers profile.

Notwithstanding the number of studies conducted from different perspectives all seeking to understand taxpayers' attitudes towards tax compliance, we can say that they are not sufficient to understand taxpayers' behaviour, because in tax relationship between State and taxpayers, the taxpayers are not always alone when they interact with tax authorities.

Thus, in the next sub-section we will introduce a third player into the "State-Taxpayers" relationship, the paid tax professionals.

1.3.3.2 Tax professionals' role in tax noncompliance

In the '80s some researchers, such as Ayres *et al.* (1989), Hite and McGill (1992) and Erard (1993), detected a knowledge gap in the area of tax noncompliance. They noted the growing importance of the activity of tax professionals in tax compliance: "The role of third-party professionals has become a critical part of the present system of voluntary compliance […]" (Ayres *et al*., 1989, p. 300). On the same subject, Erard (1993, p. 163) supports the idea that "Tax practitioners possess the means to exert an extraordinary influence over the tax compliance process." Furthermore, researchers also found that academic studies regarding "[…] tax compliance did not consider the potential impact of the tax preparer on the compliance decision." (Hite & McGill, 1992, p. 390).

As a result, the '80s witnessed the appearance of a new line of studies, which set out to determine the impact of tax professionals' actions on tax compliance.

Table 1.5, presented below, shows the studies concerning the role of tax professionals and their attitudes in relation to tax compliance.

Table 1.5 - Studies about tax professionals' role in tax compliance

Years	Studies which conclude that tax professionals reduce tax noncompliance	Studies which conclude that tax professionals increase tax noncompliance	Studies which conclude that they display contradictory behaviour[25] in the tax compliance context
'80s	Bonner (1984)/US	Ayres *et al.* (1989)/US; LaRue and Reckers (1989)[26]/US, Duncan *et al.* (1989)[27] /US	Klepper and Nagin (1989b)/US
'90s	Eriksen and Fallan (1996)/Norway	Reckers *et al.* (1991)/US; Newberry *et al.* (1993)/US	Klepper *et al.* (1991)/US, Hite and McGill (1992)/US, Erard (1993)/Canada
21st century	Park and Hyun (2003)/Korea; O'Donnell *et al.* (2005)/US	Gutman (2012)	Stephenson (2007)/US

In general, the intervention of paid tax professionals leads to different responses from taxpayers; as a result, studies in the literature review found different conclusions.

Firstly, we will present the studies which support the belief that hiring paid tax professionals decreases the level of tax noncompliance. In this case we find that the domain of tax knowledge is a key variable in the process of tax noncompliance. These studies conclude that the higher the professionals' tax knowledge, the more proactive their attitudes towards compliance with tax laws seem to be. Moreover, tax professionals with a high level of tax knowledge are less aggressive in their tax advice, since they appear to be very familiar with the entire tax system, including the risk of detection and the weight of penalties.

[25] The previous two attitudes at the same time.
[26] As cited in Reckers *et al.* (1991).
[27] *Idem*.

Secondly, by contrast, there is a group of studies which reveal that the intervention of tax professionals increases tax noncompliance. For instance, Ayres *et al.* (1989) argue that tax knowledge and experience in CPA [Certified Public Accountants]'s case make them more susceptible to assuming advantageous positions in favour of their customers and against the State or the IRS, than tax professionals who are not registered. The proximity of tax professionals to IRS employees gives them privileged access to "[…] the unwritten rules […] and […] opportunities to develop informal working relations with IRS personnel […]" (Ayres *et al.*, 1989, p. 302).

Finally, the last group of studies establishes a relationship between tax professionals' attitudes, tax complexity (especially in the field of ambiguity) and tax knowledge. These studies conclude that tax professionals find themselves in an ambiguous and tenuous position regarding tax compliance. In general, they tend to use their tax knowledge in order to increase tax compliance. However, in more complex and ambiguous situations, they have a natural predisposition to make use of their tax knowledge on behalf of their customers' tax savings, taking advantage of the ambiguity of the tax laws.

Considering the data from Table 1.5, we observe that this subject has aroused the interest of researchers from the '80s and has maintained its relevance until now. However, we note that almost all studies presented in Table 1.5 refer to the US. Therefore, as regards this issue, there is a knowledge gap as far as other countries are concerned.

After reviewing the studies attempting to explain the phenomenon of tax noncompliance, we find it necessary, in order to complete our review of the literature, to examine the works that seek to analyze the various levels of this phenomenon. We will undertake that task in the next section.

1.3.4 Tax noncompliance: quantifying studies

The quantification of tax noncompliance phenomenon is divided into two major groups: first, tax authorities' official estimates and the studies based on them; second, academic studies which try to measure tax noncompliance indirectly, by using other indicators. As stated by Andreoni *et al.* (1998, p. 819) "A popular indicator of the [tax noncompliance] magnitude is the tax gap […]" and both lines of studies try to determine it in different ways.

1.3.4.1 Using tax authorities official estimates of the tax gap

In this section, we intend to examine research that has been conducted to try to measure tax noncompliance using tax gaps estimated by tax authorities. However, it is necessary to highlight the fact that only US Federal Reserve estimates are extensive and available to academic researchers. Thus, in most countries where estimates are implemented at government level, their results are not available for use by academic researchers.

Therefore, we underline the role of tax noncompliance estimates of the US tax authority. According to Feinstein (1991, p. 14): "In the United States, [tax authorities very soon realized that] income tax evasion is one of the most widespread economic crimes." Thus, since 1979, the IRS has annually determined the «Tax Gap»; that is, the difference between tax collected and tax estimated as due, by using the TCMP.

Table 1.6 - Examples of studies based on TCMP estimates

Years	Studies	Trend study	Conclusions
'80s	Clotfelter (1983)	Marginal rates (Data from: 1969).	There is a positive effect of the increase in marginal rates (income tax) on the levels of tax evasion.
	Klepper and Nagin (1989a)	Anatomy of Tax evasion (Data from: 1982).	Among the self-employed, the level of tax noncompliance is very high. In the case of salaried employees, the level of tax noncompliance is very small. The audit rate and severity of penalties have an important impact on tax compliance.
'90s	Nagin (1990)	Impact of seven categories of instruments in the fight against tax noncompliance (Data from: 1982).[28]	It is not possible to obtain a single solution, but only combined solutions with various instruments, which change depending on the type of situation.
	Feinstein (1991)	The relation between tax evasion and detected tax evasion (Data from: 1982 and 1985).	He performs a model with two equations, one measuring tax evasion and the other the detected tax evasion.
	Tauchen *et al.* (1993)	The impact of the audit rate and tax law in tax compliance (Data from: 1979, combined with data from 1980 census).	Only have an impact on high and low incomes.
	Christian (1994)	Types of income with a higher level of tax evasion (Data from: 1988).	He has detected an increased tax noncompliance in taxpayers with lower incomes.
21st century	Bishop *et al.* (2000)	The impact of tax noncompliance in tax equity (Data from: 1979, 1982, 1985 and 1989).	The effects of tax noncompliance are not substantial in vertical equity, but have a strong impact on horizontal equity.
	Erard and Ho (2003)	Types of income with a higher level of tax evasion (Data from: 1988).	Among the self-employed the level of tax noncompliance is very high.

In the US, many studies have been conducted based on data from official statistics, using mainly the TCMP. Andreoni *et al.* (1998, p. 819) underline that "[…] the most reliable information [about the tax gap] comes from the Taxpayer Compliance Measurement Program (TCMP) […]". Additionally, Halon *et al.* (2005, p. 3) advocate that "Most existing analysis of tax noncompliance in the United States is based on the IRS Taxpayer Compliance Measurement Program […]."

[28] And from the Tax Equity and Fiscal Responsibility Act of 1982.

Table 1.6 above presents examples of studies based on TCMP data. These studies commenced in the '80s and have continued until now. In this group of studies, some use econometric and non-econometric variables. The main criticism levelled at these investigations is that they consider each variable separately.

As we have already noted, the absence of estimates by the tax authorities in most countries makes it impossible to conduct studies based on these data in countries other than the US, thus creating a knowledge gap.

1.3.4.2 Indirect quantification of tax noncompliance

Quantifying the level of tax noncompliance, based on the testimony of taxpayers, is very difficult (Andreoni *et al.*, 1998), if not impossible, mainly because the data source is not reliable. When questioned about direct tax matters, taxpayers tend not to give truthful responses, even if complete confidentiality is assured.

According to Baumeister (1982), tax noncompliance, including tax evasion and tax fraud, is likely to be considered a crime, and is therefore a matter of some social and psychological sensitivity, which is why people have a propensity not to be totally honest when they participate in surveys that try to quantify tax noncompliance.

Consequently, it is not really possible to correctly quantify the level of tax noncompliance using taxpayers' direct surveys alone. These only allow us to verify its existence and trend, *i.e.* whether it is increasing or decreasing. As Santos (1996, p. 185) points out "[…] by its very nature, the extent of [...] tax evasion and fraud is always a difficult goal to achieve in practice, worth more by the relative estimated size (large / small) and the direction of the detected variations (increase / decrease) than for its exact value […]."

As a result, some studies have been conducted to measure the extension of tax noncompliance indirectly. In the literature review, we can find four ways to verify trends of this phenomenon: consumption of food, quantity of money in circulation, donations to charity, and the Multiple Indicators Multiple Causes [MIMIC] model. Table 1.7, shown below, summarizes those studies.

The studies based on consumption and charities assume that employees and independent workers have the same preferences regarding food and the same commitments to charity. In addition, Glazer and Konrad (1996) and Andreoni (1988 as cited in Glazer & Konrad, 1996) argue that giving to making donations to charity is a

sign of income and wealth, because only those with a high level of income show charitable concerns. Consequently, differences in behaviour related to these factors, among taxpayers with the same level of reported income, is considered as unreported income. For its part, the MIMIC model assumes that the shadow economy is a latent variable, which can be estimated by using manifest variables such as the causes of illicit employment, and indicators of illicit activity such as currency demand, GDP, and others.

Table 1.7 - Studies that use indirect quantification of tax noncompliance

Years	Studies / Countries	Indicators	Conclusions
80s	Tanzi (1983)[29]/US	Comparison of the variation of currency in circulation with changes in off. GDP.	The increase of currency in circulation, without a follow-up in off. GDP growth, leads to an increase in parallel economy and consequently in tax noncompliance.
	Pissarides and Weber (1989)/UK	Consumption of food.	The level of consumption, among the self-employed, is higher for the same income level, indicating a greater tax noncompliance amongst this group.
90s	Baker (1993)/UK; Mirus *et al.* (1994)[30]/Canada; Johansson (2005)/Finland	Consumption of food.	The level of consumption, in the self-employed, is higher for the same income level, indicating a greater tax noncompliance in the self-employed.
21st century	Schuetze (2002)/Canada; Feldman and Slemrod (2007)/US	Contributions to charity.	The level of charity among the self-employed is higher for the same income level, indicating a greater tax noncompliance in this group.
	OECD(2009)/France; Schneider *et al.*(2010)/Austria/Germany/ Chile; Schneider (2005, 2011, 2012)/ Austria	MIMIC Model and Currency demand Method.	MIMIC model assumes that the shadow economy is a latent variable, which can be estimated by using manifest variables such as the causes of illicit employment, and indicators of illicit activity such as currency demand, GDP, and others. The intersection of these variables shows that the shadow economy is at very high levels around the world.
	Cebula and Feige (2012)/US	Comparison of the variation of currency in circulation with changes in off. GDP.	The increase of currency in circulation, without a follow-up in off. GDP growth, leads to an increase in parallel economy and consequently in tax noncompliance.

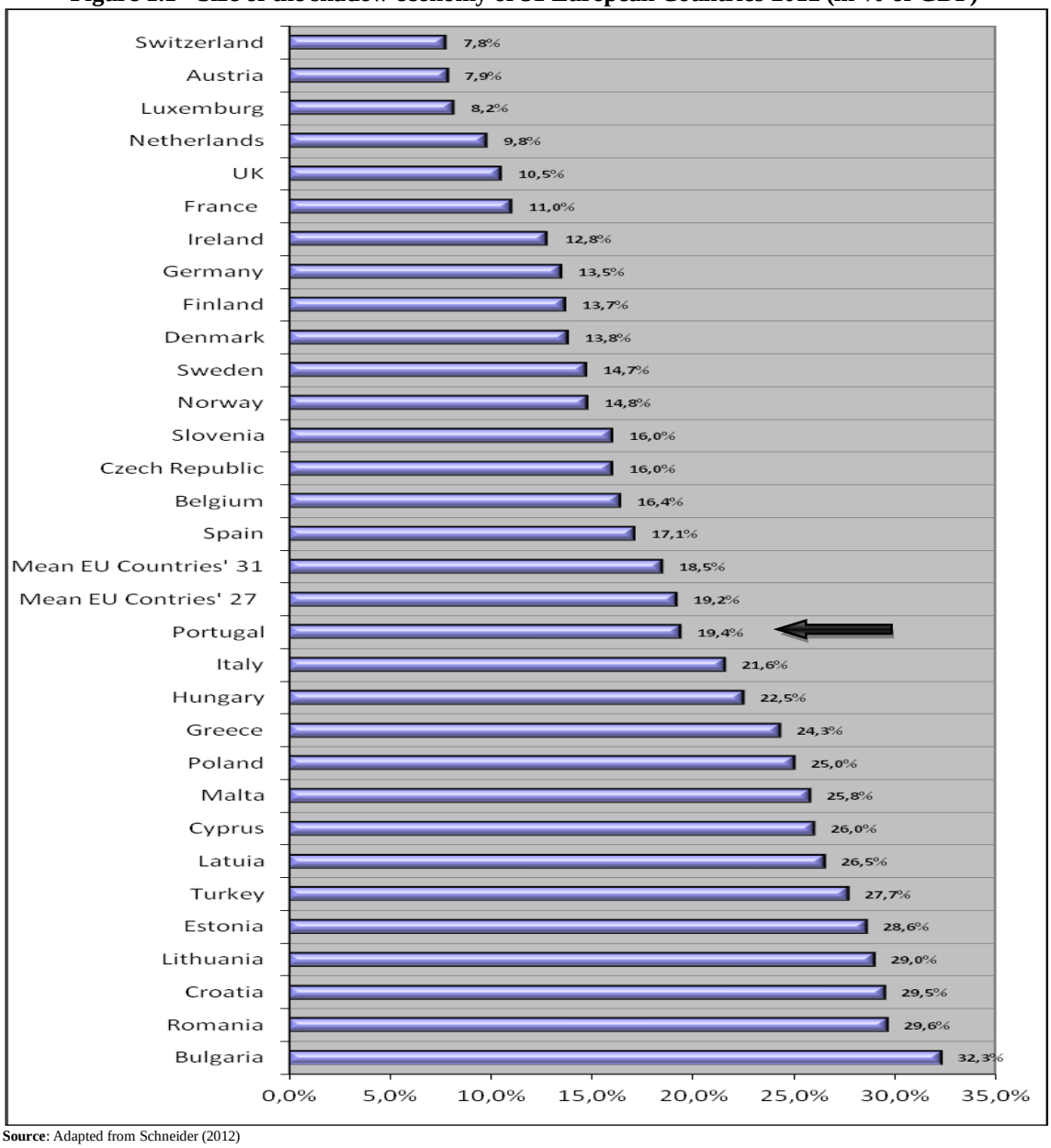
As can be seen in Table 1.7, the indicator that is most commonly used to indirectly quantify tax noncompliance is family food consumption. However, in our literature review, we have not found any studies originating in the US, based on that indicator. This is related to the existence of official estimates of the American «Tax Gap» and trends of tax noncompliance, generated mostly by the TCMP. This could discourage researchers from pursuing studies whose aim is to estimate that «Tax Gap» indirectly. For example, the only recent study in this context, based on current North American trends, is Feldman and Slemrod (2007), relating to donations to charity[31].Therefore, we

[29]As cited in Siqueira and Ramos (2005), which, in their article, call into question the accuracy of these regressions, as well as how the currency in circulation was estimated.
[30] Study heavily criticized because it has a very small database (only one year).
[31] The use of this indicator, for this purpose, reveals the significant part that charities play in that society.

note that lack as a knowledge gap in the American tax literature on the phenomenon of tax noncompliance.

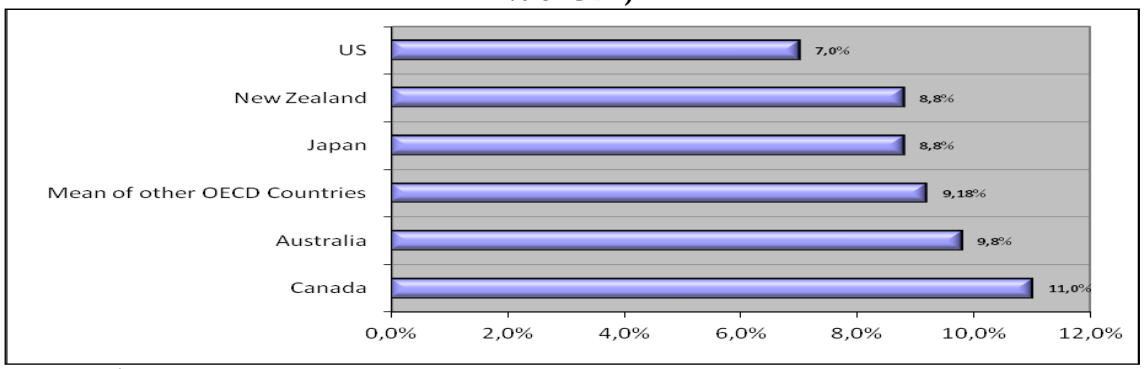
Finally, Table 1.7 shows the small number of studies that quantify tax noncompliance and emphasize Schneider's research in this particular area. Schneider (2005, 2011, 2012) made frequent estimates relating to the shadow economy, as we can see below (Figures 1.1 and 1.2).

Figure 1.1 - Size of the shadow economy of 31 European Countries 2012 (in % of GDP)



Source: Adapted from Schneider (2012)

Figure 1.2 - Size of the Shadow Economy of 5 Highly Developed Non-European Countries 2012 (in % of GDP)



Source: Adapted from Schneider (2012)

As can be seen from the analysis of Figures 1.1 and 1.2, European countries (mean: 18.4% of GDP) show higher levels of shadow economies than developed non-European countries (average: 9.18% of GDP).

Portugal, with 19.4% of GDP, stands out because it is above the mean level of the 27 EU countries (average: 19.2% of GDP). Moreover, the level of the Portuguese shadow economy, in the European context, is only surpassed by that of Greece, Italy, and Eastern Europe countries.

In the Portuguese case, the high levels of this phenomenon, and its consequences in the context of tax noncompliance, make the study of this problem more relevant.

As a consequence of our study regarding the evolution of the phenomenon of tax noncompliance in international tax literature and the multiplicity of approaches, we have derived the following questions: What about the cases where the taxpayer enters into tax noncompliance by mistake, forgetfulness, misunderstanding of the tax law, or simply through ignorance? Are those variables included in the explicative models of tax noncompliance? This knowledge gap will be explored in the next section.

1.4 Some considerations about intentionality in relation to tax noncompliance in the tax literature review

Although the majority of the studies analyzed have mainly focused on voluntary tax noncompliance, we should not overlook the involuntary nature of some taxpayers' behaviour. In this regard, McKerchar and Evans (2009, p. 3) state "[…] noncompliance may be a result of a deliberate decision by the taxpayer, or it may be unintentional"[32].

[32] Opinion also supported by Kirchler and Wahl (2010) and Slemrod (2007). However, these studies do not explore that topic more deeply; they simply refer to it, in order to make a negative delimitation of the tax evasion concept.

There are very few studies from the perspective of taxpayers' involuntary behaviour. Furthermore, hardly any of those studies on tax noncompliance make an attempt to distinguish between both types of tax noncompliance.

Considering those few studies which have actually focused on the analysis of involuntary tax noncompliance, we have decided to highlight three, one of them undertaken by Boadway and Sato (2000) and the others by McKerchar (2002a, 2002b), in Canada and in Australia, respectively. The first study concerns the influence of taxpayers' unintentional tax noncompliance (errors) on the issue of tax fairness. The other two aim at determining whether tax complexity is an explicative variable of involuntary tax noncompliance for personal taxpayers. In both of these, the author verifies a strong relationship between variables, involuntary tax noncompliance and tax complexity.

Additionally, tax authorities do not show much concern as regards this problem. As McKerchar (2002b, p. 4) argues, what has been important for a country in terms of intentional tax noncompliance "[…] has been the need for governments to guard against the erosion of their revenue base. […] In contrast, unintentional noncompliance as an outcome has received very little attention." The main reasons pointed out from the literature review are the less erosive effect on public revenues of unintentional tax noncompliance, and the difficulty of distinguishing between the two types of tax noncompliance.

McKerchar (2002b) presents two justifications given by tax authorities for that differential treatment: firstly, she points out the most nefarious effect of the voluntary type, which results in more worries by tax authorities about this type of tax noncompliance. Secondly, she also states that "One possible reason for this could be that unintentional noncompliance, in terms of revenue raised, may well favor government […]" (McKerchar, 2002b, p. 4), *i.e.*, the final tax revenue collection, with the increase in the penalties for tax noncompliance, can benefit the State.

Slemrod (2007, p. 26) has pointed out a possible third reason for a few studies that focus on the prospect of involuntary tax noncompliance, by arguing that "[…] empirical analysis cannot precisely identify the taxpayers' intent and therefore cannot precisely separate the willful from the inadvertent."

We recognize that we share the opinion of these authors as to the reasons given, but we think it is appropriate to add some additional factors.

From the researchers' point of view there is considerable difficulty in performing studies of the involuntary type of tax noncompliance - largely due to the difficulty of data collection; furthermore, they also have the problem of determining the intentionality of taxpayers' behaviour. This is because once tax noncompliant activities have been detected, although there may be a deliberate intention not to comply, taxpayers will assume a posture of non-intentionality (error, mistake or ignorance), not only through psychological factors, but also in order to minimize penalties they may incur (Baumeister, 1982). Furthermore, due to the more erosive effect of voluntary tax noncompliance on the public interest, it renders it a more high profile issue, which is more attractive to academic researchers.

Finally, from our point of view, involuntary tax noncompliance is more easily detectable, firstly due to information cross checks, tools which are increasingly being used by tax authorities in many countries[33], and secondly because taxpayers do not devise schemes to mask their tax noncompliance behaviour.

Despite the situation described above, we think that the study of tax noncompliance, from an involuntary perspective, deserves to be the subject of deeper research, not only because this issue is largely related to the problem of tax complexity, a very intricate issue that has far-reaching consequences on the levels of voluntary tax noncompliance, in particular at the cost of compliance, but also in inadvertent tax noncompliance situations (McKerchar, 2002b; UN, 2014).

Tax complexity creates grey zones in favour of some taxpayers, because it creates space for tax evasion and for all aspects of voluntary tax noncompliance, harmful to others, who "stumble" inadvertently in these grey areas, in situations of unintentional tax noncompliance.

In the case of Portugal, whose tax system is based on self-assessment, some researchers and non-governmental organizations classify the tax system as very complex and volatile (Soares, 2004; Martins, 2005; Lopes, 2003, 2008; Santos & Martins, 2009). In this context, the OECD (2010a, p. 8) points out that "Portuguese tax laws are complex and frequently changed." Additionally, conclusions supported by the World Bank (2011a, 2011b, 2013a, 2013b), which rank Portugal as one of the leading

[33] As in Portugal.

countries in terms of tax bureaucracy in Europe. Therefore, it is important for future research to analyze the determinants of tax complexity as well as its impact on tax noncompliance.

1.5 Conclusions

We can now summarize some main points in our literature review.

The importance of the traditional economic deterrence theory, based on the Rational Choice Model of Allingham and Sandmo, has been unquestionable importance in the international tax literature review since 1972.

In the ‘80s the so-called Social and Fiscal Psychology Models emerged, aiming at explaining taxpayers' behaviour, using econometric and non-econometric variables, as well as relationships among different variables. This line of research is growing and attracting researchers from many countries.

At the same time, due to the increased use of tax professionals in making taxpayers comply with their obligations, a new group of studies emerged in the US, analyzing the role of paid professionals in tax (non)compliance. This research concluded that their role is important, but dubious, because although they may reduce tax noncompliance, they may also contribute to its increase.

There are also attempts to quantify the level of tax noncompliance. These studies help us to understand the extent of the phenomenon of tax noncompliance, as well as to relate tax noncompliance with other indicators, such as consumption and even donations to charity.

In our literature review we have pointed out some knowledge gaps - firstly, the lack of studies that measure the role of paid tax professionals in tax noncompliance, and secondly, the lack of laboratory experiments in Social and Fiscal Psychology Models, apart from those carried out by North American authors. Thirdly, the analyzed studies focus mainly on voluntary tax noncompliance, thus ignoring the unintentional perspective. This lack of interest is probably related to the slight erosion of public interests and the easy detection of this type of tax noncompliance.

To sum up, determining the impact of tax professionals on the process of Portuguese tax noncompliance is surely an important issue for future tax research. Moreover, it will be useful to distinguish voluntary from involuntary tax noncompliance as well as to measure the extent of their influence on the economy.

Essay 2 - Tax complexity and its perception as a tax compliance determinant: the role of tax professionals

2.1 Introduction

The increased complexity of tax systems is mainly due to the sophistication of business dealings and the globalisation of markets, which have given rise to more complex and refined mechanisms of tax evasion. Furthermore, tax authorities have passed more anti-abuse regulations, which themselves create additional tax law complexity.

The relationship between tax complexity and tax noncompliance has received special attention from academia and major international non-governmental organisations such as the World Bank and the OECD [Organisation for Economic Co-operation and Development]. The World Bank (2011a, p. 42) reports that "[…] layers of taxation can increase the complexity and the compliance burden for business." The OECD (2013) has highlighted some causes of tax complexity and recommended some measures to simplify tax systems in order to increase tax compliance levels.

Freedman (2004, p. 342-343) argues that "The artificiality and complexity of the tax system is often cited as a reason for the frequency of tax avoidance." As stated by Briault (2005, p. 27), quoting a tax director of a large UK [United Kingdom] company: "We've got people disclosing so-called tax schemes […] and the revenue [tax authorities] are trying to close them down, [however] They do it so quickly that they don't do it properly and they have to come up with another bit of legislation that closes the loopholes on the first bit of legislation they introduced. It is all very knee-jerk and very reactive." Thus, tax complexity begets tax avoidance opportunities and as a consequence, tax noncompliance schemes.

Tax complexity has also been increasing largely because of the "[…] adoption of a self-assessment [system] […]" (Loo *et al.*, 2009, p. 182). This system transfers tax compliance tasks to taxpayers instead of tax administration. This trend, in general, occurs without previous preparation of the taxpayers. As a result, this supports an increased perception of tax complexity and its consequences in terms of tax compliance (McKerchar *et al*., 2008; Evans & Tran – Nam, 2010).

As a result, in taxation it has shifted the paradigm in the relationship between tax administrations and taxpayers and a new "player" has been introduced into the "equation": the tax professionals. Tax professionals are the tax preparers, tax practitioners, tax agents, tax accountants, tax consultants, tax advisors and tax intermediaries to which taxpayers resort in order to comply with their tax obligations.

In many countries these professionals have gradually replaced taxpayers in compliance with most tax obligations, as well as in the tax decision making process (OECD, 2008; Laffer *et al.*, 2011). Consequently, the attitudes of these professionals have an influence on taxpayers' tax compliance (Milliron & Troy, 1988; OECD, 2008; Devos, 2012; Gutman, 2012). Milliron and Troy (1988, p. 85) stated that "[…] tax practitioners are philosophically and professionally involved in the compliance problem."

Evans and Tran-Nam (2010) and the US [United States of America] Joint Committee on Taxation cited in Laffer *et al.* (2011) also emphasized that the perception of tax complexity has several consequences for tax compliance context, *e.g.* the high level of tax noncompliance, the high compliance costs and the great use of tax professionals.

Therefore, in this essay we intended to identify and review the perspectives of tax complexity as a determinant of tax noncompliance, as well as the different ways of measuring tax complexity. We discuss the role of tax professionals in tax systems; in particular we attempt to understand how the attitudes of tax professionals in regard to tax compliance can be influenced by their perception of tax complexity.

Following the introduction this essay is organized into three parts: in the second section we present some considerations on tax complexity and strategies for tax simplification, as well as the dimensions, areas and indicators of tax complexity. Special attention is given to the perception of tax complexity and tax noncompliance by tax professionals. Finally, we draw the main conclusions and proposals for future research.

2.2 Some considerations as regards tax complexity

It stands to reason that we cannot begin to understand tax complexity without clarifying what is meant by tax simplicity. Both concepts are interconnected and some authors refer to their relationship figuratively, as the mirror image of each other (Bittker, 1974; Tran-Nam, 1999).

We observe that although tax complexity and tax simplicity have been analysed in several studies, a consensual definition is still needed. As stated by Tran-Nam (2004), there is no precise theoretical framework about tax complexity and the impact of efforts toward tax simplification. Heyndels and Smolders (1995, p. 128) argue that there are in international tax literature "[…] many partial answers to the question, often implicitly".

The main reason for this lack of unanimity is related to the different meanings of tax complexity and tax simplicity. In our view, the majority of studies do not distinguish these concepts from their perceptions.

Furthermore, "Despite its widespread use, tax simplicity [tax complexity] is not a concept that can be easily defined, measured or agreed upon. Nevertheless, […] tax simplicity [tax complexity] is basically a comparative concept […]."(Tran-Nam, 1999, p.508)

There is no doubt that awareness of the extremes levels of complexity that affect many tax systems nowadays and the recognition of its relationship with tax noncompliance, increases the need to find ways to simplify them (UN [United Nations], 2014).

The need for tax simplification is not new. It dates back to 1776 with Adam Smith in his book *An Inquiry into the Nature and Causes of Wealth of Nations,* and his four maxims of taxes. At present, the need for a strategy for tax simplicity is growing among policy makers and the academic world (Tran-Nam, 2004; McKerchar *et al.*, 2008). As a result, in recent decades some governments have made efforts to simplify their tax system and to develop mechanisms to help taxpayers in an effort to decrease levels of tax noncompliance, "...in the general belief that simpler is better." (UN, 2014, p. 3)

Table 2.1 shows some of these strategies for tax simplification from various countries. According to the data, the attempts for tax simplification are mostly focused on the legislative context. In the '90s, some initiatives to rewrite tax codes were (mostly) undertaken by policy makers, in order to make reading the tax law more understandable.

Table 2.1 – Examples of strategies for tax simplification

Years	Countries	In legislative context	In administrative and compliance context
'80s	US	Reduction in itemizers; Flattening of marginal rates (Tax Reform for Fairness, Simplicity, and Economic Growth).	
	New Zealand	Including a goods and services tax (with no exemptions or zero rates); Fringe benefits tax; The number of steps in the income tax scale was dramatically reduced; Many tax incentives and subsidies were removed (Tax Reform of 1984).	Alignment of payment dates; Reduction of returns and forms (Waugh Committee).
	Bolivia	Simplified tax to be applied in very small businesses; Eliminating a number of minor taxes; Eliminating exemptions from direct and indirect taxation.	
	Colombia	Abolishing personal exemptions, income splitting and some itemized deductions.	Eliminate the need to fill tax returns for most taxpayers.
'90s	US	Rewriting tax legislation in plain English (by adopting short sections, short sentences and using the active voice).	

Years	Countries	In legislative context	In administrative and compliance context
	Australia	Rewriting tax legislation. For instance, in the provision laws, they reduced the number of words from 19,000 to 11,000 and the number of words in sentences from 241 to 31 (Tax Law Improvement Project). Abolition of nine State taxes; (Coalition Government's tax reform package).	Substitution of five existing payment and reporting systems (PAYE[34], PPS, RPS, provisional tax and company instalments) by a single system, the PAYG; Implementation of the Australian Business Number (ABN) to identify each business for all government purposes; (Coalition Government's tax reform package).
	New Zealand	Rewrote of most of the income tax Act (The rewrite Project).	
	UK	Rewriting tax legislation in plain English, (by adopting short sections, short sentences and the active voice) (Tax Law Review Committee). Rewriting most tax legislation over a period of 5 years (Inland Revenue's Tax Law Simplification Project).	Implementation of the system Pay and File for companies. Introduction of the self-assessment system for industries.
	Chile	Simplifying the tax codes.	Use of the new technologies for tax purposes.
21st Century	US		Use of a PTIN [Preparer Tax Identification Number] for all tax preparers.
	Australia	Simplify the taxation of micro business. Reducing the number of taxes; Simplifying the capital gains taxation regime; Simplifying GST (Goods and service tax) for small business; (Henry Review).	Tax Office's making it easier to comply. Online lodgement system for individual taxpayers. The Tax Pack – a do-it-yourself kit prepared by the ATO [Australian Taxation Office].
	New Zealand	Rewrite most of the income tax Act (The rewrite project - conclusion).	
	UK	Pension simplification- changes scheduled. Index of tax complexity.	Index of tax complexity.
	Portugal	Creation of a simplified regime for small business and self employed; Cash tax regime for small enterprises, in VAT [Value Added Tax]; Creation of the simplified regime for small business in the Reform of Corporate Tax.	Use of the new technologies for tax purposes.
	Spain	Creation of a regime for estimation of tax income; Creation of the simplified special regime of VAT calculation.	Use of the new technologies for tax purposes.
	Central Asian Republics	Creation of Simplified taxation for the hard-to-tax.	
	Turkey	Creation of the unified Special Consumption Tax (SCT).	Establish a modern integrated information technology support system;

Source: Bird (1992); Green (1994); Gammie (1996); James and Wallschutzky (1997); Tran-Nam (1999); McKerchar (2005); MF (2007); McKerchar *et al* (2008); Freedman (2009); IRS [Internal Revenue Service] (2009); Evans and Tran-Nam (2010); Saw and Sawyer (2010); OECD (2010d); Evans (2012); Galbiati and Zanella (2012); Mokhtari and Ashtari (2012); Whiting *et al.*, (2014); *Agencia tributaria*; *Portal das Finanças*; Australian Taxation Office; Irish Revenue; IRS.

Nevertheless, these efforts were mostly unproductive. In some countries, such as Australia, tax laws have become more complex after rewriting (McKerchar *et al.*, 2008). Some efforts to simplify tax compliance were not very successful. For example, as stated by McKerchar (2005) the «Tax Package» grew in volume, hindering its use by taxpayers and reaching 200 pages in the 2004 version. According to the literature, only the New Zealand tax system succeeded in their tax simplification effort, due to a simpler policy-maker structure[35] (McKerchar *et al.*, 2008; Saw & Sawyer, 2010).

Even so, simplifying tax legislation is only one part of the global strategy for tax simplification. Beyond rewriting tax law, the focus on simplifying some structural rules (exemptions, expenses, tax rates) and on simplifying tax compliance and reducing compliance costs is of greater relevance (OECD, 2010d; UN, 2014).

[34] Pay-as-You-Earn.
[35] In New Zealand tax laws are designed by those who will discuss and approve them.

In 2005 Portugal introduced an online pre-filing system in order to encourage voluntary tax compliance (OECD, 2010d), and Ireland created a «help guide»[36] to assist taxpayers with online compliance tasks. In 2003, the Australian Taxation Office started a «Making it easier to comply»[37] initiative, with the aim of making it easier for businesses to interact with the tax administration online and helping individual taxpayers to complete their income tax returns correctly.

Nowadays, the concern for a tax simplification system for small and medium enterprises [SMEs] is common in all countries. SMEs are most affected by the adverse effects of tax complexity but they do not have the resources to deal with it, such as by using tax expertise consultants (Evans *et al.*, 1996, 1997; OECD, 2001; EC [European Commission], 2004, 2007; McKerchar *et al.*, 2005; Lopes, 2012a; UN, 2014).

Despite all these efforts, the tax systems of most countries remain complex. We can conclude that tax simplification is a continuous process, and it is not a simple objective to achieve. As argue some authors, for tax simplification to succeed a more concerted strategy is necessary, which should be based on the simplification of the tax policy process itself (James & Wallschutzky, 1997; Barra, 2006). McKerchar *et al.* (2008) divide tax simplification into three stages: the «policy formulation tax», the «drafting of tax law» and, finally, the «application of tax law». Barra (2006) also separates it into three types «tax policy», «tax legislation» and «tax management».

Concerning tax simplification, we can verify that there are more questions and doubts than answers:

> Is tax simplification possible or is it simply a holy grail or a smoke-screen for other objectives? If it is possible, are there approaches that are more likely to be successful than others? Are some approaches completely misguided? Further, how do we know where we are in terms of reaching it? [...] what is a simple tax system and how is it best achieved? (McKerchar *et al.*, 2008, p. 367-368)

As stated by Freedman (2009, p. 156), "Even if complete simplicity is unattainable, however, general stability and good tax structures will benefit all." Thus, despite the lack of concrete results this issue is still relevant. One way to understanding the failure of tax simplification efforts involves analysing tax complexity and its determinants.

[36] Available at: www.revenue.ie/en/tax/it/leaflets/it10.html [Accessed 29th September 2013].
[37] Available at: www.ato.gov.au/About-ATO/About-us/In-detail/Key-documents/Making-it-easier-to-comply/[Accessed 29th September 2013].

2.2.1 Determinants of tax complexity

The main goals of taxes are equity, efficiency and simplicity and low compliance costs (Smith, 1776). Although these are generally accepted goals, in fiscal policy their practical application is a difficult task because some of them conflict with others.

McKerchar *et al.* (2008, p. 368) stated that "[…] in shaping a tax system, the relative importance of each of the four principles must be determined and the necessary trade-offs considered. For example, a simple, efficient system with a high degree of certainty is unlikely to be entirely equitable." For instance, it is too difficult to conciliate the goals of tax simplicity with tax equity. On one hand, tax simplicity points to fewer income brackets and tax rates; on the other hand tax equity requires more income brackets and tax rates, and the policy makers often choose equity at the expense of simplicity (Slemrod, 1992; Basto, 2004; McKerchar, 2007; James & Edwards, 2008; McKerchar *et al.*, 2008; Lopes, 2008; Martins, 2010; Evans, 2012).

Tax complexity results from the complications of trade relations and the generalization of aggressive tax planning in order to obtain higher fiscal savings, giving rise to the need for complex fiscal rules in such different areas as new technologies, movement of people and capital, derivative financial products, the globalization of markets and so on (Martins, 2005; MF, 2007; Lopes, 2008; Santos & Martins, 2009; Freedman, 2010).

Another issue that involves complexity is the process of political decisions, because policy makers often use tax laws for economic and social objectives, referred to as tax expenditures. James and Edwards (2008, p. 36) argue that "Tax systems exist not only to raise revenue but are also used in support of a range of public policy objectives in different circumstances […] a lot of the complexity arises from reasons that are not fundamentals. […]" For example, to encourage an attitude of saving we can use taxes incentives such as exemptions from capital gains. For instance, to increase the birth rate, we can use personal expense deductions in individual income tax.

McKerchar *et al*. (2008, p.372) highlighted the importance of tax policy complexity, stating that "While there may not be a single cause of complexity, there is sufficient evidence about the various causes and their impacts from which to construct a theory. That is, the less complex the policy the greater the likelihood of being able to develop law that can be readily applied."

To sum up, we identify three main structural determinants of tax complexity: the conflict among the goals of taxes; the increased complexity of trade relations and anti-abuse rules; and complex taxation policy.

2.2.2 Dimensions of tax complexity

Different authors have different perspectives on the dimensions of tax complexity. Table 2.2 presents some studies which define the dimensions of tax complexity from a general perspective.

Table 2.2 - Dimensions of tax complexity

Studies or reports/countries	Dimensions of tax complexity	
	Legislative	**Compliance**
Milliron (1985) /US	The tax law readability; The vulnerability of the law to misuse;	Nature of the topic; The quantitativeness (the number of calculations required).
McCaffey *et al.* (1990)[38] /US; Ralph Review (1998)[39]/Australia Mckerchar (2002a, 2002b, 2007) /Australia	Technical; Structural.	Compliance.
Cooper (1993)[40]/Australia	Linguistic; Policy.	Compliance.
Harris (1996)[41] /Netherlands	Form of tax law; Design of tax laws	Tax law applicability.
Tran-Nam (1999) /Australia	Legal.	Effective.
Lopes (2003) /Portugal; Gammie (1996)/UK	Legislative Complexity.	Administrative or compliance complexity.
Oliver and Bartley (2005) /Australia; Lopes (2012b) /Portugal	Legislative Complexity.	Technical complexity.

Although the authors (Table 2.2) considered differences in the dimensions of tax complexity (*e.g.* technical, structural, legislative and administrative), we grouped the various dimensions into two large categories: the legislative dimension and the compliance dimension. «Legislative complexity» is related with tax legislation itself; and «Compliance complexity» is related to compliance tasks. According to Gammie (1996) and Lopes (2003, 2012b) these two dimensions support the two major problems of the current tax systems: (i) firstly, complexity at the legislative level – the problems of tax law readability, as well as the structure of the tax system; (ii) secondly, the complexity of the declarative and administrative component.

In regard to complexity in the taxation field, the role of tax professionals has increased, thus having an understanding of their perspective on the dimensions of tax

[38] As cited in McKerchar *et al.* (2008).
[39] *Idem.*
[40] As cited in James and Wallschutzky (1997).
[41] As cited in Tran-Nam (2004).

system complexity is a key issue to our research. Therefore, Table 2.3 shows the tax professionals' perspectives on the dimensions of tax complexity.

Table 2.3 - Dimensions of tax complexity from tax professionals' perspective

Studies/ countries	Dimensions of tax complexity	
	Legislative	**Compliance**
Long and Swingen (1987) /US; McKerchar (2005) /Australia; McKerchar *et al.* (2005)/Australia/US	Ambiguity; Change; Detail.	Computations; Record Keeping; Forms.

Analysis of the data in Table 2.3 suggests a lack of studies on the perspective of tax professionals, which we identify as a knowledge gap. Here again we consider two dimensions: the «Legislative complexity», encompassing «Ambiguity», «Change» and «Detail»; and the «Compliance complexity», which includes «Computations», «Recording keeping» and «Forms».

The dimensions of tax complexity from the perspective of tax professionals can also be analysed in several areas (see Table 2.4).

Table 2.4 - Areas in the dimensions of tax complexity from the perspective of tax professionals

Dimensions of tax complexity	Areas	Studies or reports/Country
Legislative complexity	Ambiguity of tax law;	Long and Swingen (1987)/US; Green (1994)/UK; McKerchar (2005)/Australia
	Tax laws are frequently changed;	Long and Swingen (1987)/US; Green (1994)/UK; McKerchar (2005)/Australia
	Excessive number of tax rules;	Long and Swingen (1987)/US; Green (1994)/UK
	Exceptions to the rules;	McKerchar (2005)/Australia
	Complex rules of non-resident taxation.	Green (1994)/UK
Compliance complexity	Record keeping;	Long and Swingen (1987)/US; McKerchar (2005)/Australia
	Computations required;	Long and Swingen (1987)/US; McKerchar (2005)/Australia
	Tax forms (format, filing, instructions)	McKerchar (2005)/Australia
	The poor help provided by tax administration staff.	Green (1994)/UK

In the «Legislative complexity» dimension, tax professionals point out major concerns with the frequency of amendments and ambiguity of tax laws[42], the excessive number of rules and exceptions to tax laws. In the «Compliance complexity» dimension, record keeping, computations required and tax forms (format, filing and instructions) were highlighted as major tax difficulties.

In order to try to measure the dimensions tax complexity, we present some indicators in the next section.

[42] For instance, in the US tax code Laffer *et al.* (2011) report 4,400 changes in the tax codes during the period between 2000 and 2011.

2.2.3 Indicators of tax complexity and its perception

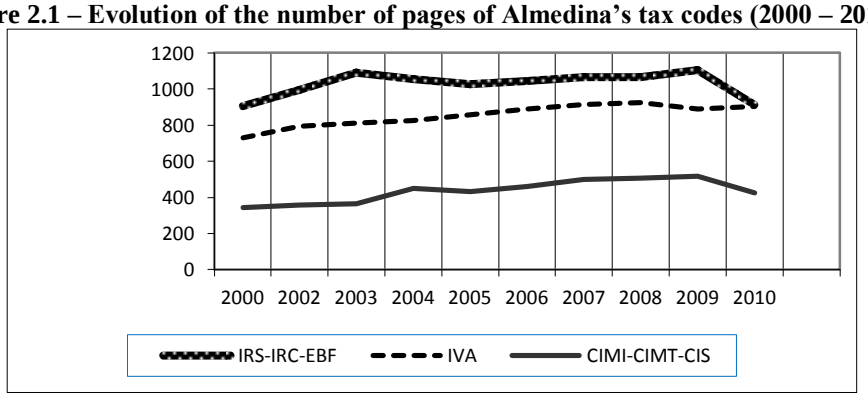
A common quantitative approach to measure tax complexity is to consider the volume and density of tax legislation. In general, the first indicator is the number of pages of tax codes, the amount of tax articles and the number of words of each article.

For instance, in the US, the number of pages for individual income tax code reached 10,000 (Logue, 2006). Moreover, according to Laffer *et al.* (2011) there was an increase of 2.4 million words in tax codes in the period of 2001 to 2010.

In Australia, the volume of tax legislation concerning small business grew from 4,000 to 7,000 pages from 2003 to 2007 (McKerchar *et al.*, 2008).

In Portugal, Lopes (2003) points out the number of pages and articles for Portuguese tax codes. For example, in 1989 the Portuguese corporate tax code had 115 articles and in 2014 it increased to 155 articles. In 2012 Lopes (2012b) presented a study which showed a tendency for an increasing number of pages in Portuguese tax codes during the first decade of the 21st century, as can be seen in Figure 2.1.

Figure 2.1 – Evolution of the number of pages of Almedina's tax codes (2000 – 2010)

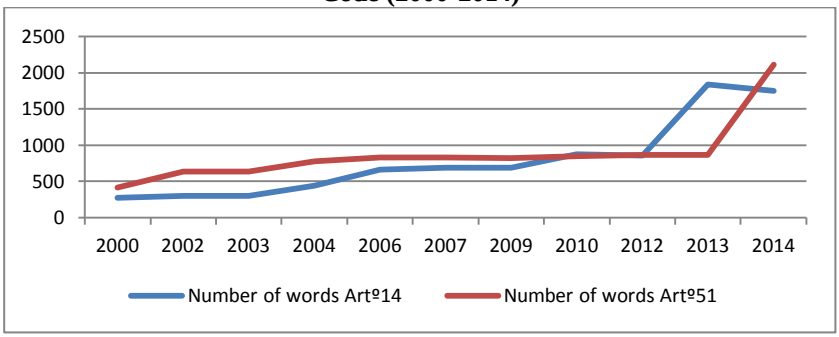


Source: Lopes (2012b)

We believe that rather than quantifying the pages, or words of tax legislation, a more useful indicator of tax legislative complexity could be the increase of the number of words in each article. For instance, in Figure 2.2 we present the evolution of two articles of the Portuguese corporate tax code, articles 14º and 51º [43] during the period between 2000 and 2014, noting a tendency toward an increasing number of words in the analyzed articles.

[43] In the year 2014 it includes Artº51 and 51º-A to Artº51-D.

Figure 2.2 - Evolution of the number of words in arts. 14.º and 51.º of Portuguese Corporate Tax Code (2000-2014)



Nevertheless, some authors argue that "The amount of rules and their density do not translate, *per se*, the increased complexity [of the tax system]" (Lopes, 2010, p. 214). For instance, we can have more complexity in one complex article than in several simple articles. Therefore, it is important to analyze the ambiguity of tax laws, for example, through readability tests («Flesch Reading Ease», «Flesch–Kincaid Grade Level**»,** and «Cloze deletion test»[44]) as well as by the perception of tax complexity.

To understand tax complexity and perception of tax complexity, it is important to answer the following questions: "[…] 'simple [or complex] in what sense?' and 'simple' [or complex] to whom?" (McKerchar *et al.*, 2008, p. 370).

Slemrod and Bakija (2008, p. 161) argue that "How complex the tax system is depends on who you are." In addition, Park and Hyun (2003) emphasize the fact that better knowledge and understanding of the tax system will influence the perception of tax complexity and taxpayers' [or tax professionals'] tax compliance.

There are several factors that influence the perception of tax complexity. The perception of tax complexity is a subjective concept because each person has his/her own perception of tax system complexity (McKerchar, 2007; Slemrod & Bakija, 2008).

Therefore, there are two distinct concepts: tax complexity – as an objective concept (*e.g.* the dimensions of tax codes); and its perception – as a subjective concept. The problem of ambiguity regarding the concept of tax complexity is caused by the lack of a conceptual line between these two sub-concepts, in the studies that compose the international literature.

[44] The first two tests are applied to the tax codes by the researcher. They give him/her scores of readability on a 100-point scale, in the first case, and ranks of scores, in the second case (in both cases, higher scores indicate easier-to-read tax codes). The last type of test is used in laboratory experiments applied to tax codes. It consists of providing the participants with a text from a tax code, with some words or some portion of text removed. Based on the "gapped" text, the participants are requested to try to understand the meaning of the text, completing the missing pieces.

While perception of tax complexity is subjective, it can be measured through objective indicators.

For instance, in the case of taxpayers' perception of tax complexity, some measurement indicators that could be used are the following: (i) the use of tax professionals to comply (Gale, 2004; Evans & Tran-Nam, 2010); (ii) the burden of tax compliance costs, which include the time spent, money and psychological costs incurred by taxpayers, individual and business (Evans & Tran-Nam, 2010; OECD, 2010e; Lopes, 2008, 2011; UN, 2014).

Concerning tax administration, it is measured through the tax administration costs, which is known as the «efficiency of tax administrations» and is usually measured by a percentage of the GDP [Gross Domestic Product] (Sandford *et al.*, 1989; Lopes, 2003; OECD, 2011).

Regarding the tax professionals' measures of perception of tax complexity, the most often used are: (i) perception of tax complexity felt by the professionals (Green, 1994; McKerchar, 2005); (ii) time spent on tax updates (Green, 1994; McKerchar, 2005; Lopes, 2009); (iii) frequency of errors caused by tax complexity (GAO [Government Accountability Office], 2006; Bloomquist *et al.*, 2007; IRS [Internal Revenue Service], 2009). In a survey McKerchar (2005) found that 99% of Australian professionals considered their tax system excessively complex, and through a laboratory experiment the GAO (2006) concluded that paid professionals also committed many errors in tax returns due to wrong interpretations of tax law.

The use of paid tax professionals due to taxpayers' perception of tax complexity is also a practical way to analyse the perception of tax complexity (Gale, 2004; GAO, 2006; Evans & Tran-Nam, 2010; TIGTA [Treasury Inspector General for Tax Administration], 2011). In the next section we will address this issue.

2.3 The perception of tax complexity and the use of paid tax professionals

The perception of tax complexity has increased taxpayers use of tax professionals (Laffer *et al.*, 2011). Table 2.5 shows the evolution of recourse to tax professionals in Portugal and Australia.

Table 2.5 - Evolution of the engagement of paid tax professionasl by taxpayers in Portugal and Australia

Countries	Type of taxpayers	1980	1990	1992	1995	1996	2002	2006
Australia	Individuals	20%		72%	75%		77%	
	Business				90%			
Portugal	Individual							25%
	Business					100%	100%	100%

Source: Baldry and McKinstry (1995 as cited in McKerchar, 2005); Sakurai and Braithwaite (2003); Lopes (2008); McKerchar *et al.* (2008)

The data shows a high level of hiring paid tax professionals, particularly among business taxpayers. This conclusion is not surprising as businesses need to comply with complex accountancy rules. For instance, in Portugal the use of tax professionals by businesses is a legal obligation since the '90s.

In relation to individual taxpayers the data shows the high level of tax professional use by Australian taxpayers, as stated by McKerchar (2005) an Devos (2012). In the US, according to the Government Accountability Office [GAO] (2006) and IRS (2009) the use of these experts is also very high. Table 2.6 shows the evolution of hiring of tax professionals by north-American individual taxpayers.

Table 2.6 - Evolution of hiring of paid tax professionals by north-American individual taxpayers

	1979	1983	1988	1996	2001	2002	2003	2005	2011	2014
% of tax forms prepared	43%	45%	50%[45]	53%	55%	56%	60%	62%	≥ 50%[46]	54%[47]

Source: Long and Caudill (1987), Klepper and Nagin (1989), Collins *et al.* (1990), Gale (2004), GAO (2006); Bloomquist *et al.* (2007); Stephenson (2007); TIGTA (2011); IRS

In the US, according to the data, after a steady increase from 1979 up to the first decade of the 21st century, the last decade shows a decrease in the use of tax professionals as a result of the use of tax preparation software. According to Masselli *et al.* (2002), the use of this kind of software presents four types of benefits for taxpayers: (i) improves the accuracy of their tax return; (ii) checks for filing errors; (iii) assists them in the interpretation of tax laws; (iv) identifies potential audits flags. However, the level of hiring tax professionals remains very high because more than half of individual taxpayers need to resort to tax professionals to comply with their tax affairs.

Therefore, understanding the taxpayers main motivations to use tax professionals is a key issue. Table 2.7 presents the main conclusions from the literature on this matter.

[45] About one-half (Collins *et al.*, 1990).
[46] "[…] more than one-half of all taxpayers […]"(TIGTA, 2011, p. 2).
[47] Available at: www.irs.gov/for-Tax-Pros [Accessed 27th April 2014].

Table 2.7 – Motivation for the use of paid tax preparers

Years	Countries	Studies	Main conclusions
'80s	US	Slemrod and Sorum (1984); Long and Caudill (1987); Slemrod (1989); Beck *et al.* (1989)	Taxpayers, due to their perception of tax complexity, use paid tax preparers to more correctly fulfil their tax obligations
'90s	US	Collins *et al.* (1990); Hite *et al.* (1992); Dubin *et al.* (1992); Hite and McGill (1992)	
	New Zealand	Tan (1999)	
21st Century	Australia	Niemirowski and Wearing (2003); Sakurai and Braithwaite (2003); Devos (2012)	
	OECD countries	OECD (2008)	

From the analysis of the data the main objective for taxpayers to use tax professionals is to surmount the problems of tax uncertainty and tax complexity. Consequently, when taxpayers hire a tax professional they mainly intend to more accurately fulfil their tax obligations. Although they have other motivations, these were never identified as the main reason. For instance, Hite *et al.* (1992) found that tax savings is the third motivation for contracting a tax professional in their target population. However, for small business owners the main cause of hiring tax professionals remains the same: uncertainty regarding tax laws and tax complexity.

Sakurai and Braithwaite (2003, p. 376) point out the relationship between the perception of tax complexity and the hiring of tax professionals, noting that: "[…] as tax systems grow in their complexity, taxpayers look to professionals conversant in tax law for expert advice." OECD (2008) refers to the internal risk-management and aggressive tax planning. Moreover, Devos (2012) points out as the second motivation «to legitimately minimise the tax paid».

The predominance of North-American studies, in the '80s and '90s reflects the role that tax professionals had in the American tax system, as a result of the early introduction of self-assessment (in 1913).

In the '90s and the 21st Century the emergence of studies from Australia and New Zealand substantiate the relevance that tax professionals earned in those countries with the introduction of self-assessment in the mid '80s.

Some studies in US have tried to understand the reasons that justify the use of tax professionals by establishing a taxpayer's profile. It is important to point out, once again, that the majority of studies conducted in the US refer to individual taxpayers, which is why the profile is limited to individual taxpayers (see Table 2.8).

Table 2.8 presents the factors which influence individual taxpayers' decision to use paid tax preparers, identified in the tax literature, as follows: (i) the age (ii) the marital status; (iii) the number of dependents; (iv) the employment status; (v) the amount of income; (vi) the burden of marginal rate; (vii) the level of complexity inherent to earned

income; (viii) the probability of auditing and the burden of tax penalties; (ix) the level of education; and (x) the tax knowledge level.

Table 2.8 – Profiles of individual taxpayer with more propensity to use paid tax professionals (US)

Determinants	Studies / Countries	Profile
Age	Slemrod and Sorum (1984)/US; Long and Caudill (1987)/US; Collins *et al*. (1990)/US; Dubin *et al*. (1992)/US	Older taxpayers
Marital status	Long and Caudill (1987)/US	Married taxpayers
Dependents	Long and Caudill (1987)/US; Dubin *et al.* (1992)/US	Taxpayers with more dependents to declare
Employment status	Slemrod and Sorum (1984) - US; Long and Caudill (1987)/US; Christian *et al*. (1993)/US	Self-employed
Amount of income	Slemrod and Sorum (1984)/US; Long and Caudill (1987)/US; Collins *et al*. (1990)/US; Klepper *et al*. (1991)/US	Taxpayers with higher incomes
Marginal rate	Long and Caudill (1987) /US; Slemrod (1989)/US; Klepper *et al.* (1991)/US; Long and Caudill (1993)/US	When the marginal rates are higher
Level of tax complexity associated with their income	Klepper *et al.* (1991)/US; Collins *et al.* (1990)/US; Dubin *et al.* (1992)/US; Christian *et al*. (1993)/US	Taxpayers with higher level of tax complexity in their income
Probability of auditing and severity of penalties	Klepper *et al.* (1991)/US; Dubin *et al.* (1992)/US	When the probability of auditing and penalties are increased
Educational graduation level	Slemrod and Sorum (1984)/US; Long and Caudill (1987)/US; Slemrod (1989)/US; Dubin *et al.* (1992)/US	Taxpayers with lower academic graduation levels
Tax Knowledge	Collins *et al.* (1990)/US	Taxpayers with lower tax knowledge

Concerning these determinants, we emphasize the probability of audits and the severity of penalties because they underline the importance of the traditional theory of tax evasion on taxpayers' tax noncompliance.

In Portugal, Lopes (2008) establishes a positive relationship between the number of income types and the hiring of tax preparers. The author also verifies that self-employed taxpayers are more likely to comply with their tax obligations with some help.

To sum up, despite the other factors involved, the taxpayers' first motivation to engage tax professionals is the perception of tax complexity (Slemrod, 1989; Tan, 1999; Sakurai & Braithwaite, 2003; Niemirowski & Wearing, 2003). In the researchers' point of view, this unanimity of findings is surprising, because the generality of studies are from the US, a country which presents a high level of tax aggressiveness, mainly through aggressive tax planning schemes or tax shelters[48]. As a result, the most recent research carried out in Anglo-Saxon countries, in particular in the US, regarding the main motivations of taxpayers for the use of paid tax professionals, aimed at assessing the veracity of the results of previous studies by trying different approaches (see Table 2.9).

[48] Sale of standardized aggressive tax planning schemes.

From Table 2.9, we can observe that until the '80s researchers only used survey and analysis of IRS data, and individual taxpayers as their target population. In the early '90s they began to use different methodologies, such as laboratory experiments. They also began to analyse different groups of taxpayers, such as business taxpayers and tax professionals.

Table 2.9 - Research methodologies: a comparative analysis

Studies/Years	Methodologies	Type of Taxpayers	Target population
Slemrod and Sorum (1984)	Survey	Individuals	Taxpayers from Minnesota (US)
Long and Caudill (1987)	Data analysis from the IRS	Individuals	North-American taxpayers
Slemrod (1989)	Survey	Individuals	Taxpayers from Minnesota (US)
Beck *et al.* (1989)	Data analysis from the IRS	Individuals	North-American taxpayers
Collins *et al.* (1990)	Survey	Individuals	Taxpayers from Pennsylvania and Oklahoma (US)
Hite *et al.* (1992)	Survey	Small business	Small business owners (US)
Dubin *et al.* (1992)	Data analysis from the TCMP	Individuals	North-American taxpayers
Hite and McGill (1992)	Survey and laboratory experiments	Individuals	North-American taxpayers
Tan (1999)	Replication of Hite and McGill (1992)'s study - laboratory experiments	Business - owners and managers of business firms	New-Zealanders taxpayers
Niemirowski and Wearing (2003)	Survey	Individuals and tax professionals	Australian individuals and tax professionals
Sakurai and Braithwaite (2003)	Survey	Individuals	Australian taxpayers
OECD (2008)	Interview	"Big Six", accounting and major law firms	Tax advisors; banks and other financial institutions.
Devos (2012)	Survey	Individuals	Australian taxpayers

Hite *et al.* (1992) used small business owners as their target population, because they regard it as the group that mostly contributes to the tax gap. Niemirowski and Wearing (2003) highlight the difference in tax knowledge among taxpayers and tax preparers, and also to emphasize the assumption among tax professionals that they have some clients who do not comply with their tax obligations. Dubin *et al.* (1992) innovated by using the analysis of data from the TCMP [Taxpayer Compliance Measurement Program]. Hite and McGill (1992) tried to contribute with a different perspective using laboratory experiments, which consisted of sending a simulated case to taxpayers' residences with advice from a tax professional about a complex tax matter. The participants (taxpayers) were asked to indicate whether they accepted, or not, the advice of the tax professional.

2.3.1 The use of tax professionals and tax aggressiveness

The main motivation to engage tax professionals is to solve problems caused by tax complexity and to better comply with tax obligations. As a result, it would be expected that the level of tax noncompliance would be reduced. However, in recent years the level of tax noncompliance has increased significantly.

For instance, in the US the individual's 1982 tax gap estimated by the US Federal Reserve was 86 billion dollars (Milliron & Troy, 1988), a value which was considered historical at the time, compared with 6.49 trillion dollars of GDP. According to the latest data, this value amounted to 197 billion dollars in 2001 (Dubin, 2007) and to 235 billion dollars in 2006, in a context of 12.71 trillion dollars and 14.72 trillion dollars of GDP, respectively. These data imply that the values of the tax gap have increased in absolute terms, as well as in the percentage of GDP.[49]

In Portugal, according to the British consultancy, «Tax Research Consultant», in 2009, the Portuguese Government lost €12 thousand million in taxes, *per* year, a high value, compared with a GDP of €155.532 million.[50]

Taking into account the high use of tax professionals and, at the same time the growth in tax noncompliance levels, we can discern there is another motivation in the use of tax professionals, *i.e*. the tax aggressiveness.

This has led some authors to study the origin of tax aggressiveness to explain the high levels of tax noncompliance.

Who takes the initiative to minimize the tax burden? Is it the taxpayers or the tax professionals, or are both in collusion?

Table 2.10 presents, by country and by period, several studies which analyse this question.

Table 2.10 - The origin of tax aggressiveness

Years	Countries	Origin of most tax aggressiveness	
		Taxpayers' initiative	Tax professionals' initiative
'80s	US	Milliron (1988 as cited in Reckers *et al.*, 1991); Ayres *et al.* (1989); Klepper and Nagin (1989b); Helleloid (1989)	
'90s	US	Cuccia (1994); Schisler (1994, 1995)	Collins *et al.* (1990); Hite and McGill (1992)
	New Zealand		Tan (1999)
21st Century	Australia		Sakurai and Braithwaite (2003)

[49] Available at: www.irs.gov/pub/newsroom/tax_gap_map_2006.pdf. [Accessed 26th June 2012] and www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_pesquisa&frm_accao=PESQUISAR&frm_show_page_num=1frm_modo_pesquisa=PESQUISA_SIMPLES&frm_texto=Produto+interno+bruto&frm_modo_texto=MODO_TEXTO_ALL&frm_data_ini=&frm_data_fim=&frm_tema=QUALQUER_TEMA&frm_area=o_ine_area_ContasNacionais [Accessed 19th May 2014].

[50] Available at: www.multpl.com/us-gdp-inflation-adjusted/table. [Accessed 19th May 2014].

In the US the source of tax aggressiveness is mostly due to taxpayers' initiative. However, in Australia and New Zealand the origin of tax aggressiveness is largely based on tax professionals' attitudes.

According to McKerchar (2005), Australian and New Zealand taxpayers were more likely to be risk averse because the penalties for tax noncompliance fell on them, not on tax professionals. To the contrary, American taxpayers use tax professionals as a defence shield against penalties; consequently this makes them more prone to be tax aggressive. Nevertheless, it is important to take into account the fact that those studies were conducted before the introduction of changes in Australian and New-Zealand tax systems regarding the compulsory registration and the application of penalties in the context of those professionals (this happened in New Zealand, in 2007, and in Australia, in 2009[51]). However, as reported by Devos (2012, p.20), regarding the Australian case, "[...]the effectiveness of this legislation upon the behaviour of tax practitioners is yet to be evaluated."

The conclusions of the previous studies present the impact the fear of penalties has on taxpayer and tax professional tax aggressiveness. Therefore, it also reflects the applicability of the traditional theory of tax evasion on professionals' noncompliant behaviour.

Furthermore, there are some studies that exploit the impact of the likelihood of audits and consequent penalties on the professionals' attitudes in tax compliance context. Those works conclude that the probability of audits and the burden of punishments have a positive effect on tax agents' levels of tax compliance (Kadous & Magro, 2001; Marshall *et al*., 2006; Givner, 2008; DeZoort *et al.*, 2012[52]).

Sakurai and Braithwaite (2003) consider three different forms to classify tax professionals' aggressiveness: the «creative accounting, aggressive tax planning», the «low risk with no fuss approach», and finally, the «cautious minimising with conflict avoidance».

Firstly, as regards «creative accounting, aggressive tax planning», these tax professionals are the ones who induce their customers or employers into tax noncompliance. Secondly, in terms of «low risk with no fuss approach», those professionals have a complete aversion to risk and do not have any kind of aggressive tax attitude, even when requested by their customers or employers. Thirdly, when it

[51] Tax Agents Services Act 2009.
[52] They are all from US, except the second, which is from Australia.

comes to «cautious minimising with conflict avoidance», these professionals have a moderate fear of taking risks and only agree to participate in any scheme of tax noncompliance if they think the possible penalties are acceptable compared with the benefits (Sakurai & Braithwaite, 2003).

Although the exposure to risk of penalties was presented as the main factor which justifies the difference in tax aggressiveness between taxpayers and tax professionals from different countries, it is important to emphasize that this is not enough to explain their attitudes toward compliance. In our view the perception of tax complexity plays a central role, but the traditional theory of tax evasion does not use tax complexity as a variable because it assumes that taxpayers understand the tax laws and know exactly what their tax liabilities and their right to deductions are. In the next section we will try to understand the role of tax complexity in tax compliance.

2.3.2 Tax complexity as a tax noncompliance determinant in tax professionals perspective

Despite the importance attributed to tax professionals in the taxation field, their role has been a missing factor in the research on tax (non)compliance. Studies on the impact of tax professionals' attitudes in fiscal systems only began in the late '80s. In the US, Scotchmer (1987), Klepper and Nagin (1989b) and Ayres *et al.* (1989) point out the relevance and the impact of the activity of tax professionals through their tax advice on the compliance of individual taxpayers' tax obligations. The same authors also highlight the lack of academic research regarding tax professionals' responsibility in taxpayers' (non)compliance.

The resulting concern about this knowledge gap was significant, so that the NAS [National Academy of Sciences] through its «Panel on Taxpayer Compliance» came to regard it as one of the weaknesses of research on the measurement of tax noncompliance in the US (Hite & McGill, 1992). In this context, Mason (1986 as cited in Milliron & Troy, 1988, p. 85), in a meeting of the American Sociological Association, referred to paid tax professionals as "[…] the unstudied group in tax compliance research."

Although four decades have now elapsed, the role of tax practitioners in tax (non)compliance remains a pertinent issue, mainly due to the lack of published studies

apart from those in Anglo-Saxon countries. In this section we will examine how the role of tax professionals is presented in the literature.

Tax professionals also perceive tax systems as having a high level of tax complexity (Green, 1994; Long & Swingen, 1987; McKerchar, 2005; Lopes, 2009). For instance, according to McKerchar (2005)[53], 99% of Australian tax professionals regard the Australian tax system as very complex.

The majority of studies on the impact of the perception of tax complexity in tax compliance among tax professionals highlight that they have the expertise to solve complex tax problems, but they can also use tax complexity and their knowledge of tax evasion schemes or aggressive tax planning to benefit their customers or employers (Ayres *et al.*, 1989; Klepper & Nagin, 1989b; Newberry *et al.*, 1993; Reckers *et al.*, 1991; Klepper *et al.*, 1991; Hite & McGill, 1992; Erard, 1993; Stephenson, 2007). Therefore, there is no consensus in the literature regarding the role of tax professionals.

Table 2.11 summarizes the conclusions of studies which examine this tri-part relationship: tax knowledge, perception of tax complexity, and tax (non)compliance.

Table 2.11 - Professionals' tax knowledge and their capacity to deal with tax complexity to comply

Studies/countries	Methodology used	Relation with tax compliance	Principal conclusion of the studies in this field
O'Donnell *et al*. (2005)/US	Laboratory experiment	Positive	The expertise of tax professionals gives them a higher capacity to deal with tax complexity in order to comply, as well as better understand the probability of penalty and the severity of punishment.
Ayres *et al.* (1989)/US	Laboratory experiment	Negative	The greater the tax professionals' tax knowledge, the better they know the more complex and more ambiguous points of tax law and can make better use of them in favour of their customers (tax noncompliance).
Reckers *et al.* (1991)/US			
Newberry *et al.* (1993)/US			
Klepper and Nagin (1989b)/US	Data from TCMP	Both relation in the same study	Positive relation: in simple and less ambiguous issues professionals use their higher level of tax knowledge to deal with tax complexity in order to comply more; Negative relation: in more complex and ambiguous issues professionals use their higher level of tax knowledge to deal with tax complexity in favour of their customers to comply less.
Klepper *et al.* (1991)/US			
Hite and McGill (1992)/US	Laboratory experiment		
Erard (1993)/Canada	Data from IRS (US)		
Stephenson (2007)/US	Laboratory experiment		

The conclusions of studies presented in Table 2.11 can be grouped into three sets:

O'Donnell *et al.* (2005) highlight the importance of tax knowledge to deal with tax complexity in order to comply.

[53] Results from a questionnaire survey conducted through ATO (Australian Taxation Office), directed to 20,000 registered Australian tax agents.

Ayres *et al.* (1989), Reckers *et al.* (1991) and Newberry *et al.* (1993) state that the higher the tax professionals' tax knowledge, the higher is their use of tax complexity and tax law ambiguity in favour of their customers or employers, consequently the level of tax noncompliance increases.

The last set of studies establishes a relationship between tax knowledge, tax professionals' aggressiveness and the levels of tax complexity and ambiguity involved. Authors such as Klepper and Nagin (1989b), Klepper *et al.* (1991), Hite and McGill (1992), Erard (1993) and Stephenson (2007) argue that tax professionals can have dubious and flexible attitudes towards tax compliance, depending on the level of tax complexity. Therefore, tax professionals take a positive attitude towards tax compliance when tax cases are not complex and ambiguous. However, when tax law gives rise to ambiguous interpretations (grey areas), professionals tend to make use of their tax knowledge around this ambiguity in order to obtain tax savings.

To sum up, tax professionals can have two kinds of approaches (positive or negative) to compliance in the context of tax complexity.

On one hand, according to Scotchmer (1989 as cited in Schisler, 1995), Sakurai and Braithwaite (2003) and GAO (2003, 2011) the tax professionals' role is crucial in solving the problems of tax law ambiguity, particularly in reducing the uncertainty of fiscal laws. GAO (2003) points out that most taxpayers believe that they benefit from the use of tax professionals, because filing tax return forms is too complex.

On the other hand, nowadays, tax complexity is associated with taxpayers' tax noncompliance, in particular with the used of help of tax professionals. The recent media attention to tax inversion by multinationals like Starbuck's in the UK, Microsoft, HP, Apple and Intel presents excellent examples of large companies' using tax complexity for aggressive tax planning, intended by tax professionals. This was elucidated by Briault (2005, p. 27) "[…] when governments increase the amount and complexity of tax legislation, large companies and their advisers are in fact beneficiaries because there are more loopholes and planning opportunities to exploit."

McGill (1988) writes that, due to the ambiguity of tax laws, the US tax system has become a game between taxpayers and tax administration in which the tax professionals do not have a neutral role, they play the role of "coach", and sometimes they take the role of being an effective "player" in the game instead of the taxpayer. It should be noted that tax complexity encourages games of fiscal engineering. However, it is up to the tax professionals to decide whether to participate.

The increasing use of tax complexity on behalf of taxpayers through aggressive tax planning, tax avoidance, tax evasion and fraud reduce tax revenue and are of major concern for tax administrations. Their great rise in recent decades is due to two factors in particular: (i) the work done in this area by paid tax professionals and attorneys specializing in tax matters; (ii) the fact that tax evasion and other noncompliance activities are mostly classified as a crime of reduced severity, *i.e.*, the penalties are negligible compared with the tax savings gained (Karlinsky *et al.*, 2004; Sanches, 2010; Aljaaidi *et al.*, 2011).

Despite tax complexity having negative effects on tax compliance, it is important to note that some level of tax complexity is necessary to ensure the equilibrium of several goals of a good tax system. Therefore, the study and management of tax complexity has become an important subject of tax matters (Evans & Tran-Nam, 2010; Evans, 2012).

In this context, it is necessary to find an equilibrium between the levels of tax complexity that taxpayers are willing to accept in order to get a fairer tax system and the negative repercussions of tax complexity, including the costs of tax compliance and the increase of tax noncompliance.

In the paid tax professionals perspective some level of tax complexity is also necessary. If the tax system were excessively simple, tax professionals would lose their role and ultimately could become expendable for taxpayers.

2.4 Conclusions

This essay started by analysing the concepts of tax complexity and tax simplicity, although, despite the large number of studies, we find there is no clear definition in the literature.

The definition of tax complexity comprises two related sub-concepts; «tax complexity» and «the perception of tax complexity», and the literature review does not consider them. We believe this conceptual gap is largely due to a failure of focus in the studies on tax complexity. What are they referring to? Are they focused on objective tax complexity, or to the perception that each "player" has regarding tax complexity?

Therefore, on one hand, «tax complexity» is an objective perspective of tax complexity which can be measured through indicators, such as the number and the dimension of tax codes. On the other hand, «perception of tax complexity» is a

subjective perspective of tax complexity, because each «player» has his own perception. Although the second sub-concept is subjective, it can be rated through objective indicators from three different perspectives: (i) the taxpayers – by tax professional use rates for compliance, by the burden of tax compliance costs including the time spent and financial and psychological costs incurred; (ii) tax administration – through cost and efficiency; (iii) tax professionals – by their perception of tax complexity, time spent on frequent tax updates and errors caused by tax complexity.

We can also divide tax complexity into two large dimensions: «legislative complexity» and «compliance complexity», *i.e.* on the one hand, the complexity of tax laws and difficult readability, as well as complexity related to tax system structure, and on the other hand the complexity associated with compliance tasks. In order to better understand the problem of tax complexity, these dimensions can be aggregated into areas which can be different, depending on the particular problems of each tax system.

The high levels of tax system complexity are mostly due to three major structural determinants: conflict among the objectives of taxes; greater complexity of trade relations and Governmental response with many more sophisticated anti-abuse rules; and the complexity which is presented in taxation policy.

From the literature review, we find that in many countries the recognition of elevated levels of tax complexity and its perception and relation to tax noncompliance originated in the ‘90s, through efforts to simplify tax codes by rewriting them with the objective of making them more comprehensible. However, those efforts were mostly unproductive; therefore, the tax systems of most countries remain excessively complex.

We note that a global strategy for tax simplification is necessary, and that it is a complicated and continuous process. Furthermore, at the present tax simplification reforms, more than rewriting tax laws, is focused on simplifying structural and compliance rules of tax laws as well as minimizing the levels of tax complexity in the SME context.

At the present time, in most tax systems tax professionals are a crucial part of tax compliance tasks. As a result, it is necessary to understand their role in the process of tax compliance and tax complexity. The role of tax professionals and their influence on taxpayers’ compliance only began to be studied in the late ‘80s. This «new» line of research extended the frontiers of the knowledge gap about tax (non)compliance, since the traditional theory of tax evasion, the most widespread at the time, did not include two important variables – the impact of the use of tax professionals and tax complexity.

We verify the widespread use of paid tax professionals in countries such as the US, Australia, New Zealand, and Portugal. In many countries, these professionals have progressively substituted individual taxpayers in their compliance with most tax obligations in regard to their judgment and choices in tax affairs.

The main cause for the large hiring of tax professionals, cited by taxpayers, is their need to mitigate the uncertainty that the perception of tax complexity causes. Thus, we highlight the use of tax professional as an indicator of high perception of tax complexity in those countries.

Therefore, we can say that, mainly due to tax complexity, the use of tax professionals is high among business and individual taxpayers. Some North American authors have conducted studies that enable profiling individual taxpayers with the highest propensity to hire professionals. Those taxpayers present the following characteristics: (i) older taxpayers; (ii) married taxpayers; (iii) taxpayers with more dependents; (iv) self-employed; (v) taxpayers on high-incomes; (vi) taxpayers subject to high marginal rates; (vii) taxpayers who perceive a high level of tax complexity in their income; (viii) taxpayers who perceive an increase in the probability of audits and penalties; (ix) taxpayers with low education levels and reduced tax knowledge.

Thus, we emphasize the important role of taxpayers' perception of tax complexity as well as the presence of the traditional theory of tax evasion, through their fear of probability of audits and penalties as key motives for taxpayers to hire a tax professional. Moreover, we conclude there is another important reason: tax aggressiveness, both in the taxpayer and tax professional context. The level of tax aggressiveness can be influenced by other factors beyond tax complexity, such as the fear of noncompliance penalties and their tax knowledge, *i.e.* their expertise.

Tax professionals' aggressiveness can be classified into three types of attitudes: «creative accounting, aggressive tax planning», «low risk with no fuss approach», and «cautious minimising with conflict avoidance». The first type persuade their customers or employers to tax noncompliant behaviours and the second have a strong sense of risk aversion; consequently, they do not have tax aggressive attitudes. Finally, the third profile has a moderate dread of taking risks. In this case, tax professionals do not decide without a deep cost-benefit analysis, and only then do they venture into advantageous situations.

In studies which analyse this subject there is a lack of consensus regarding tax professional aggressiveness, *i.e.* their attitudes toward tax compliance. The different

levels of tax aggressiveness among professionals are explained mostly by the use of their tax knowledge, as well as the penalties for tax noncompliance. In a simple scenario tax professionals can have a positive effect on increasing tax compliance by using their tax knowledge to help taxpayers overcome problems caused by tax complexity. In more ambiguous situations, tax professionals can use their tax knowledge to take advantage of tax complexity in favour of the taxpayers they represent, and thereby undermine the collection of taxes.

To resume, the perception of tax complexity is a key variable, both in the context of the performance of tax professionals and as a primary motivation taxpayers to hire them.

The main limitations identified in this literature review are related to the origins and perspectives of the studies analysed, which are mostly from the US, Australia and New Zealand; consequently there is a lack of studies about Continental European countries, as a result which we identify as a knowledge gap as a result.

We also identify a knowledge gap in the lack of studies that analyse the impact of the perception of tax complexity on the tax compliance process in the perspective of tax professionals. Thus, for future research we believe it is important to understand the effect of tax professionals' perception of tax complexity on their attitudes towards tax compliance.

Essay 3 -Tax compliance and tax complexity: empirical contributions from Portuguese tax professionals (*TOCs*)

3.1 Introduction

Tax professionals have playing an ever increasing role in current tax systems as a result of more complex and ambiguous tax laws. As a consequence, they are being hired more and more by taxpayers to assist them in complying with their tax obligations.

Nowadays, the role of tax professionals has become an important issue in tax policy. In Portugal, the study of tax professionals' activity has also become relevant for two reasons.

Firstly, some taxpayers, in particular corporate taxpayers and the largest self-employed, are required by law to hire professionals to meet their tax obligations. Thus, tax professionals – in Portugal referred to as *TOCs* [*Técnicos Oficiais de Contas*] - enrolled in their professional accountancy association, the *OTOC* [*Ordem dos Técnicos Oficiais de Contas*], are the only tax professionals authorized and recognized by the Portuguese tax administration to replace businesses in tax compliance matters. In Portugal, businesses activities and incomes are taxed through *TOCs*. Moreover, some individual taxpayers also use professional advice.

Secondly, despite some efforts to simplify the Portuguese tax system[54], it is known to be very complex (Santos & Martins, 2009; OECD, 2010a; World Bank, 2011a, 2011b 2013a, 2013b; SGI [Sustainable Governance Indicators], 2011). Consequently, *TOCs*, more than taxpayers, experience the issue of tax complexity, since their activity comprises the resolution of different tax problems for their clients, or employers.

Therefore, the perspective of tax professionals could play an important role in the future design of Portuguese tax policy.

This research proposes to achieve two main goals: firstly, we will try to design a socio-demographic, professional and technical overview of Portuguese Chartered Accountants (the Portuguese tax professionals - *TOCs*). Secondly, we will attempt to ascertain the perception of tax professionals as regards the Portuguese tax system's complexity and its consequences in terms of tax compliance.

To achieve those objectives, in 2013 a questionnaire was sent to assess the *TOCs*' views regarding tax complexity and tax compliance. This essay presents some findings of that survey, by reporting the conclusions of 994 questionnaires responded to by *TOCs* in active service.

[54] The most relevant was in 2005, with the creation of the «Working Group on Tax Simplification», whose report was published in 2007 (MF, 2007) and the introduction of technological innovations, in the context of the *Simplex* (Government program), which aims to cut bureaucracy in governmental services, particularly the computerization of the majority of tax obligation.

We believe the results of this survey contribute to the literature by presenting new empirical evidence from a country about which there are few previous published studies.

This essay is divided into four parts, apart from this introduction: literature review, drawing of research hypotheses, research methodology, analysis of data and discussion of results. Finally, we reach our main conclusions and suggest further lines of research.

3.2 Tax literature review

In the international tax literature, we can find a few studies that have been conducted to provide a professional and technical characterization of tax professionals, in order to understand their key role in tax systems, as well as in the tax compliance process.

The tax issues related to tax professionals that are most discussed in international tax literature are the determinants of their attitudes, in particular the complexity of the tax systems and their perception about it, the use of their tax knowledge, the burden and the effect of penalties on their activity, and the consequences of tax complexity for tax compliance tasks (Ayres *et al.*, 1989; Reckers *et al.*, 1991; Green, 1994; Samelson & Schloemer, 2001; O'Donnell *et al.*, 2005; McKerchar, 2005; Bloomquist *et al.*, 2007; OECD, 2008).

Long and Swingen (1987), of the US [United States], Green (1994), of the UK [United Kingdom], and McKerchar (2005), of Australia, have found that the majority of tax professional respondents perceive high levels of tax complexity in the tax systems of their countries.

Table 3.1 below shows the main areas of tax complexity perceived by those tax professionals. In this table, we highlight the following areas of tax complexity, which are common to all the studies reviewed: «Ambiguity and uncertainties of tax laws»; «Tax laws frequently change»; «Numerous rules» and «Confusing tax forms». Thus, tax professionals relate tax complexity mainly to the ambiguity and excessive changes in tax laws as well as to the excessive burden of the need to comply. Thus, there seem to be two dimensions of tax complexity: the legislative and the compliance one.

Table 3.1- Areas of tax complexity perceived by tax professionals – some comparative results in the US, the UK and Australia

Areas of tax complexity	Long and Swingen (1987)/US	Green (1994)/UK	McKerchar (2005)/Australia
Ambiguity of income tax rulings			X
Ambiguity of income tax cases			X
Ambiguity and uncertainties of tax laws	X	X	X
Tax laws frequently change	X	X	X
Numerous rules	X	X	X
Too many exceptions to rules			X
Complex rules of non-resident taxation		X	
Record keeping too detailed	X		
Record keeping too onerous			X
Confusing tax forms	X	X	X
Confusing tax forms instructions			X
Too many computations	X		X
Computations too difficult			X
Reduced help provided by tax administration staff		X	

Source: Adapted from Long and Swingen (1987), Green (1994), and McKerchar (2005)

Moreover, tax knowledge is considered a very important determinant in professionals' attitudes towards taxation, with greater impact on the perception of tax complexity and tax compliance (O'Donnell *et al.*, 2005).

Thus, the level of tax knowledge for tax professionals appears to be a key issue. However, the concept of tax knowledge "[…] is not a clear construct", as stated by Eriksen and Fallan (1996, p. 389). The variable tax knowledge, or level of education, are used in the same meaning by Jackson and Milliron (1986)[55], O'Donnell *et al.* (2005), GAO [Government Accountability Office] (2006), Bloomquist *et al.* (2007). Samelson and Schloemer (2001) define tax knowledge as the set of variables such as level of education, certification, experience and continuing professional education.

Therefore, accordingly to the lack of consensus in the literature review regarding this concept, we believe that we can define tax knowledge as a construct composed by the combination of different variables, such as a degree, academic theoretical knowledge, in particular as regards tax matters (and their updating), as well as professionals' tax experience. Table 3.2 below presents the variables which comprise tax knowledge.

Thus, although the degree (level of education) is an important variable, it is insufficient, since there are other variables which together explain the ability of professionals to deal with tax compliance issues.

[55] In their model they use the variable «education». However, they define «education», in this context, as taxpayers' tax knowledge, as well as their knowledge about the opportunities for tax noncompliance.

Table 3.2 – Variables which compose tax knowledge construct

Variables	Studies
Degree[56]	Vogel (1974); Spicer and Lundstedt (1976 as cited in Eriksen and Fallan, 1986); Song and Yarbrough (1978); Laurin (1986 as cited in Eriksen and Fallan, 1986); Ayres *et al.* (1989); Bonner *et al.* (1992); Kinsey and Grasmick (1993); Roberts (1998)[57]; Samelson and Schloemer (2001); Park and Hyun (2003)
Tax experience[58]	Ducan *et al.* (1989 as cited in O'Donnell *et al.*, 2005); Helleloid (1989); LaRue and Reckers (1989 as cited in Newberry *et al.*, 1993); Ayres *et al.* (1989); Reckers *et al.* (1991); Newberry *et al.* (1993); Bonner *et al.* (1992); Green (1994); Roberts (1998); Samelson and Schloemer (2001)
Theoretical knowledge on tax matters[59]	Bonner *et al.* (1992); Eriksen and Fallan (1996); Roberts (1998); Samelson and Schloemer (2001); GAO (2006); Loo (2006); Hasseldine (2009)

Moreover, Ayres *et al.* (1989) establish a relation between the size of corporate customers and the increasing complexity of tax issues, and Bloomquist *et al.* (2007) relate the dimension of firms in which tax professionals carry out their functions to their attitudes towards tax complexity, reflected in their mistakes entered on tax returns. Both conclude from this that tax professionals who work in larger firms commit fewer errors resulting from tax complexity.

Therefore, our aim in this essay is to understand the relation of perception of tax complexity and the consequences for their customers'/employers' tax compliance. In the literature there are three main types of difficulties caused by high levels of tax complexity: (i) tax professionals spend more time in tax updating; (ii) tax professionals are more likely to commit mistakes in tax matters; (iii) tax professionals have greater opportunities for exploiting the ambiguity of the tax laws in taxpayers' favour (Green, 1994; McKerchar, 2005; GAO, 2006; OECD [Organisation for Economic Co-operation and Development], 2008; Laffer *et al.*, 2011). Moreover, the role of tax complexity in the creation of opportunities to use the ambiguities and loopholes in the tax laws is related to the use that tax professionals make of their tax knowledge (O'Donnell *et al.*, 2005; Stephenson, 2007).

Do tax professionals use their tax knowledge in order to resolve ambiguity and uncertainties in tax law created by tax complexity, contributing positively to tax compliance, or does the opposite occur?

There is some research which studies this tripartite relationship: tax knowledge, perception of tax complexity, and tax compliance; and these present three types of relationship: (i) positive, *i.e.* a higher level of professionals tax knowledge affords them

[56] In some studies, it is referred to as «education».
[57] This author splits it into two factors: experience and tax knowledge.
[58] Knowledge gained by experience (in some cases without theoretical rationale underpinning it).
[59] Theoretical knowledge acquired academically and constantly updated in frequent tax seminars.

a better capacity to deal with tax complexity in order to comply; moreover, a higher level of tax knowledge gives them a better perception of the probability of detention and severity of punishment for taxpayers and for themselves; (ii) negative, *i.e.* the greater tax professionals' tax knowledge is, the better they know the more complex points and the ambiguities of tax law and the better use they can make of these in favour of their customers, or employers, (which probably results in more tax noncompliance); (iii) a combination of both (i) and (ii), *i.e.* as regards less complex and ambiguous issues professionals use their higher level of tax knowledge to deal with tax complexity, in order to comply more strictly with the tax law. However, as regards more complex and ambiguous issues, they use their higher level of tax knowledge to deal with tax complexity in favour of their customers, or employers, to comply less (Reckers *et al.*, 1991; Klepper *et al.*, 1991; Newberry *et al.*, 1993; Erard, 1993; O'Donnell *et al.*, 2005; Stephenson, 2007).

The conclusions of prior research are related to the different attitudes of the tax professionals towards tax aggressiveness. Some authors argue that professionals do a cost-benefit comparison, in particular weighing fear of punishment against their customers' importance, or the fear of being dismissal (Reckers *et al.*, 1991; Sakurai & Braithwaite, 2003).

Furthermore, in the tax literature review, the determinant considered most important by tax professionals, as far as tax aggressiveness is concerned, is the fear of punishment. The majority of studies conclude that there is a negative relation between aggressive tax noncompliance and the probability and severity of penalties (Reckers *et al.*, 1991; Tan, 1999; O'Donnell *et al.*, 2005; McKerchar, 2005; OECD, 2008; Gutman, 2012). Therefore, there are other factors that tax professionals take into account: (i) tax professionals' propensity to take risks, with a positive impact (Sakurai & Braithwaite, 2003); (ii) customers' tax aggressiveness, with a positive impact for tax noncompliance (Reckers *et al.*, 1991; Schisler, 1994); (iii) the perception of fairness and equity, with a negative impact (Schisler, 1995).

Regarding the influence of age and gender, we do not know published studies that discuss the effects of these two variables on tax complexity and noncompliance, in the tax preparers context. However, such studies do exist in relation to taxpayers. According to these, the oldest taxpayers have a higher perception of tax complexity and are less prone to tax noncompliance; women also have a fuller understanding of the above and are also less likely to engage in tax noncompliance (Klepper *et al.*, 1991;

Long & Caudill, 1993; Mckerchar, 2002b; Schuetze, 2002; Erard & Ho, 2003; Kastlunger *et al.*, 2010; Torgler &Valev; 2010).

In the following sections, we set out the research hypotheses and methodology. Then we present and discuss the results of our empirical study, and compare it with the results of the international tax literature.

3.3 Research Hypotheses

Basing our study on the international tax literature review, we set out our research hypotheses, as follows:

3.3.1 Perception of tax system complexity and the dimensions of tax complexity

According to Long and Swingen (1987), Green (1994), McKerchar (2005) and McKerchar *et al.* (2005), there are areas of tax complexity, which are grouped into dimensions of tax complexity, the legislative and the compliance dimensions, and which reflect tax professionals' perception of the complexity of the tax system. We need to consider the possibility that their perception of these dimensions of tax complexity can increase or reduce their perception of tax system complexity as a whole. In this regard the hypotheses to be tested are as follows:

H1: *There is a relation between tax professionals' perception as regards the legislative dimension of tax complexity and their perception about tax system complexity.*

H2: *There is a relation between tax professionals' perception as regards the compliance dimension of tax complexity and their perception about tax system complexity.*

3.3.2 Perception of tax complexity, age, gender and tax non compliance

As we previously mentioned, in prior published research relating to paid tax professionals there is no evidence to suggest that perceptions of tax complexity and the propensity to engage in tax noncompliance are different depending on their age or gender. Nevertheless regarding taxpayers' age and gender, there are studies which seem to show that older people and women are more susceptible to the uncertainty generated by tax complexity and are thus more likely to comply (Klepper *et al.*, 1991; Long &

Caudill, 1993; Mckerchar, 2002b; Schuetze, 2002; Erard & Ho, 2003; Kastlunger *et al.*, 2010; Torgler &Valev; 2010). It will be interesting to ascertain whether these differences in taxpayers are also observable in *TOCs*, so we intend to draw the latter's profile. For this purpose, we have formulated the following neutral research hypotheses:

H3: *TOCs' perception in relation to tax system complexity is not related to their age.*

H4: *TOCs' perception of tax system complexity is not related to their gender*.

H5: *TOCs' propensity to engage in tax* noncompliance (non-aggressive and aggressive) *is not related to their age.*

H6: *TOCs' propensity to engage in tax noncompliance (non-aggressive and aggressive) is not related to their gender*.

3.3.3 Perception of tax complexity, tax knowledge and tax noncompliance

Concerning tax knowledge, there is some empirical evidence that supports the existence of a link between tax professionals' tax knowledge and their capacity do deal with tax complexity in order to comply or not to comply (Ayres *et al.*, 1989; O'Donnell *et al.*, 2005; Stephenson, 2007). Basing our findings on the literature review, we believe that the different levels of tax knowledge are reflected in both perception of tax system complexity and attitudes towards taxation. Therefore, we present the following research hypotheses:

H7: *TOCs' perception of tax system complexity is related to their tax knowledge.*

H8: *TOCs' propensity for tax noncompliance (non-aggressive and aggressive) is related to their tax knowledge.*

3.3.4 Perception of tax complexity, the dimension of clients/employers and tax noncompliance

To profile Portuguese tax professionals, it is important to understand whether there is a relationship between the size of customers / employers and the way in which they perceive tax system complexity and deal with tax noncompliance opportunities.

In Portugal, we can "measure" the size of taxpayers whom *TOCs* deal using both means: in the first place, through the turnover of their customers or employers, and in

the second place, by the way a professional develops his/her activity, because in general, those who carry out their activity in accountancy and taxation firms deal with taxpayers of a smaller size. In our literature review, only Ayres *et al.* (1989) and Bloomquist *et al.* (2007) establish a relationship between perception of tax complexity and the dimension of clients, and the dimension of the accountancy and taxation firms in which the tax preparers carry out their functions. According to those authors, the professionals who work with the biggest taxpayers deal with more complex matters, but are less prone to commit errors due to tax complexity.

Moreover, some studies show that small taxpayers experience tax complexity problems more, and have less ability to derive any benefit from them, through aggressive tax planning (OECD, 2001; EC [European Commission], 2004, 2007; McKerchar *et al.*, 2005; Lopes, 2012a).

Our research hypotheses are as follows:

H9: *There is a relation between the dimension of companies in which tax professionals carry out their functions and their perception regarding tax system complexity.*

H10: *There is a relation between the dimension of companies in which tax professionals carry out their functions and their tax noncompliant behaviour (non-aggressive and aggressive), caused by tax complexity.*

3.3.5 Perception of tax complexity, tax aggressiveness and tax noncompliance

Concerning the impact of the perception of tax complexity on voluntary and involuntary compliant behaviour, all the studies show that the one relates to the other.

In the tax professionals context, GAO (2006), Bloomquist *et al.* (2007) and Laffer *et al.* (2011)[60] report that in addition to intentional tax noncompliance, the opportunity for which can be provided by tax complexity (explained in the previous hypothesis, in its link to tax knowledge), tax professionals also make unintentional errors due to tax complexity. GAO (2006) and Laffer *et al.* (2011) refer clearly that tax complexity provides opportunities for both voluntary and involuntary tax noncompliance, from a tax preparer's perspective; *i.e.* it also increases his/her chances of aggressive tax planning. Consequently, our next research hypotheses are:

[60] By referring to the study of Curt Baker, performed in 1996.

H11: *TOCs' perception of tax system complexity is related to their tax noncompliant and tax aggressive behaviour.*

H12: *TOCs' perception of the relation between tax complexity and noncompliant behaviour (non-aggressive and aggressive) is related to tax noncompliant and tax aggressive behaviour.*

3.3.6 Tax aggressiveness and fears of punishment

Tax professionals consider a number of other factors, such as fear of punishment, customer importance, or the fear of dismissal, tax professionals' propensity to take risks, customers' (or employers') tax aggressiveness, and professionals' perception of fairness and equity, in their decisions whether or not to make use of tax law complexity, and more specifically tax law ambiguity, in aggressive tax planning schemes (Reckers *et al.*, 1991; Schisler, 1994; Schisler, 1995; Sakurai & Braithwaite, 2003).

Our research hypothesis is as follows:

H13: *TOCs' tax aggressiveness, based on the ambiguity of tax law, is related to fears and psychological factors that TOCs weigh up in making their decisions.*

In the next section we present our research methodology.

3.4 Research methodology

In this research methodology, we will define the technique of data collection as well as the statistical tools chosen in order to achieve the main objectives of this research.

3.4.1 Research objectives

The main objective of our research is to analyse the levels of tax complexity perceived by *TOCs* and its relation with their tax compliance.

Bearing in mind the overall goal of this research, we formulate the following specific objectives concerning the attitudes of Portuguese tax professionals: (i) to ascertain the level of tax complexity they perceive with regard to Portuguese tax system; (ii) to ascertain the number of dimensions of tax complexity; (iii) to understand how their tax knowledge affects their perception of tax complexity; (iv) to identify other factors relating to their perception of tax complexity; (v) to discover the direct relation between perception of tax complexity and their tax noncompliant behaviour and tax

aggressiveness; (vi) to recognize the impact that the fear of discovery and punishment for tax noncompliance has on whether they adopt more or less aggressive attitudes; (vii) to understand whether other determinants of their tax aggressive behaviour exist.

To achieve those objectives, we will undertake an empirical study based on data collection from a sample of our target population: the Portuguese Tax Professionals (*TOCs)*. Therefore, this research is integrated into the positivist theory (Royer & Zarlowski, 2001), because its aim is to measure subjective issues objectively, namely the perception of professionals regarding a component of their activity, *i.e.* the tax complexity that they deal with, and its relationship with their tax (non)compliant behaviour and their tax aggressiveness.

The following section is devoted to the description of the research method used to collect data.

3.4.2 Data collection and pilot study

In order to collect the data, following the suggestion of Raupp and Beuren (2006) we have used a survey in the form of a questionnaire, addressed to Portuguese tax professionals.

First, in order to achieve our main goals, we delineate the first version of the questionnaire, carefully choosing the language used, the most appropriate questions and the most suitable scales (Hill & Hill, 2008; Larossi, 2011).

Next, to ensure the suitability of the questions, as well as their readability, during the period between 10th and 14th January 2013 a pre-test was carried out, to perform the consistency and validation test for the questionnaire (Royer & Zarlowski, 2001; Ferreira & Sarmento, 2009).

The pre-test was performed by ten volunteers: seven tax professionals that belonged to the target population and three who cumulatively satisfied two requirements, to be a member of the target population and to be a university professor (Ferreira & Sarmento, 2009). The survey was sent to each volunteer by electronic mail, as well as a form to the volunteer report their suggestions. Each respondent was asked to report his/her difficulties in interpreting or filling in the questionnaire, to offer their suggestions for changes, and to indicate the time taken to fill it out. Based on the suggestions collected, the survey has undergone several improvements: (i) some questions were reformulated; (ii) some ambiguous words were replaced; (iii) the options

«do not want to answer» were introduced into Questions 25 and 27 (Appendix A); (iv) the layout of the questionnaire was greatly improved.

During 17th and 18th January 2013 the new version of the questionnaire was pilot-tested, before being fully implemented (Royer & Zarlowski, 2001; Ferreira & Sarmento, 2009). This pre-survey was applied to a sample of ten voluntary *TOCs*. Resulting from the pilot test minor adjustments were made, in order to obtain the final version (see Appendix A[61]).

Hence we chose to apply the questionnaire without the presence of the researcher, mainly because it contained sensitive issues, particularly relating to tax noncompliance. The presence of the researcher might have intimidated the respondents and thus have led them to distort the reality (Ferreira & Sarmento, 2009). We obtained official authorization from the *OTOC* to implement the survey in its tax seminars, called «*Reuniões Livres*» (free tax seminars), around the entire country. Moreover, *OTOC* was kind enough to help by distributing it, in print form, at the beginning of the meetings and collecting it after completion at the end. This seemed a good way to introduce the survey, because the meetings are held countrywide and the number of attendees is large, so that a reasonable number of responses was "potentially" guaranteed, at a reduced cost.

Nevertheless, we also decided to place the survey online, and to spread the link through the forum of the *OTOC* and other forums frequented by tax professionals, in order to increase the number of inquiries answered and allow the professionals who do not attend those tax seminars the opportunity to participate in this study. According to Ferreira and Sarmento (2009), to apply online surveys it is necessary that the target audience have computers and internet use at their disposal, situations that apply to Portuguese tax professionals, because they comply with tax obligations mostly by electronic forms. Figure 3.1 shows the evolution of the questionnaire construction and its application.

Figure 3.1 – Evolution of the questionnaire construction and its application

[61] Although the questionnaire used was written in Portuguese, in this dissertation we present the English version in Appendix A.

The final version of the questionnaire is divided into four main parts: (i) and (ii) characterization of tax professionals; (iii) *TOCs*' perception of Portuguese tax system complexity; (iv) *TOCs*' perception in relation to tax (non)compliance (see Appendix A). In the questionnaire the set of questions aims to achieve the following:

(i) To make a socio-demographic, professional and technical characterization of the respondents (Questions 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 and 20);

(ii) To evaluate their perception regarding tax system complexity (Questions 11, 12, 13, 14, 15, 16, 19 and 22);

(iii) To appraise their need for tax updating and how important they consider this to be (Questions 17, 18, 20 and 21);

(iv) To understand the impact of tax complexity on *TOCs'* tax noncompliance (Questions 23, 24, 25 and 26);

(v) To evaluate the impact of tax complexity on *TOCs*' propensity to participate in aggressive tax planning schemes (Questions 27 and 28).

Regarding the type of questions, the nature of variables and the scales of attitudes, we have used the following (Porton & Beuren, 2006; Hill & Hill, 2008; Larossi, 2011):

(i) Closed dichotomous questions - nominal scale (Questions 1 and 5);

(ii) Open questions (Questions 2, 3, 7, 20 and 29);

(iii) Closed multiple response questions - ordinal scale (Questions 4, 6, 9 and 10, 21, 24);

(iv) Closed multiple response questions - nominal scale (Questions 14, 25 and 27);

(v) Questions with Likert attitude scale - interval scale (Questions 11, 12, 13, 15, 16, 17, 18, 19, 23, 26 and 28);

(vi) Open multiple response questions - nominal scale (Questions 8 and 22).

3.4.3 Target population and sample

Our target population is the Portuguese tax professionals (*TOCs)* in active service, which amount to 38,614 members[62]. To implement our questionnaire in paper format, we use the members present in the *OTOC [Ordem dos Técnicos Oficiais de Contas]'s* tax seminars of February 2013. Furthermore, as already stated, we put the same questionnaire online.

[62] Information provided by *OTOC* in February 2013.

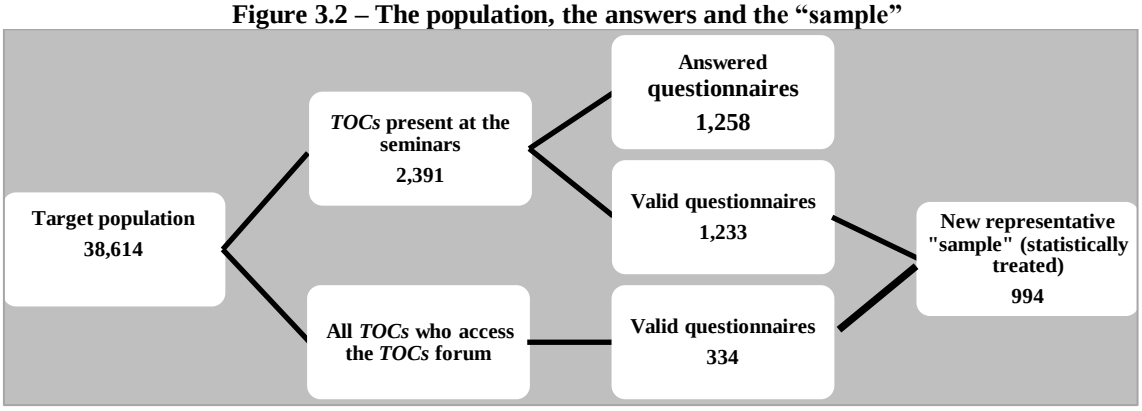
We have collected 1,258 questionnaires answered on paper and 334 answered online, amounting to a total of 1,567 valid questionnaires (see Tables I and II, Appendix B).

To apply our survey, we used a convenience sample, because we applied it in the *OTOC* seminars. However, this means of sampling involves problems regarding the representativeness of the population.

In order to turn it into a representative sample, based on the aspects of the target population, and to provide characteristics of randomness to the sample, we used tables of random numbers to obtain a smaller, but stratified "random" sample (for more details about the characteristics of the new "sample"[63], after the application of tables of random numbers, see Tables III and IV, Appendix B).

Figure 3.2 presents these data of the target population, the "sample" as well as the 994 questionnaires statistically treated.

Figure 3.2 – The population, the answers and the "sample"



The response rate in paper format was about 52%, the *TOCs* present at those seminars being considered as the target population (see Table I in Appendix B). Regarding the proportion of the total of active tax professionals (*TOCs)*, our response rate was about 4.1%. In terms of international tax research it is an acceptable rate, as stated for instance by Green (1994), who had a response rate of 25%[64] and by McKerchar (2005) with a 1% of response rate.[65]

[63] From this point forward, in the statistical analysis, we will refer to this new "sample" as sample.
[64] Institutional study conducted in the context of The Institute of Chartered Accountants in England and Wales.
[65] This questionnaire was applied online, only by including a link in the ATO [Australian Taxation Office]'s Newsletter. This method results in a very small response rate.

3.4.4 Research variables

In this section, we define the groups of variables analyzed in our questionnaire.

In the socio-demographic variables, we present the characteristics of the target population, such as gender and age. The professional and technical variables are divided into two categories, firstly, the tax knowledge variables, namely degree, professional tax experience, and the updating of tax knowledge, and secondly, the sizes of companies for which they are responsible.

The areas of tax complexity are related to the volume and density of the tax laws, the interpretation of legislation, the preparation of information, the filling of tax forms, and finally, the record keeping (tax archive)

Basing our study on the literature review, within our range of variables we define our three dependent variables: «*TOCs*' perception of tax system complexity», «*TOCs*' non-aggressive noncompliant behaviour, due to tax complexity» and «*TOCs*' propensity for tax aggressiveness, based on tax complexity», as well as a set of independent variables, which influence and explain these dependent variables. In Table 3.3 we present our variables, dependent and independent, as well as the expected signal concerning the relations between the variables in our models.

Table 3.3 – Definition of dependent and independent variables and expected signal

Dependent variables	Independent variables	Expected signal
TOCs' perception of tax system complexity	*TOCs*' age	Neutral hypothesis
	TOCs' gender	Neutral hypothesis
	TOCs tax knowledge index	-
	Size of customers/employers	+
	TOC legislative tax complexity index	+
	TOCs compliance tax complexity index	+
TOCs' non-aggressive tax noncompliance behaviour, due to complexity	*TOCs*' age	Neutral hypothesis
	TOCs' gender	Neutral hypothesis
	TOCs tax knowledge index	-
	Size of customers/employers	+
	TOCs legislative tax complexity index	+
	TOCs compliance tax complexity index	+
	TOCs' perception of tax system complexity	+
TOCs' propensity for tax aggressiveness, based on tax complexity	*TOCs*' age	Neutral hypothesis
	TOCs' gender	Neutral hypothesis
	TOCs tax knowledge index	-
	Size of customers/employers	+
	TOCs legislative tax complexity index	+
	TOCs' perception of tax system complexity	+
	TOCs' psychological and fear factors	+/-

3.5 Results and discussion results

Data from the survey responses were processed and analysed using Version 21 of the Statistical Package for the Social Sciences [SPSS] as our principal tool.

3.5.1 Descriptive statistics – Portuguese tax accountants' self-portrait

Table 3.4 and Figures 3.3 and 3.4 present the socio-demographic characteristics of our sample (questions 1, 2 and 3, Appendix A).

Table 3.4 - Socio-demographic characteristics of sample

***TOCs*' socio-demographic characteristics**	**Categories**	**N**	**%**
Region of residence ▪ Mode: North	North	456	45.9%
	Centre	380	38.2%
	South	129	13.0%
	Azores	13	1.3%
	Madeira	16	1.6%
Age ▪ Mean: 48.21 (s.d.: 12.217); ▪ Mode: 37; ▪ Maximum: 85; minimum: 22.	Up to 35 years old	159	16.0%
	> 35 to 50 years old	402	40.4%
	> 50 to 65 years old	347	34.9%
	> 65 years old	78	7.8%
Gender ▪ Mode: Male	Male	545	54.8%
	Female	446	44.9%

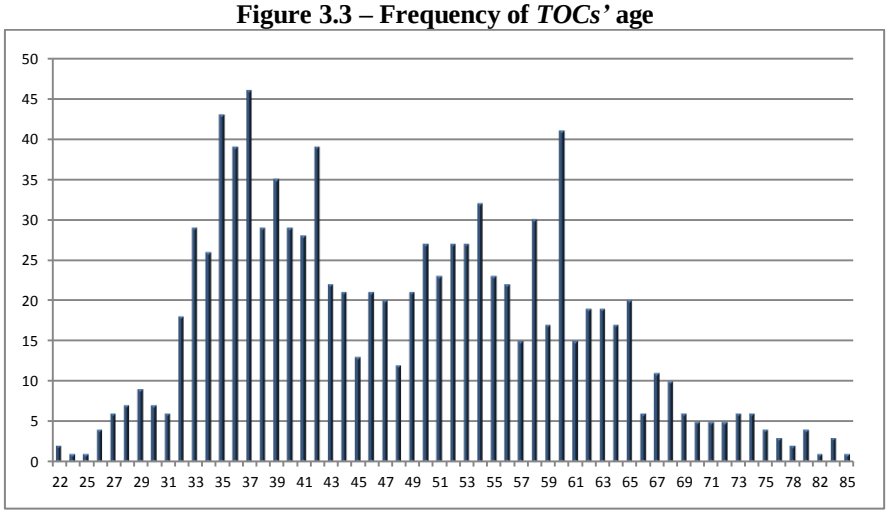
Looking at Table 3.4 and taking the geographical region into account, the data shows that the highest percentage of *TOCs* are based in the North and Centre of Portugal. However, this distribution should not actually be seen as a feature of the professional class, *i.e.* where it really prefers to be based, but rather as the concomitant of the geographical distribution of companies in Portugal. According to the *Instituto Nacional de Estatística*[66] [*INE*] (2013), 83.48% of Portuguese companies are mostly located in those two areas of the country. [67]

With regard to the age of *TOCs*, the most significant data is that about 56% of professionals are 50 years old or less. We also verify that, despite the complexity involved and the demands of study and updates, there are quite a number of professionals in activity (about 8%) whose ages are considerably above the statutory retirement age (65 years old). We also found that there are two steep downward curves

[66] Portuguese Official Statistical Office.
[67] Available at: www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_pesquisa&frm_accao=PESQUISAR&frm_show_page_num=1&frm_modo_pesquisa=PESQUISA_SIMPLES&frm_texto=pequenas+e+m%C3%A9dias+empresas&frm_modo_texto=MODO_TEXTO_ALL&frm_data_ini=&frm_data_fim=&frm_tema=QUALQUER_TEMA&frm_area=o_ine_area_Destaques&xlang=pt [Accessed 16th September 2013]. Data from 2011, published in 2013.

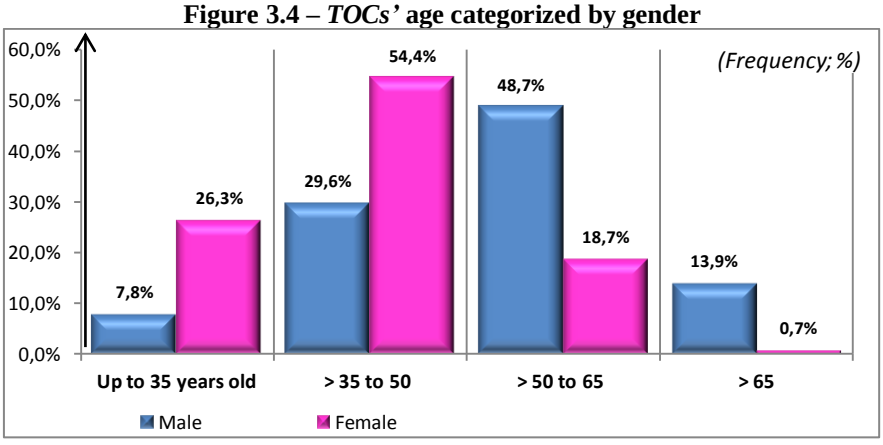
in the *TOCs*' age distribution (see Figure 3.3), the first with the minimum value of about 50 years, coinciding with the previous years, and relating to the creation of the *OTOC*, the second in the present, with the youngest *TOCs* at the minimum values, which can be related to the present difficulty of access to the profession, due to the demands imposed by *OTOC* (see Figure 3.3).

Figure 3.3 – Frequency of *TOCs'* age



Moreover, despite the fact there are not substantial differences in distribution between genders in this professional class, if we categorize age by gender (questions 1and 2, Appendix A), we can verify that there have been differences over the years. Figure 3.4 shows these differences.

Figure 3.4 – *TOCs'* age categorized by gender



In the recent past, the Portuguese accountancy profession has been dominated by the male gender. However, over the years there has been a reversal in access to this profession, because in recent years more women than men have entered this profession. For instance, amongst the younger *TOC*s, women outnumber men by more than two to one (see Figure 3.4). We verify the significance of this change by using a crosstab (see

Table IV in Appendix E) and Pearson Chi-Square, with the result: χ^2 (3) = 204.3; p = 0.000 < 0.05; we verify that the observed difference is statistically significant and quite relevant (contingency coefficient = 0.42). If this trend is maintained into the future, there will be a prevalence of women accountants, which could be an interesting line of future research.

The technical and professional characteristics of our sample are presented in Table 3.5 (questions 4, 5 and 7, Appendix A).

Table 3.5 – Technical characteristics of sample

TOCs' technical characteristics	Categories	N	%
Degree[68] ▪ Mode: University (with tax matters); ▪ Median: University (with tax matters).	Up to 9 years of schooling	10	1.0%
	From 10 years of schooling to 12 years of schooling	237	23.8%
	University (without tax matters)	16	1.6%
	University (with tax matters)	731	73.5%
Professional experience[69] ▪ Median: 18 ; ▪ Mode: 30; ▪ Maximum: 60 years; ▪ Minimum: < 1 year; ▪ Mean: 19.99 (s.d.: 11.880).	Up to 5 years	114	11.5%
	> 5 years to 10 years	147	14.8%
	> 10 years to 25 years	412	41.4%
	> 25 years	321	32.3%

Regarding the data in Table 3.5, we verify that 75.1% of tax professionals have a university degree, as a result of the rules relating to access to the profession, imposed by the *OTOC*.

As regards professional experience, 73.7% of *TOCs* have more than 10 years of tax experience, which is similar to the 66.5% reported in UK by Green (1994)[70], at the same level of professional experience.

By using the data concerning *TOCs*' age and years of experience, we can point out that the mean age of entry into the profession is approximately 28 years old and this age has remained stable over the years.

Table 3.6 below points out the professional characteristics of our sample (questions 8, 9 and 10, Appendix A).

Regarding the data in Table 3.6, *TOC* respondents mostly work in accountancy and taxation firms (69.9%). It is noteworthy that this value, although high, is lower than the 88% observed by Green (1994). Thus we note a more reduced use of the outsourcing accounting services in the case of Portugal.

[68] The aggregation of two variables in one new variable (see Table I in Appendix D).
[69] We asked the respondents to include, if appropriate, the years of experience they possessed prior to the creation of the professional accountancy association (*OTOC*).
[70] This should be taken cautiously as there is a gap of 20 years between the studies.

Table 3.6 - Professional characteristics of sample

TOCs' professional characteristics	Categories	N	%
Ways to develop activity ▪ Mode: Professional in accountancy and taxation firms	Professional in accountancy and taxation firms	695	69.9%
	Specialists in tax issues at in-house tax departments	262	26.4%
	Other	34	3.5%
Accountancy and taxation firms customers' portfolio	Micro companies		78.2%
	Small companies		15.7%
	Medium companies		4.0%
	Large companies		2.3%
Dimension of largest *TOCs'* customers' or employers' (Turnover) ▪ Mode: > €500,000 to €2 million ▪ Median: > €500,000 to €2 million	Up to €500,000	339	34.1%
	> €500,000 to €2 million	374	37.6%
	> €2 million to €10 million	204	20.5%
	> €10 million to €50 million	56	5.7%
	> €50 million	16	1.6%

Additionally, their customers' portfolios comprise: 78.2% of micro companies, 15.7% of small companies, 4% of medium companies, and only 2.3% of large companies. These data are in line with those of Lopes (2009) and with the Portuguese business structure presented in the *INE* (2013). They are also in line with data from about 2001, presented by McKerchar *et al.* (2005). According to these authors, as regards the non-farm companies, 99% in the case of the US, and 96% in the case of Australia, are small businesses. This is important, in relation to the high level of tax complexity that *TOCs* deal with. As Freedman (2009, p. 156) states: micro-SMEs "[...] are inherently complex" because "small business affairs interact with those of the family and other personal relationships and they offer a way of life as well as a financial venture."

As regards the dimension of the largest customers, we can notice that more than half of *TOCs* respondents (71.7%) are responsible by companies with a turnover of up to €2 million. These data are compatible with the data published by the *INE* (2013) in relation to business size, in Portugal, as well as with data from the *TOCs'* costumer portfolio presented in Lopes (2009). It is interesting to note that crossing the turnover with gender (questions 1 and 10, Appendix A), we verify that the *TOCs* responsible for the largest companies are men (see Figure I, Appendix F and Table V, Appendix E). However, this difference should not be considered statically significant, with χ^2 (4) = 9.582; $p = 0.048 \simeq 0.05$.

Next, we present data concerning *TOCs*' perception of Portuguese tax system complexity, along with the effects they feel this has on their professional activity in terms of tax compliance. Data regarding *TOCs'* perceptions of Portuguese tax system

complexity, and its evolution, are summarized in Table 3.7 below (questions 11, 12 and 13, Appendix A).

Table 3.7 - *TOCs'* perceptions regarding Portuguese tax system complexity

***TOCs*' perceptions**	**Categories**	**N**	**%**
Level of tax system complexity ▪ Median: Complex (4); ▪ Mean: 4.28 (s.d.: 0.672).	Very simple (1)	2	0.2%
	Simple (2)	5	0.5%
	Neither simple nor complex (3)	101	10.2%
	Complex (4)	493	49.6%
	Very complex (5)	393	39.5%
Effects of the legislative changes (in the last 5 years) ▪ Median: More complex (3); ▪ Mean: 3.16 (s.d.: 0.828).	Simpler (1)[71]	72	7.2%
	Unchanged (2)	57	5.7%
	More complex (3)	503	50.6%
	Much more complex (4)	361	36.3%
Effects of the technological changes (in the last 5 years) ▪ Median: Simpler (2); ▪ Mean: 2.68 (s.d.: 1.180).	Much simpler (1)	100	10.1%
	Simpler (2)	512	51.5%
	Unchanged (3)	74	7.4%
	More complex (4)	218	21.9%
	Much more complex (5)	88	8.9%

The data concerning *TOCs*' perception of tax system complexity presented in Table 3.7 leads us to the conclusion that they generally regard the Portuguese tax system as being highly complex, with 89.1% of respondents considering it as either complex or very complex. These results are in line with those of the World Bank (2011a, 2011b, 2013a, 2013b), which ranks Portugal as a leading country in terms of tax bureaucracy in Europe, only surpassed by Italy and some Eastern European countries.

The majority of *TOCs* pointed to the legislative changes of recent years as being a factor which intensified their perception of tax complexity, although the development of new technologies introduced in compliance with tax obligations represents, for 61.60% of *TOCs*, a positive measure in the reduction of the perception of tax complexity.[72]

In relation to the areas of tax complexity, Figures 3.5 and 3.6 (below) represent, in ascending order of importance from the professionals' perspective, the several determinants (areas) of legislative and compliance tax complexity[73] (questions 15 and 16, Appendix A).

[71] Joining the categories «much simpler» with «simpler» (see Table IV in Appendix D).
[72] However, it is important to note a higher perception of respondents has mentioned that, during the periods of heaviest access, the tax administration software do not support the number of requests and frequently crash. This observation is important because the professionals themselves point to the use of new technologies as a tool that reduces tax complexity, so that an improvement in this area deserves the interest of the tax administration (OECD, 2010d).
[73] See Table II, Appendix F, to access to the measure of the central tendency.

Figure 3.5 - Areas of legislative tax complexity – *TOCs*' perspectives

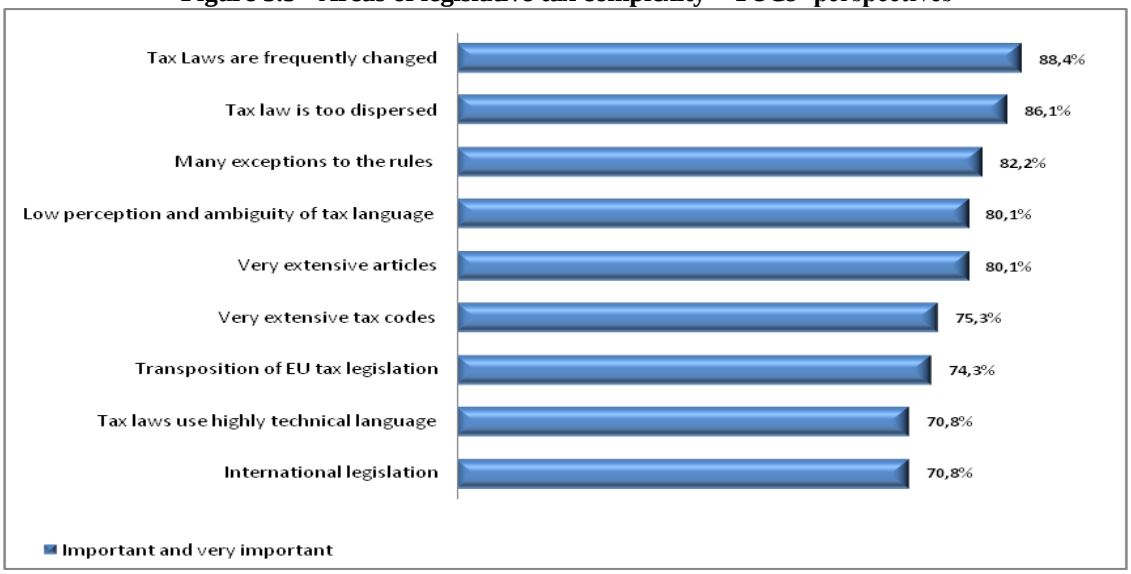
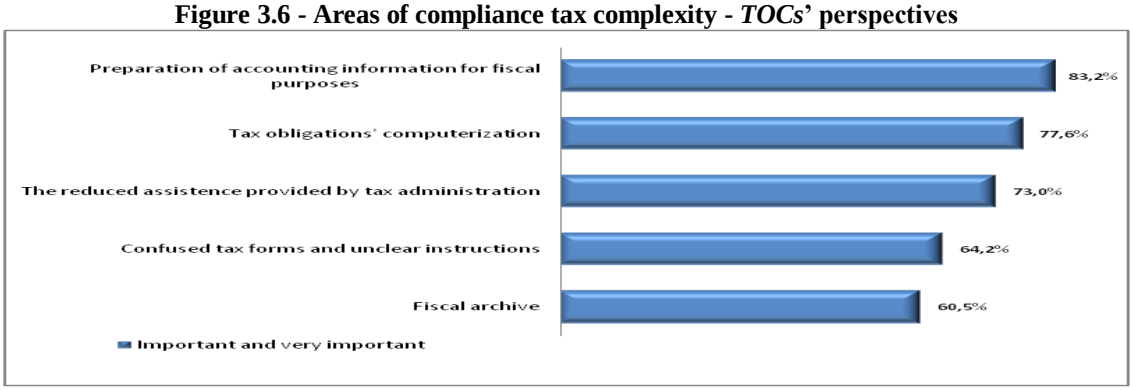


Figure 3.6 - Areas of compliance tax complexity - *TOCs*' perspectives



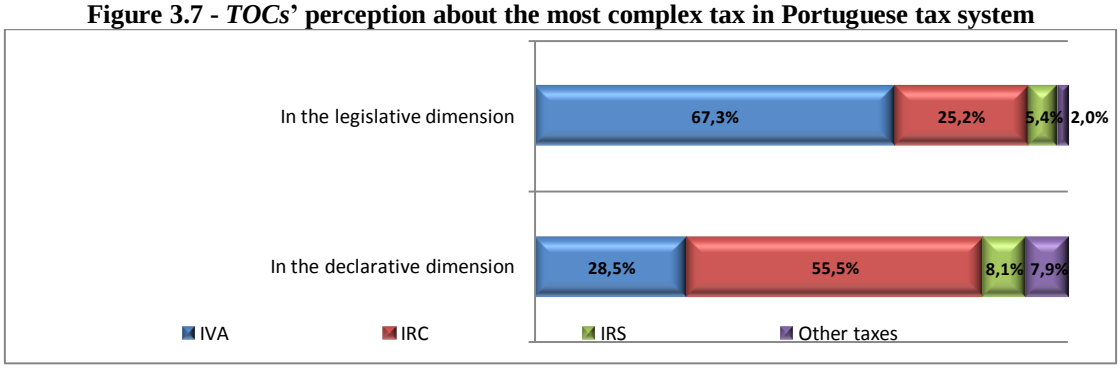
Concerning legislative tax complexity (see figure 3.5), *TOCs* assign a high level of relevance to all areas, in special «tax law changes», with 88.4%, and «tax law dispersion», with 86.1%.

As can be observed from the data in Figure 3.6, in the context of compliance tax complexity, Portuguese tax professionals attribute a high level of importance to all areas, in particular to «preparation of accounting information for fiscal purposes» (83.2%) and to «tax obligation informatization (computerization)» (77.6%). Moreover, «the reduced help (assistance) provided by tax administration staff» captured our attention because it presents a mode of 5 (*i.e.*: very important)[74]. These results, in the areas of tax complexity, are in line with Long and Swingen (1987), Green (1994) and McKerchar (2005).

Figure 3.7 presents *TOCs*' perception about the most complex tax in Portuguese tax system.

[74] *Idem.*

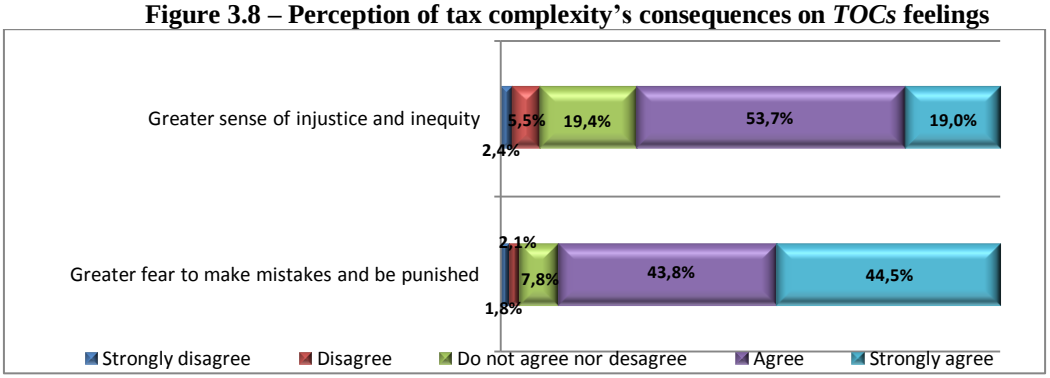
Figure 3.7 - *TOCs*' perception about the most complex tax in Portuguese tax system



As can be seen in Figure 3.7, for tax professionals, the «*IVA [Imposto sobre o valor acrescentado]*» (VAT - Value Added Tax) is the tax which causes higher levels of legislative tax complexity, with 67.3% of respondents. In the compliance dimension, the tax which contributes mostly to tax complexity is the «*IRC [Imposto sobre o Rendimento das Pessoas Colectivas]*» (Corporate Tax), with 55.5% (question 14, Appendix A). These results are in line with those of Lopes (2009), which showed that *TOCs* identified VAT and Corporate tax as the two taxes with the highest tax complexity related to costs.

Figure 3.8 presents the consequences of *TOCs*' perception of tax complexity on their feelings.

Figure 3.8 – Perception of tax complexity's consequences on *TOCs* feelings



According to data in Figure 3.8, the respondents' high perception of tax complexity increases their feeling of tax injustice and inequity. These results contradict the argument usually presented as one of the structural causes of tax complexity, *i.e.* the system needs to be complex in order to be fairer. Moreover, it greatly increases their fear of making mistakes in tax matters, and being punished.

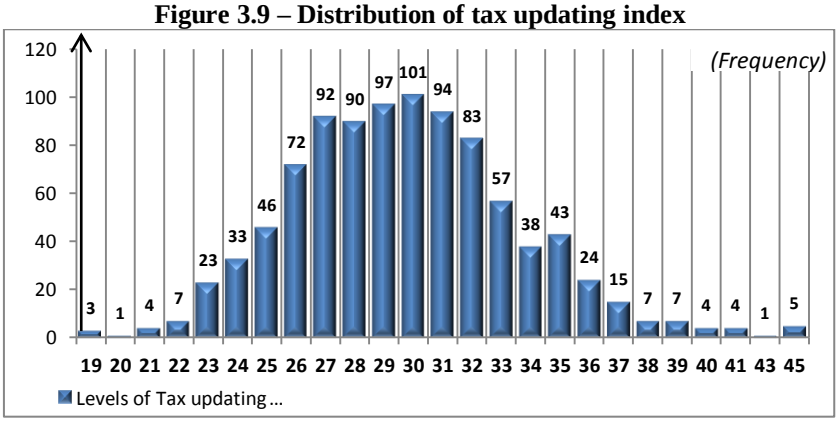
Tax professionals' perception of high levels of tax complexity also has consequences on their need of tax updating. Thus, by joining the data regarding

perception of tax complexity[75] and the time spent in tax updates (questions 11 and 20, Appendix A – see Figure II, Appendix F), we verify that there is a positive statistically significant and relevant relation between both variables, with χ^2 (6) = 14.169; p = 0.028 < 0.05 and contingency coefficient = 0.12.

About the time spent in tax updating, the mean is 21.17 hours (21 hours and 10 minutes), by month. This result is in line with McKerchar (2005), in Australia, with 21.6 hours/month (21 hours and 36 minutes) spent in tax updating. For instance, Green (1994) prefers do represent it in relative terms, according with her study, the UK's chartered accountants spent 78% of their professional activities in tax updating. This is quite important, because they spend a considerable amount of their time in that activity, which could be used in more productive activities; furthermore, they can have difficulties in charging it in the fees, mainly because their fees may be considered as excessively high (Green, 1994).

Furthermore, *TOCs* use several methods to perform tax updates (question 17, Appendix A). For that reason, we construct an additive index to measure it, «the tax updating index», with a scale ranging from a minimum of 19 to a maximum of 45 (see Table IV and V in Appendix C). Figure 3.9 shows the distribution of respondents by index of tax updating levels.

Figure 3.9 – Distribution of tax updating index



The distribution of tax updating index allows us to conclude that the *TOCs*' levels of tax updating are medium to high.

Furthermore, in our research, we attempt to answer the two part question below:

What is the main aim and concern of professionals regarding the time they spend on tax updating?

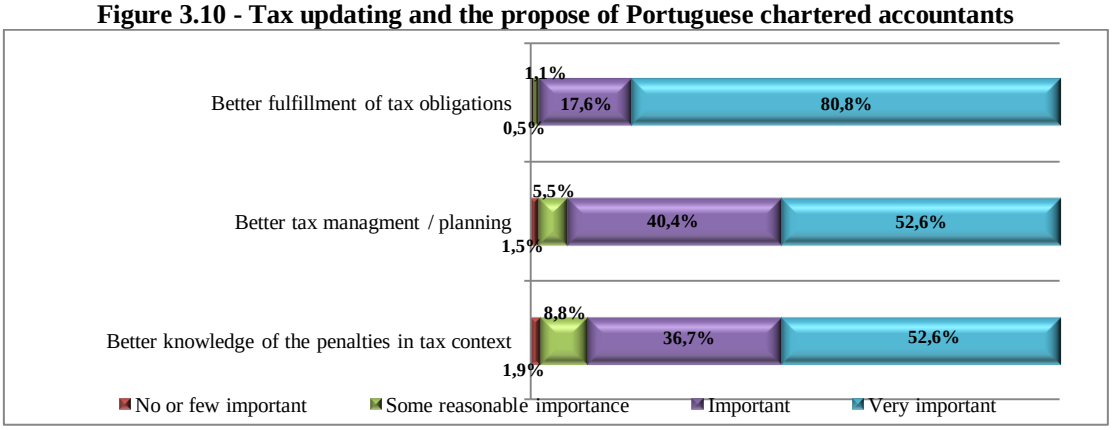
[75] By using the variable transformed into three categories (see Table III, Appendix D).

Is it to better comply with their customers tax obligations, or to help them to improve their tax management/tax planning schemes?

We try to understand *TOCs*' attitudes regarding the tax field via two points of view - through their expectations regarding the usefulness of tax updates, and through the way they divide their time between tax compliance and tax management / planning activities.

Figure 3.10 presents data relating *TOCs*' perspective regarding the usefulness of tax updates (question 18, Appendix A).

Figure 3.10 - Tax updating and the propose of Portuguese chartered accountants



As can be seen in Figure 3.10, regarding the objectives that *TOC*s intend to achieve through tax updates, is the correct «fulfilment of tax obligations», with a classification of 80.8% attributed by the respondents.

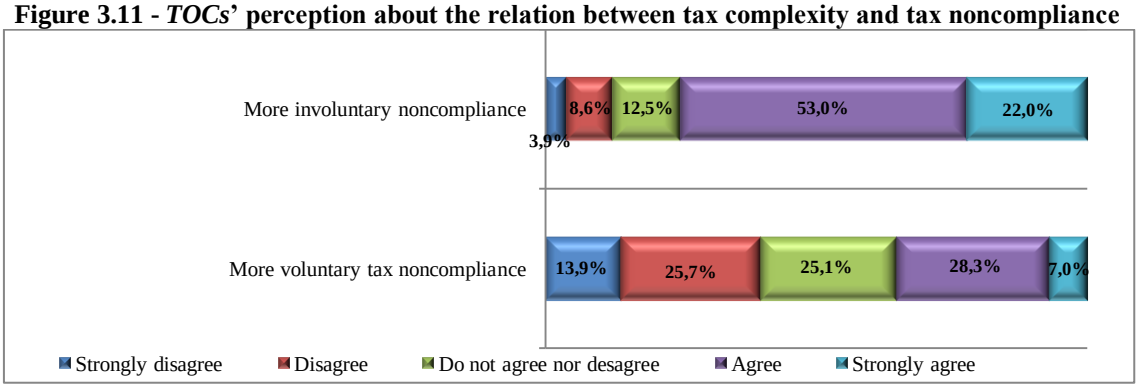
Furthermore, in the context of the importance attributed by these professionals to tax compliance *versus* tax planning and management (question 24, Appendix A), we can verify that the majority of *TOCs* have a greater concern with tax compliance, devoting more time to tax compliance than to tax planning and management, with a mode of 80% and 20% respectively (see Table 3.8).

Table 3.8 – Time (%) dedicated to tax compliance and tax planning activities

	N	Mean	Median	Mode	St. Dev.	Minimum	Maximum
Tax compliance	994	67.7%	70.0%	80.0%	20.4%	0.0%	100.0%
Tax management/tax planning	994	32.1%	30.0%	20.0%	20.4%	0.0%	100.0%

Tax complexity, as perceived by *TOCs*, could also introduce some distortions in tax noncompliance, which can impact on involuntary and voluntary tax noncompliance. Those data are presented in Figure 3.11.

Figure 3.11 - *TOCs*' perception about the relation between tax complexity and tax noncompliance



According to data presented in Figure 3.11 (question 23, Appendix A), the great majority of *TOCs* (75%) believe that tax complexity increases involuntary tax noncompliance**.** With regard to voluntary compliance, 30.8% of Portuguese tax professionals consider that the relationship with tax complexity also exists[76].

Furthermore, Table 3.9 presents data about non-aggressive tax noncompliance that *TOCs* admit to having committed, at least once, due to tax complexity (question 25, Appendix A).

Table 3.9 - The relation between tax complexity and non-aggressive tax noncompliance for *TOCs*

Question	Yes	No	Do not want to answer
Have you already practised any kind of tax noncompliance due to tax complexity?	45.9%	49.2%	4.9%

As can be seen, the percentage of professionals who claim never to have entered into non-aggressive tax noncompliance due to tax complexity is 49.2%. However, 45.9%, roughly a half of *TOCs*, assume this link between tax complexity and their non-aggressive tax noncompliant behaviour (involuntary and voluntary).

Concerning *TOCs* who chose to answer affirmative to the question 25 (Appendix A), to better understand the importance they give to the impact of *TOCs*' perception of tax system complexity on their tax noncompliance, we also intend to ascertain the frequency of those non-aggressive attitudes[77]. The results are presented in Table 3.10.

Table 3.10 - Frequency of *TOCs'* non-aggressive tax noncompliance due to tax complexity

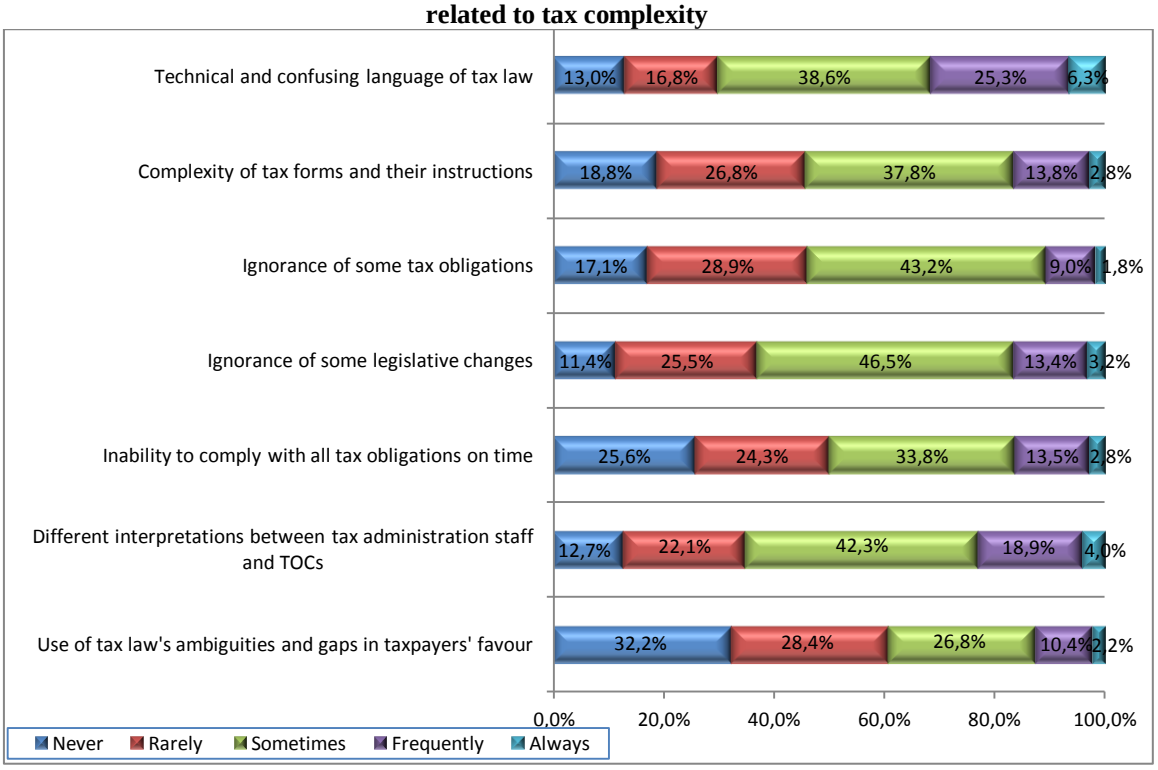
TOCs' level of perception of tax system complexity	Frequency of non-aggressive tax noncompliance			Total
	Yes - rarely	Yes - sometimes	Yes - frequently	
Low complexity	9	21	3	33
High complexity	132	178	105	415
Total	141	199	108	448

[76] See measure of central tendency Table II in Appendix F.
[77] We apply the same technique used to construct an additive index - see Table V and VI (and text below) in Appendix D.

Therefore, we verify that the frequency of non-aggressive tax noncompliance problems is positioned on the moderate level. This data also shows us firstly, the high level of the perception of tax complexity on the part of *TOCs*, and secondly, its relevant relationship to tax noncompliance in the context of the development of *TOCs*' activity, with χ^2 (2) = 6.49; p = 0.039 < 0.05 and contingency coefficient = 0.12.

Figure 3.12 presents the main problems related to tax complexity which induce tax noncompliant behaviour, from the perspective of *TOCs* (question 26, Appendix A).

Figure 3.12 - *TOCs*' perception of the main determinants of their non-aggressive tax noncompliance related to tax complexity



The analysis of Figure 3.12 shows that there are two most frequent areas of non-aggressive tax noncompliance[78] pointed out by *TOCs*: «technical and confusing language of tax law» and «different interpretations between tax administration staff and *TOCs*». They are both related to the complexity of tax laws and the consequent difficulty of different users of tax laws reaching a unanimous interpretation. Furthermore, it is important to emphasize that the main suggestions of *TOCs* to simplify the tax system are in line with these results: the stabilization of the tax system and the simplification of the technical language (see Table I, Appendix F).

[78] Joining the two highest categories (frequently and always).

Finally, we can verify, from Figure 3.12 that the problem which is least highlighted is in the field of voluntary tax noncompliance: «the exploitation of tax law's ambiguities and gaps in favour of the taxpayer», with 60.6% in the categories never and rarely.

In order to try to understand if *TOCs* are available to exploit tax complexity, tax law ambiguity and tax gaps in aggressive tax planning schemes, we questioned them directly. Thus Table 3.11 presents the *TOC*s' position in regard to those attitudes (question 27, Appendix A).

Table 3.11 - *TOCs*' attitudes toward proposals of aggressive tax planning by using tax complexity

	Refuse	Consider	Accept	Do not want to answer
If a customer/employer proposes that you participate in an abusive tax planning scheme, by using ambiguities and gaps in the tax law, what will your answer be?	65.6%	25.6%	0.7%	8.1%

By analyzing the data, we find that more than half (65.6%) of *TOCs* claim that they peremptorily refuse such proposals, while only 0.7% (7 cases) admit to having agreed to participate in these schemes, by taking advantages of tax complexities. We highlight the fact that about 25% of respondents admitted that it was a decision worth considering.

Figure 3.13 – The determinants of tax attitudes of Portuguese tax professionals

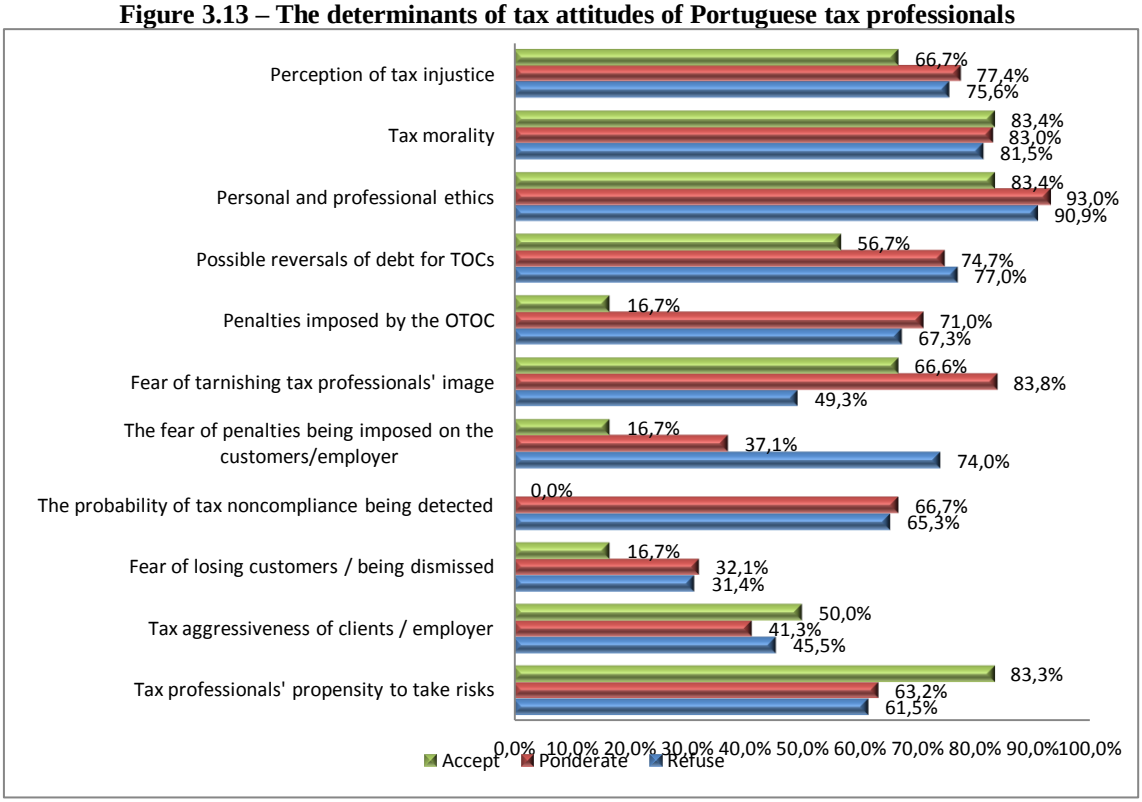


Figure 3.13 above presents the data regarding the determinants pondered by *TOCs* in deciding their attitudes toward aggressive tax planning proposals (question 28, Appendix A).[79]

As we can observe, for Portuguese tax professionals there are three main determinants in their decisions, which are related to the sense of personal and professional ethics, professionals' standards of tax morality and the need to preserve their professional reputation[80]. However, in the international literature the most significant determinants, to weigh against each other, in the decision whether to participate in aggressive tax planning schemes are the fear of penalties *versus* the importance of customers and the apprehension of losing them.

Consequently, the results relating to Portugal are not in line with the international tax literature and the traditional theory of tax evasion (Allingham & Sandmo, 1972) is not applicable to Portugal, according to these results. Thus, for tax policy makers and for tax authorities, as well as for the regulatory organisation (*OTOC*) to which these professionals belong, it is necessary to address alternative ways to decrease voluntary and involuntary noncompliance amongst *TOCs*, because the fear of punishment is not a sufficient deterrent. The fact that in Portugal the tax punishments for noncompliance do not fall directly on the professionals may be the main explanation for this lack of concern of *TOCs* regarding penalties.

We believe those results are also associated with moral, cultural, social and even religious factors in Portugal's case. In this case we are referring to the intrinsic motivation of Portuguese tax professionals to comply, *i.e.* to their tax morality. In fact, Portugal is a traditionally Catholic country, which over time has consecrated the feelings of guilt and sin as supreme values, associating them with divine penalties, as well as with society's judgment. This type of mentality can be a barrier to *TOCs*' participation in, or collusion with, activities classified as severe forms of tax noncompliance, because they are more related to feelings of morality and ethics than to the fear of monetary or professionals penalties (McGee, 1998; Torgler, 2006).

Therefore, the punitive attitudes applied by the *OTOC*, as well as by the tax authority, seemed to us not enough. We believe that promoting *TOCs'* sense of tax morality even more is a far more productive approach, for instance, associating their

[79] By using, in all the areas of tax complexity, only the sum of the answer «important» and «very important».
[80] We conducted an exploratory analysis, in order to find differences in the importance attributed by *TOCs* to the several determinants, depending on the tax professionals' age, and we do not find notable differences to highlight.

attitudes in this matter with the prestige of their profession. This could be a new area for future research: tax morality and the tax professionals' role in tax compliance.

3.5.2 Indices construction

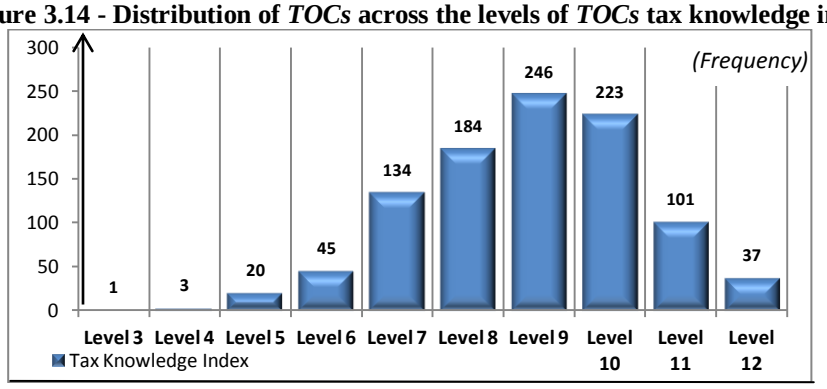
As follows from the definition of the independent variables in our study, in some cases we will use indices, or constructs, replacing the manifest variables. In addition, the construction of these indices will in future allow us to monitor the evolution of the phenomena. This is in line with the construction of an index of tax complexity in the UK, by a team of investigators from the Office of Tax Simplification (Whiting *et al.*, 2014)[81].

Let us build our indices (independent variables): «*TOCs* tax knowledge index», «*TOCs* legislative tax complexity index» and «*TOCs* compliance tax complexity index».

In order to better understand the level of tax knowledge, we construct an additive index named «*TOCs* tax knowledge index», with a scale ranging from 3 to 12, by using the following variables: «Academic graduation plus curriculum with courses in taxation», «Time spent on tax updating» and « *TOCs*' tax experience» (we attribute an additive factor to each level - see details of that construct in Tables I to III, Appendix C).

The results, from the distribution of *TOCs* across the several levels of this index, are summarized in Figure 3.14.

Figure 3.14 - Distribution of *TOCs* across the levels of *TOCs* tax knowledge index



From the analysis of Figure 3.14, we can observe a high level of tax knowledge among Portuguese chartered accountants. The majority of professionals fall between Levels 8 and 10 of the index (43.2%), while on Level 9 we find the highest number of

[81] They develop an additive weighted index.

TOCs: 246 (24.7%). The median is 9 (Q1 = 8 and Q3 = 10) and the professionals at the levels above the mean value (8.85) are 61.1%, value below than the 77% reported in McKerchar (2005).

Moreover, the lowest level of the scale contains a very small number of professionals, being almost empty, as are the following two levels, going up the scale, which is an extremely positive sign. However, even the higher levels of the scale, and particularly the highest, do not reveal a very large number of professionals, which means that although the level of tax knowledge of the majority of Portuguese tax professionals is already quite high, there is still room to improve this index even more[82].

This result is mainly due to the fact that 73.7% of respondents have more than ten years of tax experience and cumulatively 73.5% have a degree which included courses related to tax matters. Concerning the remaining respondents: (i) the lower levels of academic qualifications of some older *TOCs* are offset, according to the results of the index, by their large number of years of tax experience; (ii) the few years of professional experience of younger *TOCs* are counterbalanced, according to the results of the index, by their academic qualifications, because since the creation of the Professional Accountancy Association, in 1996, it has been mandatory to have a university degree (with courses in taxation matters) to enter the profession.[83]

We believe that in future, the *TOCs* tax knowledge index will increase, because the older accountants, with fewer qualifications, will cease to exercise their functions.

In relation to the areas of tax complexity, we intend to identify the dimensions of tax complexity perceived by *TOCs*, in the Portuguese tax system. Thus, based on a preliminary exploratory study (see from Table VI to Table XIV, Appendix C), we construct three synthetic indices, which represent the dimensions of tax complexity for Portugal. To perform those indices we use the Principal Component Analyses [PCA] with a single factor. The individuals' scores are formed from the respective factorial scores (standardized).

The first index is the «*TOCs* legislative tax complexity index» (the details of its construction are presented in Tables XV to XIX, Appendix C). Table 3.12 below resumes the results from the construction of this index.

As can be seen in Table 3.12, with regard to this first index, the component matrix KMO [Kaiser-Meyer-Olkin] = 0.898 (between 0.8 and 0.9) and p = 0.000 (<0.001),

[82] We notice the fact that, for statistical treatment, we will remove the levels of the index with less than 30 observations, where we will use the percentage as a measure, to not distort the analysis.
[83] Except for the registrations made in 1998, under the transitional exceptional regime, created by the Law nº 27/98.

which indicates the suitability of a good sample, consequently the PCA is adequate. Additionally, the Bartlett's test of sphericity, with χ^2 (36) = 6,036.756 and p = 0.000 (p <0.001), demonstrates the suitability of the PCA for the population. In addition, Cronbach's Alpha presents a value of 0.925, *i.e.* bigger than 0.9, which demonstrates an excellent reliability of the index. Thus, we justify the extraction of one component by the Kaiser criterion, and we concluded that the explained variable is acceptable, because it presents a value of 62.71%. We can conclude that this index with one dimension is adequate.

Table 3.12 - Construction of the *TOCs* legislative tax complexity index (PCA)*

Variables	N	Min.	Max.	Mean	Standard Deviation	Alpha Cronbach	Factorial weights	Expl. variance
Very extensive articles with references to other articles	994	**1**	5	4.21	1.03	0.925	0.865	62.71%
Tax law is too dispersed	994	1	5	4.36	0.97		0.858	
Many exceptions to the rules and transitional arrangements	994	1	5	4.24	1		0.849	
Tax laws are frequently changed	994	1	5	4.44	0.92		0.817	
Very extensive tax codes	994	1	5	4.01	1.05		0.801	
Transposition of EU tax legislation	994	1	5	3.98	0.96		0.758	
Tax laws use highly technical language	994	1	5	3.89	1		0.745	
International legislation	994	1	5	3.88	1		0.731	
Low perception and ambiguity of tax language	994	1	5	4.18	0.95		0.681	

* Component matrix KMO = 0.898; *p = 0.000* < 0.001

The second index, presented below in Table 3.13, is the «*TOCs* compliance tax complexity index» (see the details about its construction from Table XX to Table XXIV, Appendix C).

Table 3.13 - Construction of the *TOCs* compliance tax complexity index (PCA)*

Variables	N	Min.	Max.	Mean	Standard Deviation	Alpha Cronbach	Factorial weights	Expl. variance
Fiscal Archive	994	1	5	3.60	1.07	0.606	0.852	72.59%
Preparation of accounting information for fiscal purposes	994	1	5	4.14	0.81		0.852	

* Component matrix KMO = 0.500; *p*< 0.001

In relation to this index, the component matrix KMO = 0.500 (between 0.5 and 0.6) and *p* = 0.000 (<0.001), which indicates that the quality is not good**;** although, given the particularity of the measure in Likert scales of five points, the PCA is acceptable. Additionally, Bartlett's test of sphericity, with χ^2 (1) = 219.505 and p = 0.000 (p <0.001), demonstrates the suitability of the PCA for the population.

As can be observed in Table 3.13, additionally Cronbach's Alpha presents a value of 0.606 (between 0.6 and 0.7), which demonstrates a questionable reliability index, although as we have already mentioned, given the particularity of the measure in Likert scales of five points, the index's reliability is acceptable. Therefore, we justify the extraction of one component by the Kaiser criterion, and we conclude that the explained variable is acceptable, because it presents a value of 72.59%. Therefore this index with one dimension is adequate.

In relation to the construction of the third index, the «index of compliance tax complexity in tax administration context», Table 3.14 resumes this (more details can be found from Table XXV to Table XXIX in Appendix C).

Table 3.14 - Construction of the index of compliance tax complexity in tax administration context (PCA)*

Variables	N	Min.	Max.	Mean	Standard Deviation	Alpha Cronbach	Factorial weights	Expl. variance
The reduced assistance provided by tax administration	994	1	5	3.98	1.05	0.890	0.771	52.34%
Tax obligations computerization	994	1	5	4.02	0.961		0.731	
Confused tax returns and unclear instructions	994	1	5	3.68	1.14		0.663	

* Component matrix KMO = 0.606; $p < 0.001$

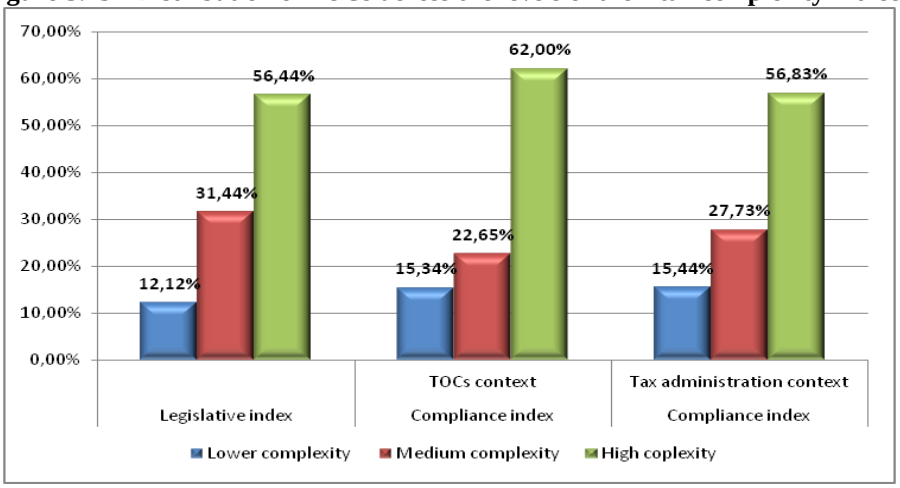
This index presents the component matrix KMO = 0.606 (between 0.6 and 0.7) and p = 0.000 (<0.001), which indicates that the quality is reasonable**.** However, given the particularity of the measure in Likert scales of five points, the PCA is acceptable. Additionally, Bartlett's test of sphericity, with χ^2 (3) = 218.498 and p = 0.000 (p <0.001), shows the suitability of the PCA for the population.

As can be seen in the data of Table 3.14, Cronbach's Alpha presents a value of 0.890 (between 0.8 and 0.9), which demonstrates a very good reliability of the index. Consequently, we justify the extraction of one component by means of the Kaiser Criterion, and we conclude that the explained variable is acceptable, because it presents a value of 52.34%. Therefore, this index with one dimension is adequate.

The results, from the distribution of *TOCs* across the several levels of those indices, are summarized in Figure 3.15 below (see Table XXX, Appendix C).

From the analysis of data in Figure 3.15, we can observe a high level of perception of tax complexity, among Portuguese chartered accountants, in all the dimensions (the dimensions are represented by the indices).

Figure 3.15 - Distribution of *TOCs* across the levels of their tax complexity indices



3.5.3. Bivariate and multivariate analysis

In these analyses, we have modified some variables in order to simplify the statistical treatment. That is the case with the use of the indices of legislative and compliance tax complexity instead of the areas of tax complexity and the index of tax knowledge, in a modified version (see Table XXX in Appendix E and Table III in Appendix C). We also use modified variables for *TOCs*' perception of tax system complexity, *TOCs*' propensity for non-aggressive tax noncompliance (due to tax complexity), *TOCs*' propensity to participate in aggressive tax planning (based on tax complexity) and *TOCs*' ways of developing their activity, and so on (see Tables II, III, V, VII and VIII, Appendix D).

3.5.3.1 Testing the research hypotheses

In order to test our research hypotheses, we will test the relationship between the explicative variables and the dependent variables.

The statistical analysis aims to determine whether differences between the distributions of gender, age, customer size and other potential *TOC* characteristics, as well as the indices of tax complexity, which can influence the *TOCs'* perceptions of tax system complexity and their noncompliant behaviour, are statistically significant.

Due to the characteristics of our data we use nonparametric tests: Crosstabs, χ^2, the Mann-Whitney test and the Kruskal Wallis Test. To measure the strength and direction of the relation between variables we use the Spearman Correlation (Pestana & Gageiro, 2000). The adoption of nonparametric tests, rather than parametric tests, is justified by

the lack of data normality, as well as by the using of nominal and ordinal variables frequently based on five point Likert scales.

Table 3.15 presents the effects of each independent variable on the first dependent variable, *i.e.* on *TOCs*' perception of tax system complexity.

Table 3.15 - Effects of socio-demographic, professional technical variables on *TOCs*' perception of tax system complexity

H	Operationalization	Tests, results and correlations (Strength and sign)	Conclusion
H1	**H_0:** There are no differences in *TOCs'* perception of tax system complexity depending on their perception of the legislative tax complexity index; **H_a:** There are differences in *TOCs'* perception of tax system complexity depending on their perception of the legislative tax complexity index.	χ^2 (2) = 46.526; p = 0.000 <0.05[84] Kruskal Wallis Test *H* (916) = 46.475; *p* = 0.000 < 0.05 Spearman Correlation: *rho* = 0.217; *p* = 0.000 <0.05	We reject the null hypothesis (H_0). There are statistically significant differences in the perception of tax system complexity depending on the way they perceive the legislative tax complexity dimension. The relation is positive; when one increases, the other increases too.
H2.1	**H_0:** There are no differences in *TOCs'* perception of tax system complexity depending on their position toward *TOCs* compliance tax complexity index; **H_a:** There are differences in *TOCs'* perception of tax system complexity depending on their position toward *TOCs* compliance tax complexity index.	χ^2 (2) = 6.632; p = 0.036 <0.05[85] Kruskal Wallis Test *H* (958) = 6.625; *p* = 0.036 < 0.05 There is no significant correlation.	We reject the null hypothesis (H_0). There are statistically significant differences in the perception of tax system complexity depending on their position toward *TOCs* compliance tax complexity index.
H2.2	**H_0:** There are no differences in *TOCs'* perception of tax system complexity depending on their position regarding the index of compliance tax complexity in tax administration context; **H_a:** There are differences in *TOCs'* perception of tax system complexity depending on their position regarding the index of compliance tax complexity in tax administration context.	χ^2 (2) = 8.735; p = 0.013 <0.05[86] Kruskal Wallis Test *H* (952) = 8.726; *p* = 0.036 < 0.013 Spearman Correlation: *rho* = 0.093; *p* = 0.005 <0.05	We reject the null hypothesis (H_0). There are statistically significant differences in the perception of tax system complexity depending on their position toward the index of compliance tax complexity in tax administration context. The relation is positive, when one increases, the other increases too.
H3	**H_0:** There are no differences in the perception of tax system complexity depending on the age of the professional; **H_a:** There are differences in the perception of tax system complexity depending on the age of the professional.	χ^2 (3) = 7.989; p = 0.046 <0.05[87] Kruskal Wallis Test *H* (985) = 7.981; *p* = 0.046 < 0.05 Spearman Correlation: *rho* = - 0.083; *p* = 0.009 <0.05	We reject the null hypothesis (H_0), and the relation is negative. The *TOCs* with the highest perception of tax system complexity are the younger ones, and those with the least perception are the 50 to 65 year olds.
H4	**H_0:** The perception of tax system complexity does not differ in relation to professionals' gender; **H_a:** The perception of tax system complexity differs depending on professionals' gender.	χ^2 (1) = 1.125; p = 0.289 > 0.05[88]	We do not reject the null hypothesis (H_0) of equality of means: there are no statistically significant differences in the perception of tax system complexity between males and females.
H7	**H_0:** There are no differences in the perception of tax system complexity depending on *TOCs* tax knowledge index; **H_a:** There are differences in the perception of tax system complexity depending on *TOCs* tax knowledge index.	χ^2(5) = 18.363; p = 0.003 <0.05[89] Kruskal Wallis Test *H*(994) = 18.344; *p* = 0.003< 0.05 Spearman Correlation: *rho* = - 0.104; *p* = 0.001 <0.05	We reject the null hypothesis (H_0), and the relation is negative. The *TOCs* with the highest perception are those on Levels 6 to 8 in the index of tax knowledge, while those with the least perception are on Levels 9 to 11.

[84] See the crosstab in Table I, in the Appendix E.
[85] See the crosstab in Table II, in the Appendix E.
[86] See the crosstab in Table III, in the Appendix E.
[87] See the crosstab in Table VI, in the Appendix E.
[88] See the crosstab in Table VII, in the Appendix E.
[89] See the crosstab in Table VIII, in the Appendix E.

H	Operationalization	Tests, results and correlations (Strength and sign)	Conclusion
H9.1	**H_0:** There are no differences in *TOCs'* perception of tax system complexity depending on the turnover of companies in which professionals function; **H_a:** There are differences in *TOCs'* perception of tax system complexity depending on the turnover of companies in which professionals function.	$\chi^2(4) = 8.035$; $p = 0.090 > 0.05$[90]	We conclude that we do not reject the null hypothesis (H_0). There are no statistically significant differences in the perception of tax complexity between *TOCs* responsible for companies of different sizes.
H9.2	**H_0:** There are no differences in *TOCs'* perception of tax system complexity depending on the way they develop their activity; **H_a:** There are differences in *TOCs'* perception of tax system complexity depending on the way they develop their activity.	$\chi^2(1) = 0.006$; $p = 0.941 > 0.05$[91]	We conclude that we do not reject the null hypothesis (H_0). There are no statistically significant differences in *TOCs*' perception of tax system complexity depending on the way they develop their activity.

According to our analysis, there is a statistically significant relationship between the perception of tax complexity and the following independent variables: (i) legislative and compliance dimensions; (ii) *TOCs*' age; (iii) *TOCs* tax knowledge index. We also highlight this result, particularly the negative effects of the index of tax knowledge on *TOCs*' perception of tax system complexity.

Table 3.16 presents the relation between *TOCs'* perception of tax system complexity and other dependent variables and *TOCs*' non-aggressive tax noncompliant behaviour, due to tax complexity.

Table 3.16 - Tests of research hypotheses about the relation between the perception of tax system complexity (and other variables) and *TOCs'* non-aggressive tax noncompliant behaviour

H	Operationalization	Tests, results and correlations (Strength and sign)	Conclusion
H5.1	**H_0:** There are no differences in *TOCs*' propensity to not comply, due to complexity, depending on the age of the professional; **H_a:** There are differences in *TOCs*' propensity to not comply, due to complexity, depending on the age of the professional.	$\chi^2(3) = 13.909$; $p = 0.003 < 0.05$[92] Kruskal Wallis Test $H(920) = 13.894$; $p = 0.003 < 0.05$ There is no significant correlation.	We reject the null hypothesis (H_0). The *TOCs* with the highest propensity to tax noncompliant behaviour, due to tax complexity, are those with more than 35 years old until 50 years old, and the group with fewer propensities are the younger.
H6.1	**H_0:** There are no differences in *TOCs*' propensity to comply, due to complexity, depending on the gender of the professional; **H_a:** There are differences in *TOCs*' propensity to comply, due to complexity, depending on the gender of the professional.	$\chi^2(1) = 1.125$; $p = 0.005 < 0.05$[93], Contingency Coefficient = 0.122. Mann-Whitney Test U (925) = 96173.500; p = 0.005 <005 Spearman Correlation: $rho = -0.093$; $p = 0.005 < 0.05$	We reject the null hypothesis (H_0) and the relation is negative. The *TOCs* with the highest propensity not to comply, due to complexity, are the men.
H8.1	**H_0:** There are no differences in *TOCs*' propensity to not comply, due to complexity, depending on their tax knowledge index; **H_a:** There are differences in *TOCs*' propensity to not comply, due to complexity, depending on their tax knowledge index.	$\chi^2(5) = 3.607$; $p = 0.607 > 0.05$[94]	We do not reject the null hypothesis (H_0): there are no statistically significant differences in the *TOCs*' propensity not to comply with the levels of tax knowledge index.

[90] See the crosstab in Table IX, in the Appendix E.
[91] See the crosstab in Table X, in the Appendix E.
[92] See the crosstab in Table XI, in the Appendix E.
[93] See the crosstab in Table XII, in the Appendix E.
[94] See the crosstab in Table XIII, in the Appendix E.

H	Operationalization	Tests, results and correlations (Strength and sign)	Conclusion
H10.1	**H_0:** There are no differences in *TOCs'* propensity for tax noncompliant behaviour, due to tax complexity, depending on the turnover of companies in which professionals carry out their functions; **H_a:** There are differences in *TOCs'* propensity for tax noncompliant behaviour, due to tax complexity, depending on the turnover of companies in which professionals carry out their functions.	χ^2 (4) = 7.250; p = 0.123 >0.05[95]	We conclude that we do not reject the null hypothesis (H_0). There are no statistically significant differences in *TOCs*' propensity for tax noncompliant behaviour, due to tax complexity, depending on the turnover of companies in which professionals are responsible.
H10.2	**H_0:** There are no differences in *TOCs'* propensity for tax noncompliant behaviour, due to tax complexity, depending on the way of development of their activity; **H_a:** There are differences in *TOCs'* propensity for tax noncompliant behaviour, due to tax complexity, depending on the way of development of their activity.	χ^2 (1) = 1.172; p = 0.279 >0.05[96]	We conclude that we do not reject the null hypothesis (H_0). There are no statistically significant differences in *TOCs*' propensity for tax noncompliant behaviour, due to tax complexity, depending on the way they develop their activity.
H11.1	**H_0:** There are no differences in *TOCs*' tax noncompliant behaviour, depending on their perception about tax system complexity; **H_a:** There are differences in *TOCs*' tax noncompliant behaviour depending on their perception about tax system complexity.	χ^2 (1) = 9.910; p = 0.002 <0.05[97] Mann-Whitney Test *U* (895) = 76087.500; p = 0.006 <0.05 Spearman Correlation: *rho* = 0.103; *p* = 0.002 <0.05	We reject the null hypothesis (H_0) and the relation is positive. The *TOCs* with the highest perception of tax system complexity are those who are assumed to have more tax noncompliant behaviour.
H11.2	**H_0:** There are no differences in *TOCs*' tax noncompliant behaviour, depending on their perception of the index of legislative tax complexity; **H_a:** There are differences in *TOCs*' tax noncompliant behaviour depending on their perception of the index of legislative tax complexity.	χ^2(2) = 11.696; p = 0.003 <0.05[98] Kruskal Wallis Test *H*(862) = 11.682; *p* = 0.003< 0.05 Spearman Correlation: *rho* = 0.116; *p* = 0.001 <0.05	We reject the null hypothesis (H_0) and the relation is positive. The *TOCs* in the highest levels of the *TOC* legislative tax complexity index are those who are assumed to have more tax noncompliant behaviour.
H11.3	**H_0:** There are no differences in *TOCs*' tax noncompliant behaviour, due to tax complexity, depending on their perception about their compliance tax complexity index; **H_a:** There are differences in *TOCs*' tax noncompliant behaviour, due to tax complexity, depending on their perception about their compliance tax complexity index.	χ^2 (2) = 3.036; *p* = 0.219 >0.05[99]	We conclude that we do not reject the null hypothesis (H_0). There are no statistically significant differences in *TOCs*' tax noncompliant behaviour, due to tax complexity, depending on their perception about the compliance dimension of tax complexity.
H11.4	**H_0:** There are no differences in *TOCs*' tax noncompliant behaviour, due to tax complexity, depending on their perception of the compliance tax complexity index, in the tax administration field; **H_a:** There are differences in *TOCs*' tax noncompliant behaviour, due to tax complexity, depending on their perception of the compliance tax complexity index, in the tax administration field.	χ^2 (2) = 1.963; *p* = 0.375 >0.05[100]	We conclude that we do not reject the null hypothesis (H_0). There are no statistically significant differences in *TOCs*' tax noncompliant behaviour, due to tax complexity, depending on their perception of the compliance dimension of tax complexity, in the tax administration field.
H12.1	**H_0:** There are no differences in *TOCs*' tax noncompliant behaviour, due to tax complexity, depending on their perception of the relation between tax complexity and involuntary tax noncompliance; **H_a:** There are differences in *TOCs*' tax noncompliant behaviour, due to tax complexity, depending on their perception of the relation between tax complexity and involuntary tax noncompliance.	χ^2(4) = 24.618; *p* = 0.000 <0.001[101] Kruskal Wallis Test *H*(903) = 66.647; *p* = 0.000< 0,001 Spearman Correlation: *rho* = 0.260; *p* = 0.000 <0.001	We reject the null hypothesis (H_0) and the relation is positive. The *TOCs* who perceive the highest relation between tax complexity and involuntary tax noncompliance are those who are most assume to exhibit tax noncompliant behaviour.

[95] See the crosstab in Table XIV, in the Appendix E.
[96] See the crosstab in Table XV, in the Appendix E.
[97] See the crosstab in Table XVI, in the Appendix E.
[98] See the crosstab in Table XVII, in the Appendix E.
[99] See the crosstab in Table XVIII, in the Appendix E.
[100] See the crosstab in Table XVIII, in the Appendix E
[101] See the crosstab in Table XIX, in the Appendix E.

H	Operationalization	Tests, results and correlations (Strength and sign)	Conclusion
H12.2	**H_0:** There are no differences in *TOCs*' tax noncompliant behaviour, due to tax complexity, depending on their perception of the relation between tax complexity and their fear of making mistakes; **H_a:** There are differences in *TOCs*' tax noncompliant behaviour, due to tax complexity, depending on their perception of the relation between tax complexity and their fear of making mistakes.	$\chi^2(4) = 26.904$; $p = 0.000 < 0.001$[102] Kruskal Wallis Test $H(908) = 26.875$; $p = 0.000 < 0.001$ Spearman Correlation: $rho = 0.151$; $p = 0.000 < 0.001$	We reject the null hypothesis (H_0) and the relation is positive. The *TOCs* who perceive the highest relation between tax complexity and fear of committing errors are those who are most assume to display tax noncompliant behaviour.

As can be seen in the table above, there is a statistically significant relationship between *TOCs'* non-aggressive tax noncompliant behaviour, due to tax complexity and the following independent variables: (i) *TOCs*' perception of tax system complexity; (ii) the importance assigned by *TOCs* to the legislative dimension of tax complexity; (iii) *TOCs*' age; (iv) *TOCs*' gender; (iv) the importance assigned by *TOCs* to the relationship between tax complexity and involuntary tax noncompliance, as well as the fear of making mistakes.

Table 3.17 presents the relation between *TOCs'* perception of tax system complexity and other dependent variables and *TOCs*' propensity for tax aggressiveness, based on tax complexity.

Table 3.17 - Tests of research hypotheses as regards the relation between the perception of tax system complexity (and other variables) and *TOCs*' tax aggressiveness, based on tax complexity

H	Operationalization	Tests, results and correlations (Strength and sign)	Conclusion
H5.2	**H_0:** There are no differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on the age of the professional; **H_a:** There are differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on the age of the professional.	$\chi^2(3) = 23.583$; $p = 0.000 < 0.001$[103] Kruskal Wallis Test $H(889) = 23.557$; $p = 0.000 < 0.001$ Spearman Correlation: $rho = -0.143$; $p = 0.000 < 0.001$	We reject the null hypothesis (H_0) and the relation is negative. The *TOCs* with the highest propensity to participate in aggressive tax planning schemes are the oldest ones, and the group with fewer propensities comprises those *TOCs* whose ages range from 35 to 50 years old.
H6.2	**H_0:** There are no differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on the gender of the professional; **H_a:** There are differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on the gender of the professional.	$\chi^2(1) = 8.029$; $p = 0.703 > 0.05$[104]	We do not reject the null hypothesis (H_0) of equality of means: there are no statistically significant differences between men and women in the propensity of *TOCs* to participate in aggressive tax planning schemes.
H8.2	**H_0:** There are no differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on their level of tax knowledge; **H_a:** There are differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on their level of tax knowledge.	$\chi^2(5) = 3.632$; $p = 0.603 > 0.05$[105]	We do not reject the null hypothesis (H_0) of equality of means: there are no statistically significant differences in the *TOCs*' propensity to participate in aggressive tax planning schemes between the levels of the tax knowledge index.

[102] See the crosstab in Table XX, in the Appendix E.
[103] See the crosstab in Table XI, in the Appendix E.
[104] See the crosstab in Table XII, in the Appendix E.
[105] See the crosstab in Table XIII, in the Appendix E.

H	Operationalization	Tests, results and correlations (Strength and sign)	Conclusion
H10.3	**H_0:** There are no differences in *TOCs'* propensity to participle in aggressive tax planning schemes, depending on the turnover of companies in which professionals carry out their functions; **H_a:** There are differences in *TOCs'* propensity to participle in aggressive tax planning schemes, depending on the turnover of companies in which professionals carry out their functions.	χ^2 (4) = 8.592; p = 0.072 >0.05[106]	We conclude that we do not reject the null hypothesis (H_0). There are no statistically significant differences in *TOCs*' propensity to participle in aggressive tax planning schemes, depending on the turnover of companies in which professionals operate.
H10.4	**H_0:** There are no differences in *TOCs'* propensity to participle in aggressive tax planning schemes, depending on the way they develop their activity; **H_a:** There are differences in *TOCs'* propensity to participle in aggressive tax planning schemes, depending on the way they develop their activity.	χ^2 (1) = 7.495; p = 0.006 <0.05[107] Mann-Whitney Test U (895) = 76087.500; p = 0.006 <0.05 Spearman Correlation: *rho* = 0.092; p = 0.006 <0.05	We reject the null hypothesis (H_0), and the relation is positive. The *TOCs* with the highest propensity to participate in aggressive tax planning schemes are those who work in in-house taxation departments.
H11.5	**H_0:** There are no differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on their perception of tax system complexity; **H_a:** There are differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on their perception of tax system complexity.	χ^2 (1) = 0.500; p = 0.480 > 0.05[108]	We conclude that we do not reject the null hypothesis (H_0). There are no statistically significant differences in *TOCs*' propensity to participle in aggressive tax planning schemes, depending on their perception regarding tax system complexity.
H11.6	**H_0:** There are no differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on their perception of the legislative dimension of tax complexity; **H_a:** There are differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on their perception of the legislative dimension of tax complexity.	χ^2 (2) = 6.991; p = 0.030 <0.05[109] Kruskal Wallis Test H (834) = 6.983; p = 0.030 < 0.05 Spearman Correlation: *rho* = 0.071; p = 0.041 <0.05	We reject the null hypothesis (H_0) and the relation is positive. The *TOCs* in the highest levels of the *TOCs* legislative tax complexity index are those who assume greater propensities to participate in aggressive tax planning schemes.
H13.1	**H_0:** There are not differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on their propensity to take risks; **H_a:** There are differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on their propensity to take risks.	χ^2 (4) = 9.596; p = 0.048 <0.05[110] Kruskal Wallis Test H (818) = 9.584; p = 0.048 < 0.05 There is no significant correlation.	We reject the null hypothesis (H_0). The *TOCs* who refuse to participate in aggressive tax planning schemes are those who do not attribute importance to their own propensity to take risks in this context.
H13.2	**H_0:** There are no differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on their clients (employers) aggressiveness; **H_a:** There are differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on their clients (employers) aggressiveness.	χ^2 (4) = 22.266; p = 0.000 <0.001[111] Kruskal Wallis Test H(810) = 22.238; p = 0.000 < 0.001 There is no significant correlation.	We reject the null hypothesis (H_0). The *TOCs* who do not refuse to participate in aggressive tax planning schemes are those who attribute more importance to their clients' (employers') aggressiveness.
H13.3	**H_0:** There are no differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on their fear to lose clients (or to be dismissed); **H_a:** There are differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on their fear to lose clients (or to be dismissed).	χ^2 (4) = 17.502; p = 0.002 <0.05[112] Kruskal Wallis Test H(817) = 17.480; p = 0.002 < 0.05 Spearman Correlation: *rho* = 0.140; p = 0.000 <0.001	We reject the null hypothesis (H_0), and the relation is positive. The *TOCs* who do not refuse to participate in aggressive tax planning schemes are those who attribute more importance to the possibility of losing clients (or being dismissed).

[106] See the crosstab in Table XIV, in the Appendix E.
[107] See the crosstab in Table XV, in the Appendix E.
[108] See the crosstab in Table XVI, in the Appendix E.
[109] See the crosstab in Table XVII, in the Appendix E.
[110] See the crosstab in Table XXI, in the Appendix E.
[111] *Idem.*
[112] *Idem.*

H	Operationalization	Tests, results and correlations (Strength and sign)	Conclusion
H13.4	**H_0:** There are no differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on their fear of tax noncompliance being detected; **H_a:** There are differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on their fear of tax noncompliance being detected.	χ^2 (4) = 11.827; p = 0.019 <0.05[113] Kruskal Wallis Test H(813) = 11.813; p = 0.019 < 0.05 There is no significant correlation.	We reject the null hypothesis (H_0), and the relation is positive. The *TOCs* who refuse to participate in aggressive tax planning schemes are those who attribute less importance to the fear of tax noncompliance being detected.
H13.5	**H_0:** There are no differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on their fear of penalties being imposed on their customers; **H_a:** There are differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on their fear of penalties being imposed on their customers.	χ^2 (4) = 3.275; p = 0.513 >0.05[114]	We conclude that we do not reject the null hypothesis (H_0). There are no statistically significant differences in *TOCs*' propensity to participle in aggressive tax planning schemes, depending on their fear of penalties being imposed on the customers.
H13.6	**H_0:** There are no differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on their fear of the tax professional's image being tarnished; **H_a:** There are differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on their fear of the tax professional's image being tarnished.	χ^2 (4) = 11.671; p = 0.020 <0.05[115] Kruskal Wallis Test H(816) = 3.271; p = 0.514 > 0.05 There is no significant correlation.	We reject the null hypothesis (H_0). There are differences between *TOCs'* propensity to participate in aggressive tax planning schemes, depending on their fear of the tax professional's image being tarnished; but there are no categories to highlight.
H13.7	**H_0:** There are no differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on their fear of *OTOC* penalties; **H_a:** There are differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on their fear of *OTOC* penalties.	χ^2 (4) = 6.839; p = 0.145 >0.05[116]	We conclude that we do not reject the null hypothesis (H_0). There are no statistically significant differences in *TOCs*' propensity to participle in aggressive tax planning schemes, depending on their fear of *OTOC* penalties.
H13.8	**H_0:** There are no differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on their fear of debt reversal; **H_a:** There are differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on their fear of debt reversal.	χ^2 (4) = 3.595; p = 0.464 >0.05[117]	We conclude that we do not reject the null hypothesis (H_0). There are no statistically significant differences in *TOCs*' propensity to participle in aggressive tax planning schemes, depending on their fear of debt reversal.
H13.9	**H_0:** There are no differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on their personal and professional ethics; **H_a:** There are differences in *TOCs*' propensity to participate in aggressive tax planning schemes, based on tax complexity, depending on their personal and professional ethics.	χ^2 (4) = 24.917; p = 0.000 <0.001[118] Kruskal Wallis Test H(836) = 24.888; p = 0.000 < 0.001 Spearman Correlation: *rho* = - 0.141; p = 0.000 <0.001	We reject the null hypothesis (H_0), and the relation is negative. The *TOCs* who refuse to participate in aggressive tax planning schemes are those who attribute more importance to personal and professional ethics.
H13.10	**H_0:** There are no differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on their tax morality; **H_a:** There are differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on their tax morality.	χ^2 (4) = 38.636; p = 0.000 <0.001[119] Kruskal Wallis Test H(820) = 38.589; p = 0.000 < 0.001 Spearman Correlation: *rho* = - 0.213; p = 0.000 <0.001	We reject the null hypothesis (H_0), and the relation is negative. The *TOCs* who refuse to participate in aggressive tax planning schemes are those who attribute more importance to their tax morality.

[113] *Idem.*
[114] *Idem.*
[115] *Idem.*
[116] *Idem.*
[117] *Idem.*
[118] *Idem.*
[119] *Idem.*

H	Operationalization	Tests, results and correlations (Strength and sign)	Conclusion
H13.11	**H_0:** There are no differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on their perception of tax injustice; **H_a:** There are differences in *TOCs*' propensity to participate in aggressive tax planning schemes, depending on their perception of tax injustice.	χ^2 (4) = 16.197; p = 0.003 <0.05[120] Kruskal Wallis Test H(815) = 16.177; p = 0.003 < 0.05 Spearman Correlation: *rho* = - 0.128; p = 0.000 <0.001	We reject the null hypothesis (H_0), and the relation is negative. The *TOCs* who refuse to participate in aggressive tax planning schemes are those who attribute more importance to tax injustice.

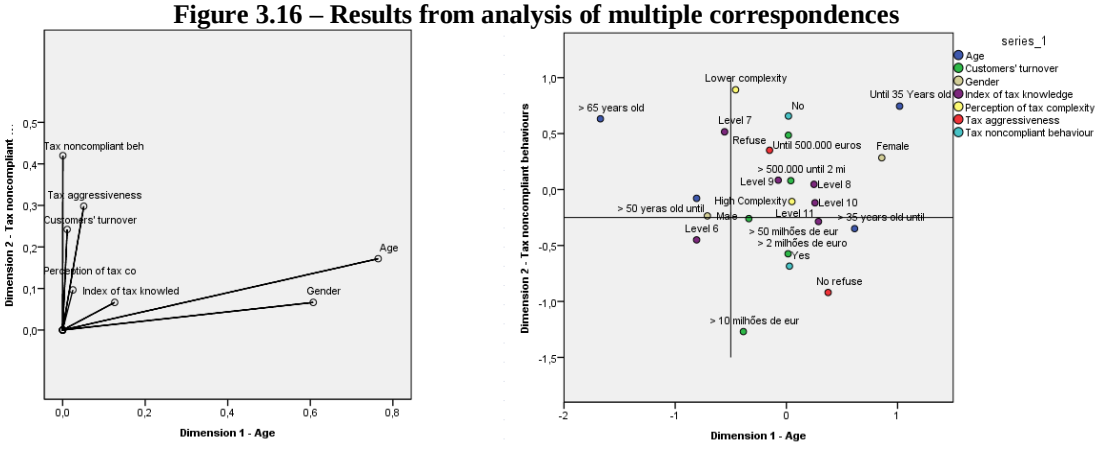
According to the data shown in the table, there is a statistically significant relationship between *TOCs'* propensity for tax aggressiveness, by taking advantage of tax complexity, and the following explicative variables: (i) the legislative dimension of tax complexity; (ii) *TOCs*' age; (iii) *TOCs*' ways of developing their activity; (iv) *TOCs*' values, such as their ethics, tax morality and sense of tax justice. Moreover, we highlight their failure to be affected by any fear of penalties. Our findings are in line with the results of descriptive statistics.

In the following sections, we perform an analysis of multiple correspondence and the explicative models of tax complexity and tax noncompliance are presented from the perspective of Portuguese tax professionals.

3.5.3.2 Analysis of multiple correspondences

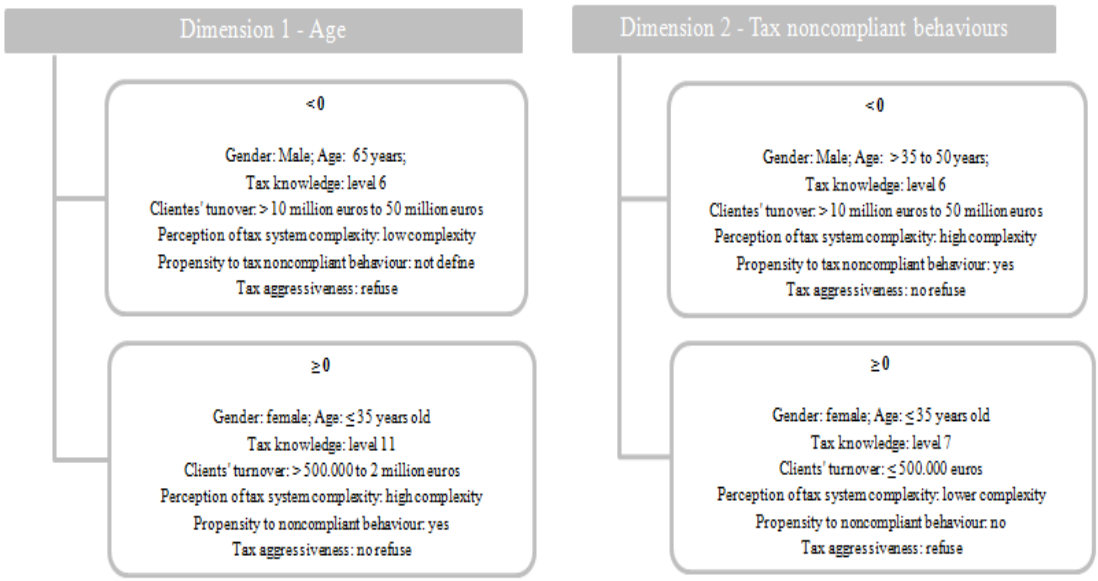
In order to obtain a profile containing the three dependent variables in our study, *TOCs'* perception of tax system complexity, *TOCs*' non-aggressive noncompliant behaviour, due to complexity and *TOCs*' propensity for tax aggressiveness, based on complexity, we undertook an analyses of multiple correspondences. Figure 3.16 presents the graphical results of that analysis.

Figure 3.16 – Results from analysis of multiple correspondences



[120] *Idem.*

Figure 3.17 – Dimensions of Portuguese tax professionals' profiles



The profile of *TOCs* has two dimensions, Dimension 1 and 2, with 0.431 and 0.310 of Cronbach's Alpha[121], respectively. Figure 3.17 presents these.

From the analysis of multiple correspondences, we can draw four profiles of Portuguese tax professionals. Two of those profiles represent the *TOCs* with greater propensity for tax noncompliance and tax aggressiveness, which correspond to Dimension 1, positive (≥ 0), and Dimension 2, negative (< 0). The first profile, with larger propensity for tax noncompliant behaviour, is: (i) female; (ii) aged up to 35; (iii) on Level 11 of the *TOCs* tax knowledge index; (iv) clients' turnover > €500,000 to €2 million; (v) a high perception of tax system complexity. The second profile is: (i) male; (ii) > 35 to 50 years old; (iii) on Level 6 of the *TOCs* tax knowledge index; (iv) clients' turnover > €10 million to €50 million; (v) a high perception of tax system complexity.

According to these two profiles characteristics, we can verify a relation between higher perception of tax system complexity and the greater propensity for non-aggressive tax noncompliance, as well as a relationship with the aggressive behaviour in the taxation field.

After defining those profiles, based on the three dependent variables, it seems important to construct models to explain them.

[121] Although the values of reliability analysis, obtained through Cronbach's Alpha, are low, it is important to note three factors that influence these values, the fact that we are working in the social sciences, the fact that the dependent variable is the transformation of a variable on a five point Likert scale and that the variable tax knowledge is an index.

3.5.3.3 Perception of tax complexity, tax noncompliance and tax aggressiveness: the explicative models

To perform this multivariate analysis, we opted for logistic regressions (by using the "enter" method), because the dependent variables of the models are dichotomous: *«TOCs'* perception of tax system complexity», «*TOCs'* non-aggressive noncompliant behaviour, due to complexity» and «*TOCs'* propensity for tax aggressiveness, by using tax complexity». In the models we also have three qualitative independent variables, «gender», «ways of developing activity», and, in the last two models, «*TOCs*' perception of tax system complexity», which we convert into *dummy* variables.[122]

It is important to note that in the logistic regression the pseudo R^2 is based on the comparison of the fitted model with the null model (with only one constant), and is interpreted as equivalent to the R^2 in the linear regressions. Thus this means the explicative capacity of the independent variables of the models.

Model 1 - *TOCs*' perception of tax system complexity

The dependent variable of the first model is *«TOCs'* perception of tax system complexity», and the data are grouped into two categories - «Low Complexity» and «High Complexity», thus making it a dichotomous variable. Table 3.18 presents the results of the explicative model.

Table 3.18 - *TOCs'* perception of tax system complexity (TOC_TC)

Independent variables (Predictors)	B	Wald
TOCs' age **(A)**	-0.346**	4.927
TOCs' gender (*Dummy*) [(a)] **(G)**	0.262	0.985
TOCs tax knowledge index **(TX_KNW)**	-0.286**	12.105
TOCs' customers' (employers') turnover **(TRNV)**	0.095	0.547
TOCs' ways of developing activity (*Dummy*) [(b)] **(ACT)**	-0.025	0.010
TOCs legislative tax complexity index **(LEG_CPX)**	0.878***	31.470
TOCs compliance tax complexity index **(DEC_CPX_1)**	0.034	0.049
Index of compliance tax complexity in tax administration context **(DEC_CPX_2)**	0.133	0.732
Constant	2.827**	7.708
Nagelkerke R^2	0.131***	

Reference categories [(a)] Female; [(b)] In-house tax department
* p< 0.1; ** p < 0.05; *** p < 0.001

The estimated final model is represented by the following equation:

TOC_TC = 2.827 – 0.346**A** + 0.262**G** –0.286**TX_KNW** + 0.095**TRNV** – 0.025**ACT** + 0.878**LEG_CPX** + 0.034 **DEC_CPX_1** + 0.133**DEC_CPX_2**

[122] A *dummy* variable is the transformation of a qualitative variable with two categories into a numerical variable, by assigning to one category the code 0 and to the other category the code 1. The advantage of using the transformation into dummy variables is the possibility of applying statistical tests not applicable to qualitative variables.

From the table above, we can see the independent variables explain *TOCs'* perception of tax system complexity at 13.1 %. This value is low, however for some authors seem reasonable for the social sciences, due to the complexity and subjectivity inherent in the attempts to explain and measure the behaviour and perceptions of individuals. In this sense, for instance, Cuccia and Carnes (2001) present a model of 25% of explicative capacity, concerning the relation between tax complexity and tax equity perceptions, Kasipillai and Jabbar (2006) use results of 15**.**9% to explain an association between taxpayers' gender and their tax noncompliant attitudes, and Bonner *et al.* (1992) show results of 9%, 12%, 14%, 19% and 27%, by using a stepwise method, in a study concerning the ability of tax professionals to identify tax planning opportunities.

Moreover, this model correctly classifies 89.1% of the respondents, and we also verify the suitability of the model to the data, through the likelihood ratio: $p < 0.001$ (*p-value* = 0.000). We also found that the values estimated by the model are very close to the observed values. We also emphasise the fact that this model, according to the Hosmer and Lemeshow test with a *p-value* = 0.639 (> 0.05), proves to be suitable for the data.

According to the results of the model we verify firstly that the older the ages of the *TOCs* are, the lower is their perception of tax system complexity; secondly, the higher the levels of *TOCs* tax knowledge are, the lower is their perception of tax system complexity; thirdly, the higher the index of legislative tax complexity is, the greater is their perception of tax complexity.

We emphasize the crucial role that professional tax knowledge plays, because of the significant negative effect on their perception of tax system complexity. We also highlight the importance of the legislative tax complexity index, by according the perception of tax complexity greater significance in the model: 31.470, with a *p-value* = 0.000 (<0.001).

Model 2 - *TOCs*' non-aggressive noncompliance behaviour and tax complexity

The dependent variable of this model is «*TOCs'* non-aggressive noncompliant behaviour, due to tax complexity», to which it is possible to give two responses: no/yes.

Table 3.19 summarizes the results of the explicative model of the predictors of «*TOCs'* non-aggressive noncompliant behaviour, due to tax complexity».

Table 3.19 - *TOCs'* non-aggressive noncompliant behaviour due to tax complexity (N_CPL_TC)

Independent variables (Predictors)	B	Wald
TOCs' age **(A)**	0.119	1.419
TOCs' gender (*Dummy*) [(a)] **(G)**	0.409**	5.977
TOCs tax knowledge index **(TX_KNW)**	0.044	0.682
TOCs' customers' (employers') turnover **(TRNV)**	0.112	2.016
TOCs' ways of developing activity (*Dummy*) [(b)] **(ACT)**	0.110	0.442
*TOCs l*egislative tax complexity index **(LEG_CPX)**	0.199*	2.791
TOCs compliance tax complexity index **(DEC_CPX_1)**	-0.55	0.287
Index of compliance tax complexity in tax administration context **(DEC_CPX_2)**	0.017	0.025
TOCs' perception of tax system complexity (*Dummy*) [(c)] **(TOC_TC)**	- 0.489*	3.478
Perception about the relation of tax system complexity with the increase in involuntary tax noncompliance **(TC_NCPL)**	0.420***	24.965
Perception regarding the relation of tax complexity with the increase in the fear of making errors **(TC_E)**	0.211**	4.108
Constant	-4.131***	26.340
Nagelkerke R^2	0.122***	

Reference categories [(a)] Female; [(b)] In-house tax department; [(c)] High complexity
* p< 0,1; ** p < 0,05; *** p < 0,001

The estimated final model is represented by the following equation:

N_CPL_TC = -4.131 + 0.119**A** + 0.409**G** + 0.044**TX_KNW** + 0.112 **TRNV** + 0.110**ACT** + 0.199**LEG_CPX** -0.55 **DEC_CPX_1** + 0.017**DEC_CPX_2** + 0.489 **TOC_TC** + 0.420**TC_NCPL**+ 0.211**TC_E**

The explicative capacity of the independent variables included in this model of *TOCs*' non-aggressive noncompliant behaviour due to tax complexity is 12.2%. As is shown by the explicative capacities of the regressions published by Bonner *et al.* (1992) and Kasipillai and Jabbar (2006), the present value is relatively realistic for the social sciences, because subjects related to attitudes and perceptions are complex, particularly when they involve sensitive issues such as tax noncompliance. Furthermore, this model correctly classifies 64.5% of the respondents.

As regards the suitability of the model for the data, we noticed the likelihood ratio, which revealed the model as suitable, because $p < 0.001$ (*p-value* = 0.000) and there are only small differences between the values estimated by the model and the observed values. According to the Hosmer and Lemeshow test, with a *p-value* = 0.234 (> 0. 05), this model seems suitable for the data.

We conclude that the independent variables with statistically significant impact on the propensity of *TOCs* for non-aggressive noncompliant behaviour, motivated by tax complexity, have the following effects: (i) men are up to 5.977 times more susceptible to tax noncompliance than women; (ii) the higher the index of legislative tax complexity, the greater is *TOCs*' propensity for tax noncompliance; (iii) *TOCs* with a low perception of tax system complexity are up to 3.478 times less likely to default,

than those who have a higher perception of tax system complexity; (iv) *TOCs* who have a higher perception of the relationship of tax system complexity with the increase in involuntary tax noncompliance and the increase in the fear of committing errors have a higher propensity for tax noncompliant behaviour.

From these results, we highlight the lack of any statistical relevant relation to an important variable: the *TOCs* tax knowledge index. However, the variables with statistically significant relation with *TOCs*' propensity for tax noncompliance, due to tax complexity, are those related to the complexity of the tax system. Thus, we can conclude that tax complexity provides statically significant explanation for some tax non-aggressive noncompliant behaviour of Portuguese tax professionals.

Model 3 - *TOCs*' propensity for tax aggressiveness and tax complexity

The dependent variable for this model is *«TOCs'* tax aggressiveness, by using tax complexity», *i.e.* a dichotomy variable (refuse/do not refuse[123]). Table 3.20 summarizes the results of this explicative model.

Table 3.20 -*TOCs'* propensity for tax aggressiveness and tax complexity (AG)

Independent variables (Predictors)	B	Wald
TOCs' age **(A)**	-0.338**	7.800
TOCs' gender (*Dummy*) [(a)] **(G)**	0.366*	3.452
TOCs tax knowledge index **(TX_KNW)**	-0.012	0.034
TOCs' customers' (employers') turnover **(TRNV)**	0.178**	3.864
TOCs' ways of developing activity (*Dummy*) [(b)] **(ACT)**	-0.288	2.256
TOCs legislative tax complexity index **(LEG_CPX)**	0.379**	7.144
TOCs' perception of tax system complexity (*Dummy*) [(c)] **(TOC_TC)**	-0.099	0.108
TOCs' propensity to take risks **(R)**	-0.006	0.004
Clients'/employers' tax aggressiveness **(AGG)**	-0.087	0.820
TOCs' fear of losing customers (or being dismissed) **(CL)**	0.322***	13.557
TOCs' fear of the probability of noncompliance detection **(D)**	-0.073	0.529
TOCs' fear of punishments imposed by tax administrators on their customers/employers **(P_TA)**	-0.044	0.146
TOCs' fear of tarnishing their professional image **(PI)**	-0.099	0.528
TOCs' fear of punishment imposed by OTOC **(P_OTOC)**	0.051	0.217
TOCs' fear of customers'/employers' debts being reversed **(P_DEB)**	0.068	0.487
TOCs' personal and professional ethics **(PPE)**	-0.104	0.414
TOCs' tax morality **(TM)**	-0.443**	11.451
TOCs' perception of tax justice **(TJ)**	0.005	0.002
Constant	0.753	0.728
Nagelkerke R^2	0.151***	

Reference categories [(a)] Female; [(b)] In-house tax departmentt; [(c)] High complexity
* p< 0,1; ** p < 0,05; *** p < 0,001

The estimated final model is represented by the following equation:

[123] Participate in aggressive tax planning schemes, by using the loopholes in tax laws, and the ambiguity caused by tax complexity.

AG = 0.753 – 0.338 **A** + 0,366 **G** – 0.012 **TX_KNW** + 0.178 **TRNV** – 0.288 **ACT** + 0.379 **LEG_CPX** – 0.099**TOC_TC** – 0.006**R** -0.087**AGG +** 0.322**CL** – 0.073 **D** – 0.044 **P_TA** – 0.099 **PI +** 0.051**P_OTOC +** 0.068**P_DEB** – 0.104**PPE** - 0.443**TM +** 0.005**TJ**

This model correctly classifies 71.5% of the respondents and explains 15.1% of the tax aggressiveness of Portuguese tax professionals. However, this is a low value, it shows some relations between the variables, which is a good starting point in the tax noncompliance context, since it is difficult to explain and measuring individual attitudes and perceptions as regards such sensitive subjects as tax aggressiveness, as highlighted by the results of Bonner *et al.* (1992) and Kasipillai and Jabbar (2006), as mentioned above.

The model is suitable for the data, with $p < 0.001$ (*p-value* = 0.000) (as the Hosmer and Lemeshow test, with a *p-value* = 0.812 (> 0.05), attests); we also found that the values estimated by the model are very close to the observed values.

According to the results presented in Table 3.20, we verify that the independent variables with statistically significant relation with the propensity for *TOCs*' tax aggressiveness have the following effects: (i) younger *TOCs* are more prone to tax aggressiveness; (ii) men are up to 3.452 times more prone to tax aggressiveness than women; (iii) the *TOCs* who work in larger firms are more likely to tax aggressive behaviour; (iv) the higher the legislative tax complexity index the greater is *TOCs*' propensity for tax aggressiveness; (v) the greater the fear of losing the client (or of being dismissed) the higher the propensity to tax aggressiveness; (vi) the higher is *TOCs*' level of tax morality the lower is their propensity to be tax aggressive.

We also highlight the inexistence of a relationship between *TOCs* own propensity to take risks and their propensity for tax aggressiveness, as well as the absence of any statistically significant relation with *TOCs*' tax aggressiveness of other variables presented in the international tax literature, such as the professionals tax knowledge, their customers'(or employers') aggressiveness, and all the types of punishments proposed in the questionnaire, which corroborate all the conclusions we have already reached about the ineffectiveness of the traditional theory of tax evasion, in the *TOCs* taxation context.

3.6 Conclusions

Concerning the characterization of *TOCs*, we verify a predominance of members whose ages are equal to or less than 50 years old (about 60%), and an equal balance between

professionals of both genders. By categorized the data of age by gender, we note that there has been an increasing trend of women to enter this profession in recent years, suggesting that though it was predominantly a male domain in the past, it will become predominantly a female one in the future.

We also conclude that the majority of tax professionals have a degree (75.1%), and their level of tax experience is high (73.7% of respondents have more than ten years of experience). *TOCs* mostly develop their activity outsourcing, via accountancy and taxation firms (69.9%), with customer portfolios' composed essentially of micro enterprises (78.2%).

In addition, we developed the *TOCs* tax knowledge index, which allows us to evaluate their fiscal knowledge, classified as medium high: Levels 8 and 10 of the index contain the majority of *TOCs* (43.2%); 61.1% of tax professionals are at the levels above the mean value. In future, the *TOC* tax knowledge index will be increased, because the *TOCs* with fewer qualifications are mainly the older ones, who are nearing retirement age.

TOCs perceive the Portuguese tax system to have a high level of complexity (89.1%). This result corresponds with the international literature (Long & Swingen, 1987; Green, 1994; McKerchar, 2005).

The introduction of new technologies in compliance tasks is seen by 61.60% of *TOCs* as a positive measure for reducing their perception of tax complexity; this result is in line with the reports from the OECD (2010d) regarding the importance of new technologies in tax compliance tasks.

The main determinants of tax complexity pointed out by tax professionals are related to tax laws, such as: (i) "volatility" of tax laws (88.4%); (ii) tax law dispersion (86.1%); (iii) preparation of accounting information for fiscal purposes (83.2%)[124]; (iv) many exceptions to the rules and transitional arrangements (82.2%); and (v) ambiguous language (80.1%).

The *«IVA»* is the tax which presents the highest level of legislative tax complexity (67.3%), and the «*IRC*» is recognized as the tax with the highest level of complexity as regards compliance tasks (55.5%).

We divide tax complexity into different dimensions, by grouping the areas of tax complexity, by using the technique of Principal Component Analysis (PCA). The three dimensions (indices) are (i) the «*TOCs* legislative tax complexity index»; (ii) the «*TOCs*

[124] These data are in line with those obtained by Lopes (2009) about the costs of time within the companies.

compliance tax complexity index»; (iii) the «Index of compliance tax complexity in tax administration context». This is a new and important result for tax research, since according to the international tax literature, tax professionals used to divide tax complexity into six dimensions, which in our literature review we faction into two groups of dimensions: the legislative dimension and the compliance dimension.

The perception of a high level of tax complexity has two main types of consequence in relation to *TOCs* compliance: tax complexity increases the propensity to effectively make errors in taxation matters. It also exerts an influence on the use of the ambiguities of tax laws in taxpayers' favour. 45.9% of *TOCs* admitted they had engaged in non-aggressive tax noncompliance, due to tax complexity, at least once; 12.5% admitted to having frequently used the complexity of tax laws in taxpayers' favour. Moreover, we can also verify that the frequency of that tax noncompliance is mostly at the level «sometimes»; the sum of the categories «sometimes» and «frequently» amounts to 68.53% of the *TOCs* who confessed to tax noncompliance.

In addition, 0.7% of respondents admitted to having participated at least once, or to being disposed to participate, in aggressive tax planning schemes, by using tax complexity.

In addition, the results of the test of our research hypotheses are summarized in Table 3.21.

Table 3.21 – Summary of the results of the research hypotheses

H	Hypotheses	Expected Signal	Result	Signal
H1	There is a relation between tax professionals' perception as regards the legislative dimension of tax complexity and their perception about tax system complexity.	+	Validated	+
H2	There is a relation between tax professionals' perception as regards the compliance dimension (*TOCs* context) of tax complexity and their perception about tax system complexity.	+	Validated	?
	There is a relation between tax professionals' perception as regards the compliance dimension (tax administration context) of tax complexity and their perception about tax system complexity.	+	Validated	+
H3	*TOCs*' perception in relation to tax system complexity is not related to their age.	Neutral	Not validated	- (younger)
H4	*TOCs*' perception of tax system complexity is not related to their gender.	Neutral	Validated	
H5	*TOCs*' propensity to engage in tax noncompliance (non-aggressive) is not related to their age.	Neutral	Not validated	?
	TOCs' propensity to engage in tax noncompliance (aggressive) is not related to their age.	Neutral	Not validated	- (medium age)
H6	*TOCs*' propensity to engage in tax noncompliance (non-aggressive) is not related to their gender.	Neutral	Not validated	- (men)
	TOCs' propensity to engage in tax noncompliance (aggressive) is not related to their gender.	Neutral	Validated	
H7	*TOCs'* perception of tax system complexity is related to their tax knowledge.	-	Validated	-
H8	*TOCs*' propensity for tax noncompliance (non-aggressive and aggressive) is related to their tax knowledge.	-	Not validated	
H9	There is a relation between the dimension of companies in which tax professionals carry out their functions and *TOCs'* perception regarding tax system complexity.	+	Not validated	

H	Hypotheses	Expected Signal	Result	Signal
H10	There is a relation between the dimension of companies in which tax professionals carry out their functions (turnover) and *TOCs*' tax noncompliant behaviour (non-aggressive), caused by tax complexity.	+	Not validated	
	There is a relation between the dimension of companies in which tax professionals carry out their functions (way of develop activity) and *TOCs*' tax noncompliant behaviour (non-aggressive), caused by tax complexity.	+	Not validated	
	There is a relation between the dimension of companies in which tax professionals carry out their functions (turnover) and *TOCs*' tax noncompliant behaviour (aggressive), caused by tax complexity.	+	Not validated	
	There is a relation between the dimension of companies in which tax professionals carry out their functions (way of develop activity) and *TOCs*' tax noncompliant behaviour (non-aggressive and aggressive), caused by tax complexity.	+	Validated	+ (In-house department)
H11	*TOCs*' perception of tax system complexity (as a whole) is related to their tax noncompliant.	+	Validated	+
	TOCs' perception of tax system complexity (legislative dimension) is related to their tax noncompliant.	+	Validated	+
	TOCs' perception of tax system complexity (compliance dimension – *TOCs* context) is related to their tax noncompliant.	+	Not validated	
	TOCs' perception of tax system complexity (compliance dimension – tax administration context) is related to their tax noncompliant and tax aggressive behaviour.	+	Not validated	
	TOCs' perception of tax system complexity (as a whole) is related to their tax aggressive behaviour.	+	Not validated	
	TOCs' perception of tax system complexity (legislative dimension) is related to their tax aggressive behaviour.	+	Validated	+
H12	*TOCs*' perception of the relation between tax complexity and noncompliant behaviour (non-aggressive and aggressive) is related to tax noncompliant and tax aggressive behaviour.	+	Validated	+
H13	*TOCs'* tax aggressiveness, based on the ambiguity of tax law, is related to fears and psychological factors (their propensity to take risks) that *TOCs* weigh up in making their decisions.	+	Validated	?
	TOCs' tax aggressiveness, based on the ambiguity of tax law, is related to fears and psychological factors (their clients/employers aggressiveness) that *TOCs* weigh up in making their decisions.	+	Validated	?
	TOCs' tax aggressiveness, based on the ambiguity of tax law, is related to fears and psychological factors (their fear to lose clients/or to be dismissed) that *TOCs* weigh up in making their decisions.	+	Validated	+
	TOCs' tax aggressiveness, based on the ambiguity of tax law, is related to fears and psychological factors (their fear of tax noncompliance being detected) that *TOCs* weigh up in making their decisions.	-	Validated	?
	TOCs' tax aggressiveness, based on the ambiguity of tax law, is related to fears and psychological factors (their fear of penalties being imposed on their customers) that *TOCs* weigh up in making their decisions.	-	Not validated	
	TOCs' tax aggressiveness, based on the ambiguity of tax law, is related to fears and psychological factors (their professional's image) that *TOCs* weigh up in making their decisions.	-	Validated	?
	TOCs' tax aggressiveness, based on the ambiguity of tax law, is related to fears and psychological factors (their fear of *OTOC* penalties) that *TOCs* weigh up in making their decisions.	-	Not validated	
	TOCs' tax aggressiveness, based on the ambiguity of tax law, is related to fears and psychological factors (their fear of debt reversal) that *TOCs* weigh up in making their decisions.	-	Not validated	
	TOCs' tax aggressiveness, based on the ambiguity of tax law, is related to fears and psychological factors (their ethics) that *TOCs* weigh up in making their decisions.	-	Validated	-
	TOCs' tax aggressiveness, based on the ambiguity of tax law, is related to fears and psychological factors (their ethics) that *TOCs* weigh up in making their decisions.	-	Validated	-
	TOCs' tax aggressiveness, based on the ambiguity of tax law, is related to fears and psychological factors (tax injustice) that *TOCs* weigh up in making their decisions.	-	Validated	-

The results obtained in the analysis validated most of the expected signals of the research hypotheses. Regarding the neutral hypotheses, we were able to establish some relations and define the corresponding signal (H3, H5b and H6a).

Moreover, using the analysis of multiple correspondences, we define two profiles of *TOCs* most prone to tax noncompliant behaviour (aggressive and non-aggressive). The first profile is constituted by women aged up to 35, classified at Level 11 of the tax knowledge index, whose clients (or employers) with the highest turnovers are positioned in the category «> €500,000 to €2 million», and who have a high perception of tax system complexity. The second profile is characterized by men, whose ages range from «> 35 to 50», on the Level of a tax knowledge index of 6, with clients' (or employers') turnover within the range of «> €10 million to €50 million», and whose perception of tax system complexity is high.

It is important to highlight two key ideas in relation to these profiles - firstly, the presence of a high level of perceived tax system complexity in both, and secondly, the existence of a profile which identifies younger women as having a high propensity for tax noncompliance. However, in general men are more likely to resort to tax noncompliance than women, particularly in its aggressive form. This profile becomes worrisome given that in recent years the number of women entering this profession has been more than twice that of men. If this trend continues, the number of *TOCs* included in this profile will grow, which could significantly increase the levels of tax noncompliance in the future.

Finally, from the variables of our study, we construct an explicative model of the tax complexity perceived by *TOCs*, which explains 13.1% of the perception of fiscal complexity. This perception is mainly predicted by the index of legislative tax complexity, age and the *TOCs* tax knowledge index .We highlight the importance of the level of the tax knowledge index, because it can reduce the level of tax complexity perceived by *TOCs*.

We also construct an explicative model of *TOCs'* non-aggressive tax noncompliant behaviour, due to tax complexity, which explain in 12.2% those attitudes. Some of that behaviour, in the context of Portuguese tax professionals, can be predicted based on the following variables: «gender», «*TOCs* legislative tax complexity index», «*TOCs'* perception of tax system complexity», and the relation, established by *TOCs*, between high level of tax system complexity and the increase in involuntary tax noncompliance.

Furthermore, we also construct an explicative model of *TOCs*' tax aggressiveness, by using tax complexity; this explains the dependent variable in 15.1%. We validate that the *TOCs* legislative tax complexity index, the fear of losing customers (or being dismissed), age and tax morality are the variables that explain tax aggressiveness of tax professionals in Portugal.

We highlight the lack of importance of all forms of punishment for tax noncompliance, which detracts from the significance of the traditional theory of tax evasion in the *TOC* taxation field, which emphasizes the relevance of punishment. This result is not in line with the international tax literature review. Furthermore, in contrast with the international literature, *TOCs'* tax morality is the second most important predictor in the model, and its influence is negative.

In relation to the impact of tax complexity on *TOCs*' tax noncompliant behaviour (more aggressive or less), particularly in its legislative dimension, tax system complexity emerges as a serious problem, which deserves the attention of policy-makers, the tax authority, the *OTOC* and academia, in order to unite efforts to minimize its negative effects on *TOCs'* compliance activities.

We propose some future lines of research - firstly, the study of gender in the development of the activity of tax professionals**;** secondly, the study of the costs of the "volatility" of Portuguese tax law for *TOCs*, including for instance updates on professional software, knowledge updates and additional meetings with customers. Thirdly, we propose a study regarding *TOCs*' tax morality and tax compliance**;** fourthly, due to the importance of tax knowledge in the *TOC* context, we propose undertaking a study into the management of tax knowledge in Portugal, *i.e.* the tax knowledge market, and fifthly, a research to understand how the Portuguese tax authority perceives the problem of tax complexity, and its consequences in terms of tax compliance. Finally, we consider that it would be useful in future to undertake an update of the tax complexity and tax knowledge indices, in order to measure their evolution within the Portuguese tax system.

Concluding remarks

This dissertation is devoted to the study of tax compliance and tax complexity, from the perception of tax professionals in Portugal. These final conclusions are a synthesis of the main findings presented in the three essays.

From a theoretical perspective, through the literature review, this research has revealed some knowledge gaps that can be used by researchers in the future - for instance, the need for studies, particularly from non-Anglo-Saxon countries, relating to the role of tax accountants concerning tax compliance and tax complexity**,** the dearth of studies that use laboratory experiments as part of their methodology, the lack of studies about involuntary tax noncompliance**,** and the need to better distinguish between tax complexity and perception of tax complexity, as well as the need to study and compare different perceptions from different players in the tax systems.

Nowadays, tax professionals have progressively substituted individual taxpayers in order to comply with their tax obligations, because of their better judgment and ability to make choices regarding tax affairs. As a result, it is necessary to understand their role in the process of tax compliance and tax complexity. The role of tax professionals and their influence on taxpayers' compliance began to be studied in the '80s, since the traditional theory of tax evasion did not contain two important variables – the impact of the use of tax professionals and the perception of tax complexity.

Taxpayers resort to the use of tax professionals in order to solve complexity and uncertainty surrounding tax laws. Thus, we highlight the use of the tax professional as an indicator of a high perception of tax complexity.

Tax professionals' aggressiveness can be classified into three types of attitudes: «creative accounting, aggressive tax planning», «cautious minimising with conflict avoidance» (those who ponder carefully their decision whether or not to participate in tax aggressive activities)**,** and «low risk with no fuss approach» (Sakurai & Braithwaite, 2003).

The different levels of tax aggressiveness among professionals are explained mostly by the way they use their tax knowledge, as well as by their awareness of the penalties for tax noncompliance. In an uncomplicated situation, tax professionals can have a positive effect on increasing tax compliance by using their tax knowledge to help taxpayers overcome problems caused by tax complexity. In more complex situations, tax professionals can use their tax knowledge to take advantage of tax complexity in favour of taxpayers. The perception of tax complexity is a key variable, both in the

context of the performance of tax professionals and as a primary motivation for taxpayers to hire them.

From the empirical study, this thesis extends knowledge in this area into three perspectives.

Firstly, it lends more weight to the importance of tax professionals in the field of tax compliance and tax complexity in Portugal, a country where there are no prior research publications regarding this subject.

Secondly, it creates a useful framework, with the construction of some indices, namely the index of tax knowledge, the indices of tax complexity (legislative and compliance dimensions) and the index of tax updating, which can measure some key points of tax complexity, allowing researchers to monitor their progress.

Thirdly, it adds to the international tax literature review the perspective of paid tax professionals whose customers are mostly companies. In the case of Portugal, tax professionals' clients are overwhelmingly businesses with the status of permanent clients, through renewable annual contracts, or the *TOCs* are employees of the companies themselves. By contrast, the majority of existing studies focus mostly on individual taxpayers. Nevertheless, the detected areas of tax complexity are very similar, compared with those reported in the international literature review, except in the case of the dimensions of tax complexity perceived. Thus, Portuguese tax professionals grouped the areas of tax complexity into three dimensions: legislative, compliance from a tax professional's perspective, and compliance in tax administration context. However, for tax preparers from Anglo-Saxon countries, there are six dimensions: ambiguity, change, detail, computations, record keeping and tax forms.

One of the main contributions this thesis make to the knowledge in this field is related to the possibility of drawing the profile of Portuguese tax professionals regarding important and sensitive areas of their activity, such as their perception of tax complexity, their tax knowledge, their need for constant updating, and their compliant / noncompliant profiles.

Regarding the perception of tax complexity, the indices of tax complexity indicate high levels of perceived tax complexity by *TOCs*, in legislative and compliance dimensions. In relation to tax updating, Portuguese tax professionals spent approximately 22 hours per month on tax updating, which is a considerable amount of time, in particular because they could have spent this time in more productive activities. The index of tax knowledge classifies Portuguese tax accountants mostly with a

medium high level of tax knowledge**.** From *TOCs* perspective, tax knowledge becomes a "weapon" against tax complexity and the main "tool" for avoidance of one of their greatest fears, the possibility of committing errors due to the complexity of the tax system.

Portuguese tax professionals also have great concerns regarding tax compliance obligations. Firstly, they instance tax compliance as the main justification for their need to make constant tax update; secondly, they state that on average 70% of their tax activities are involved with tax compliance tasks. Nevertheless, about half the respondents admit to practising non-aggressive tax noncompliant activity, motivated by tax complexity. Regarding their tax aggressiveness as a result of ambiguity and gaps in the tax laws, the main findings profile them on levels of reduced aggressiveness: 66% of Portuguese tax professionals are classified in the category of less aggressiveness, *i.e.* «low risk with no fuss approach»; 26% in the medium aggressiveness bracket, *i.e.* the «cautious minimising with conflict avoidance»; and finally 0.7% are in the «creative accounting, aggressive tax planning» group of tax professionals.

The main reason that Portuguese tax professionals proffer for not adhering to the aggressive tax planning schemes is not the fear of penalties, but their fear of losing customers (or being dismissed), with a positive relation with their tax aggressiveness, as well as their sense of tax morality, with a negative effect. Thus, for Portuguese tax professionals, the probability of accepting to participate in aggressive tax planning increases in direct proportion to the fear of losing a customer (or being dismissed). Furthermore, as the tax morality of Portuguese tax professionals increases, the less likely are they to accept an aggressive tax planning scheme.

By considering together their tax noncompliant behaviour (more or less aggressive), their perception of tax complexity and other variables (age, gender, tax knowledge and size of customers), we can draw two profiles of Portuguese tax professionals with the greatest propensities to tax noncompliance (aggressive and non-aggressive). The first have the following characteristics: women up to 35 years of age, classified on Level 11 of the *TOCs* tax knowledge index, whose clients mainly comprise companies with a turnover in the range of €500,000 to €2 million, and who have a high perception of tax system complexity. The second profile assumes the following characteristics: men**,** whose ages range from 35 to 50 years old, ranked on Level 6 of the *TOCs* tax knowledge index, with a client portfolio mainly comprising companies whose turnover is in the range of €10 million to €50 million, and with a high perception of tax

system complexity. Thus, the results show that in the profiles of higher propensity for tax noncompliance, there is a high perception of tax complexity. On the other hand, in the two profiles with fewer propensities for tax non compliant behaviour, the perception of tax complexity decreases.

We can also verify that *TOCs* tax knowledge index is negatively related with their perception of tax system complexity. Furthermore, gender, their index of legislative tax complexity and their perception of tax complexity are related to some non-aggressive tax noncompliant behaviour of Portuguese tax professionals.

Moreover, the age of Portuguese tax professionals, their levels of tax morality, the index of legislative tax complexity and their fear of losing customers (or be dismissed) are the variables that most explain tax aggressive attitudes of tax professionals in Portugal.

Our findings show that the perception of tax system complexity, mainly the legislative perspective, can influence Portuguese tax professionals' behaviours towards tax compliance**.**

For future lines of research, it will be interesting to ascertain why Portuguese taxpayers (individual and small business) who are not required by law to hire a *TOC* use them at all, and how widespread that use is. In addition, we intend to find out what kinds of tax professionals are used by those taxpayers (*TOCs*, lawyers, solicitors or others), and what relation this have to tax complexity and tax compliance.

The study of tax professionals' tax morality is also a line of future research, since in Portugal it is the predictor (in Model 3 – *TOCs* aggressiveness and tax complexity) with the most negative relation with their aggressive tax noncompliant behaviour.

Understanding the role of women in the tax professional context in relation to tax compliance could be another interesting line of future research. Finally, a research investigation to understand how the Portuguese tax authorities perceive tax complexity will be relevant in order to compare perspectives, those of tax professionals and those of tax administration.

This research admits some limitations. Firstly, in relation to the method of data collection used, a survey of Portuguese tax professionals' perceptions might introduce some degree of subjectivity, since any conclusions depend on the direct answers of tax professionals. However, our survey was applied without the presence of the research in order to minimize this effect. The second limitation concerns the convenience sample used. Nevertheless, tables of random numbers were used to obtain a stratified "random"

sample with similar characteristics to those of the target population. Thus, generalizations should be deduced from the results with care.

As far as we know, this study is the first conducted in Portugal whose aim is to analyse the role of tax professionals in relation to their perception of tax complexity and tax compliance. We believe this subject deserves further investigation in the future, since this thesis has introduced the importance of the role of tax professionals (*TOCs*) into the debate of tax policy.

Appendices

Appendix A: Questionnaire (English version)

TOCs' perception of tax complexity and tax compliance

Universidade do Minho
Escola de Economia e Gestão

universidade de aveiro

1 - This questionnaire is part of the research of a doctoral dissertation.
2 - Please note that the information collected is confidential.
3 - You should not fill in this survey if you are not the TOC responsible for, at least, one entity.
4 - Thanks for your cooperation, it is very important.

PART I - IDENTIFICATION AND PROFESSIONAL EXPERIENCE

1. Gender: M F
2. Age:
3. District of residence:
4. Complete academic degree:
   Up to 9th grade Up to 12th grade University
   (You should only answer to question 5, if you have chosen the last option in question 4)
5. Did you attend any course on tax matters?
   Yes No
   (Include the years before the profession's regulation)
6. Indicate approximately the number of hours of external training, in the tax area in 2011/2012:
   Up to 24 h >24h to 48h >48h
7. Number of years of experience as TOC:
   (Presented by OTOC, APECA, APOTEC, etc)

PART II - PROFESSIONAL ACTIVITY CHARACTERIZATION

8. How do you develop your professional activity?
   Office of accountancy/tax. Company of other sector Other _____ (specify)
   (You only should answer to question 9, if you have chosen the 1st option in question 8.)
9. What is your customers' portfolio composed of?

	Quantity
Micro companies (<10 employees)	
Small companies (≥10 to 50 employees)	
Medium companies (≥50 to 250 employees)	
Large Companies (≥250 employees)	
TOTAL	

10. Please indicate the turnover of the largest company for which you are/were responsible for, over the last 5 years:

Up to 500,000 €	
>500,000 € to 2 million €	
>2 million € to 10 million €	
>10 million € to 50 million €	
>50 million €	

PART III - TOCs' PERCEPTION OF PORTUGUESE TAX SYSTEM COMPLEXITY

11. How do you classify the Portuguese tax system as far as its complexity?
    Very simple Simple Neither simple nor complex Complex Very Complex
12. Effects on tax system complexity of the legislative changes in the last 5 years:
    Much simpler Simpler Unchanged More complex Much more complex
13. Effects on tax system complexity of the technological changes in the last 5 years:
    Much simpler Simpler Unchanged More complex Much more complex
14. In your opinion, what is the more complex tax?

	VAT	Corporate tax	Income tax	Others
In the legislative perspective				
In the compliance perspective				

15. Classify the areas below, according to their importance in the compliance complexity:

	No importance	Very little importance	With some importance	Important	Very important
Fiscal archive					
Preparation of accounting information for fiscal purposes					
Confused tax forms and unclear instructions					
Tax obligations computerization					
Reduced help provided by tax administration staff					
Others:_____					

16. Classify the areas below, according to their importance in the legislative complexity:

	No importance	Very little importance	With some importance	Important	Very important
Low perception and ambiguity of tax language					
Tax laws are frequently changed					
Tax laws use highly technical language					
Very extensive tax codes					
Very extensive articles with references to other articles					
Many exceptions to the rules and transitional arrangements					
Tax law too dispersed					
Transposition of EU tax legislation					
International tax legislation					
Others: _____					

17. How often do you rely on the following to ensure you are fiscally updated?

	Never	Rarely	Sometimes	Frequently	Always
Individual study of tax laws and instructions of tax returns					
Exchanges of points of views with other TOCs					
Contact with local and regional services of tax administration					
Contact with the call center of tax administration					
Contact with the technician office of OTOC					
Frequency of the free seminars provided by OTOC					
Binding information publised by tax administration					
Frequency of professional training					
Newspapers and magazines about tax matters					

18. How important is it for you to be fiscally updated on the following?

	No importance	Very little importance	With some importance	Important	Very important
Proper compliance of tax obligations					
Better management/tax planning					
Better knowledge of penalties applied to tax noncompliance					
Others: _____					

19. Up to what extent do you agree with the following statements?

	Strongly disagree	Disagree	I do not agree or disagree	Agree	Strongly agree
Tax complexity is due to the economic complexity					
Tax complexity benefits the State					
Tax complexity benefits the taxpayers					
Tax complexity benefits the major economic groups					
Others: _____					

20. Indicate the number of hours you spend monthly, on average, ensuring that you are fiscally updated:

Hours

21. Considering the time you spent on tax updates, how much time would you say you alocate to each tax?

VAT	Corporate	Income tax	Others	TOTAL
				100%

22. Named possible changes to the Portuguese tax system, which in your opinion might reduce its level of tax complexity:

Legislative stabilization	
Simplification and clarification of the legislative language	
Simplification of the tax forms and inclusion of examples	
Introdution of the prior consultation in the process of legislative chang	
Reduction of the exceptions to the rules and the special arrangements	
Simplification of the small companies' tax obligations	
Creation of a tax code for non-residents' taxation	
Others: _____	

23. Up to what extent do you agree with the following statements regarding the impact of tax complexity on the activity conducted by TOCs?

	Strongly disagree	Disagree	I do not agree or disagree	Agree	Strongly agree
It increases the involuntary tax noncompliance					
It increases the voluntary tax noncompliance					
It increases the sense of tax injustice and inequity					
It increases the fear of punishment in case of tax noncompliance					

PART IV - TOCs' PERCEPTION IN RELATION TO TAX (NON)COMPLIANCE

24. Considering the total amount of time you dedicate to your tax activities, indicate, approximately the percentages allocated to:

Tax compliance	
Tax management/planning	
TOTAL	**100%**

25. In the course of your activity, has tax complexity ever resulted in situations of non-aggressive tax noncompliance behaviour?

Yes ☐ No ☐ Do not want to answer ☐

(if your answer is not YES, please skip to question 27)

26. If your answer to the previous question was YES, please classify the statements below regarding frequency, supplementing them with the various options. TAX COMPLEXITY HAS ALREADY LED YOU TO TAX NONCOMPLIANCE DUE TO ...

	Never	Rarely	Sometimes	Frequently	Always
Technical and confusing language of tax laws					
Complexity of tax forms and their instructions					
Ignorance of some tax obligations					
Ignorance of some legislation changes					
Inability to comply with all tax obligations on time					
Differeces in interpretation between tax administration staff and TOCs					
Use of tax laws' ambiguities and gaps in taxpayers' favour					
Others: _____					

27. If a customer / employer suggested the use of potencial gaps or ambiguities of the tax laws in abusive scheme of tax planning, what would your reation be?

Refuse ☐ Consider ☐ Accept ☐ Do not want to answer ☐

28. Classify, according to their importance, the factors which you take into account in your decision:

	No importance	Very little importance	With some importance	Important	Very Important
Tax professionals' propensity to take risks					
Tax aggressiveness of clients/employers					
The fear of losing customers/ being dismised					
The probability of tax noncompliance being detected					
The fear of penalties being imposed on the costumers/employers					
Fear of tarnishing tax professional's image					
Penalties imposed by the OTOC					
Possible reversals of debts for TOCs					
Personal and professional ethics					
Tax morality					
Perception of tax injustice					
Others: _____					

29. Please state any suggestions you may have to improveIf you desire, you can make suggestions for improvement of the tax system, to reduce legislative and administrative tax complexity and to increase voluntary tax compliance

Thank you for your cooperation.

Ana Clara Borrego

Advisors: Cidália Maria da Mota Lopes and Carlos Manuel dos Santos Ferreira

Appendix B: Sample and data collection additional information

Table I – Information about the questionnaire (in paper format) response rate

City/ archipelago	Number of *TOCs* present[125]	Number of questionnaires filled	Number of valid questionnaires	Response rate %
A. Heroísmo (Azores)	30	25	25	83.33%
Aveiro	100	80	78	78.00%
Beja	14	4	4	28.57%
Braga	338	203	201	59.47%
Bragança	43	33	33	76.74%
Castelo Branco and Covilhã	75	26	25	33.33%
Coimbra	130	89	85	65.38%
Évora	44	27	27	61.36%
Faro	141	78	75	53.19%
Funchal (Madeira)	88	30	30	34.09%
Guarda	37	37	37	100.00%
Horta (Azores)	10	10	10	100.00%
Leiria	270	105	102	37.78%
Lisboa	463	108	105	22.68%
Ponta Delgada (Azores)	30	21	21	70.00%
Portalegre	25	19	19	76.00%
Porto	200	138	135	67.50%
Santarém	38	24	24	63.16%
Setúbal	74	44	43	58.11%
Viana do Castelo	96	53	51	53.13%
Vila Real	43	35	35	81.40%
Viseu	102	69	68	66.67%
TOTAL	2.391	1258	1233	51.57%

Table II – Information about the questionnaire (*on line* format)

City / archipelago	Number of questionnaires filled	Number of valid questionnaires
Aveiro	16	16
Beja	2	2
Braga	35	35
Bragança	3	3
Castelo Branco and Covilhã	9	9
Coimbra	20	20
Évora	9	9
Faro	14	14
Guarda	3	3
Leiria	20	20
Lisboa	72	72
Portalegre	14	14
Porto	48	48
Santarém	11	11
Setúbal	27	27
Viana do Castelo	11	11
Vila Real	4	4
Viseu	9	9

[125] In the tax seminars.

City / archipelago	Number of questionnaires filled	Number of valid questionnaires
Madeira	5	5
Azores	2	2
TOTAL	334	334

Table III - Representativeness of the new "sample" (socio-demographic characteristics)

Socio-demographic characteristics	Gender		Age (years old)			Geographical dispersion				
	Male	Female	≤ 32	>32-72	> 72	North	Centre	South	Azores	Madeira
Target population	55%	45%	6%	91%	3%	45.8%	38.4%	12.9%	1.3%	1.6%
New "sample"	55%	45%	6.2%	90.8%	3%	45.9%	38.2%	13%	1.3%	1.6%
Relative deviation	0%	0%	-3.33%	0.22%	0%	-0.22%	0.52%	-0.78%	0%	0%

Table IV - Representativeness of the new "sample" (professional and technical characteristics)

Educational and professional experience characteristics	Professional experience (years)		Degree		
	≤ 12	> 12	Up to «*9th grade*»	«*10th grade*» to «*12th grade*»	University education
Target population	31%	69%	1%	24%	75%
New "sample"	30.5%	69.5%	1%	23.9%	75.1%
Relative deviation	1.61%	-0.72%	0%	0.42%	-0.13%

Appendix C: Methodological procedures in the construction of indices

Table I - Additive factors of the *TOCs* tax knowledge index

Academic graduation plus tax curriculum		Professional experience		Time spent on tax updating	
Categories	**Additive factor**	**Categories**	**Additive factor**	**Categories**	**Additive factor**
Up to 9th grade	1	Up to 5 years	1	Up to 5 hours	1
> 9th grade to 12th grade	2	> 5 to 10 years	2	> 5 to 15 hours	2
University education (without tax curriculum)	3	> 10 to 25 years	3	> 15to 30 hours	3
University education (with tax curriculum)	4	> 25 years	4	> 30 hours	4

Table II - Frequency and percentage of *TOCs* tax knowledge index levels

***TOCs*' tax knowledge index**	**Frequency**	**%**	**Valid %**	**Cumulative %**
Level 3	1	0.1%	0.1%	0.1%
Level 4	3	0.3%	0.3%	0.4%
Level 5	20	2%	2%	2.4%
Level 6	45	4.5%	4.5%	6.9%
Level 7	134	13.5%	13.5%	20.4%
Level 8	184	18.5%	18.5%	38.9%
Level 9	246	24.7%	24.7%	63.7%
Level 10	223	22.4%	22.4%	86.1%
Level 11	101	10.2%	10.2%	96.3%
Level 12	37	3.7%	3.7%	100.0%
Total	994	100.0%	100.0%	

Table III - Transformation of the index «*TOCs* tax knowledge index»

Old index		New index	
Categories	**N**	**Categories**	**N**
Level 3	1	Level 6	69
Level 4	3		
Level 5	20		
Level 6	45		
Level 7	134	Level 7	134
Level 8	184	Level 8	184
Level 9	246	Level 9	246
Level 10	223	Level 10	223
Level 11	101	Level 11	138
Level 12	37		

Table IV - Additive factor of tax updating in the index construction

Likert scale (question 17)	**Never**	**Rarely**	**Sometimes**	**Frequently**	**Always**
Additive correspondent factor	1	2	3	4	5

Table V - Construction of the «tax updating index» - question 17

Index	**Frequency**	**%**	**Valid %**	**Cumulative %**
Level 19	3	0.3%	0.3%	0.3%
Level 20	1	0.1%	0.1%	0.4%
Level 21	4	0.4%	0.4%	0.8%
Level 22	7	0.7%	0.7%	1.6%
Level 23	23	2.3%	2.4%	4.0%
Level 24	33	3.3%	3.5%	7.5%
Level 25	46	4.6%	4.8%	12.3%
Level 26	72	7.2%	7.6%	19.9%

Index	Frequency	%	Valid %	Cumulative %
Level 27	92	9.3%	9.7%	29.5%
Level 28	90	9.1%	9.5%	39.0%
Level 29	97	9.8%	10.2%	49.2%
Level 30	101	10.2%	10.6%	59.8%
Level 31	94	9.5%	9.9%	69.7%
Level 32	83	8.4%	8.7%	78.4%
Level 33	57	5.7%	6.0%	84.4%
Level 34	38	3.8%	4.0%	88.4%
Level 35	43	4.3%	4.5%	93.0%
Level 36	24	2.4%	2.5%	95.5%
Level 37	15	1.5%	1.6%	97.1%
Level 38	7	0.7%	0.7%	97.8%
Level 39	7	0.7%	0.7%	98.5%
Level 40	4	0.4%	0.4%	98.9%
Level 41	4	0.4%	0.4%	99.4%
Level 43	1	0.1%	0.1%	99.5%
Level 45	5	0.5%	0.5%	100.0%
Sub-total	951	95.7%	100.0%	
Missing	43	4.3%		
Total	994	100.0%		

Tables VI to IX present the **exploratory preliminary study**, which was made before the construction of the legislative index of tax complexity, by the PCA method.

Table VI - KMO and Bartlett's test about «*TOCs* legislative tax complexity index»

Kaiser-Meyer-Olkin measure of sampling adequacy		**0.898**
Bartlett's test of sphericity	Approx. Chi-Square	6036.756
	df	36
	Sig.	0.000

Table V presents the results from the exploratory KMO and Bartlett's Test on «*TOCs* legislative tax complexity index»**.**

Firstly, we need to check the suitability of CATPCA [Categorical Principal Component Analysis], through the use of Bartlett's sphericity test. Then we verify the two following operational hypotheses: $\mathbf{H_0}$: The variables are not correlated in the population or $\mathbf{H_a}$: The variables are correlated in the population.

A value of 0.898 (between 0.8 and 0.9) and a $p = 0.000$ (>0.001) indicates a good suitability, thus we reject the null hypothesis. Consequently the CATPCA is adequate. Next, we check the communalities, *i.e.* we verify the proportion of the variance explained by the variable components.

Table VII - Proportion of the variance explained about «*TOCs* legislative tax complexity index»

Communalities	Initial	Extraction
Low perception and ambiguity of tax language	1	0.464
Tax laws are frequently changed	1	0.667
Tax laws use highly technical language	1	0.555
Very extensive tax codes	1	0.642
Very extensive articles with references to other articles	1	0.749
Many exceptions to the rules and transitional arrangements	1	0.721
Tax law is too dispersed	1	0.737
Transposition of EU tax legislation	1	0.575
International legislation	1	0.534

In the case presented in Table VII above all the variables have high communalities (all have values > 0.3), which means that all variables are strongly explained by components and contribute greatly to its definition (see Table VII).

In Table VIII we can verify, in this exploratory study, that we have only one component, which explains almost 63% of the total variance.

Table VIII - Total of variance explained about «*TOCs* legislative tax complexity index»

Component	Initial eigenvalues			Extraction sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	5.644	62.71%	62.71%	5.644	62.71%	62.71%
2	0.92	10.22%	72.93%			
3	0.622	6.92%	79.84%			
4	0.593	6.59%	86.43%			
5	0.355	3.94%	90.37%			
6	0.274	3.04%	93.41%			
7	0.242	2.69%	96.10%			
8	0.182	2.02%	98.12%			
9	0.17	1.88%	100.00%			

Thus, in Tables VIII and IX, we justify the extraction by the Kaiser criterion, and we conclude that the explained variable is acceptable, because it presents a value ≥ 60%.

Table IX - Component matrix about «*TOCs* legislative tax complexity index»

Component matrix[126]	Component
	1
Very extensive articles with references to other articles	0.865
Tax law is too dispersed	0.858
Many exceptions to the rules and transitional arrangements	0.849
Tax laws are frequently changed	0.817

[126] 1 Components extracted.

	Component
Very extensive tax codes	0.801
Transposition of EU tax legislation	0.758
Tax laws use highly technical language	0.745
International legislation	0.731
Low perception and ambiguity of tax language	0.681

Tables X to XIV present the **exploratory preliminary study**, which was made before the construction of the compliance index of tax complexity, by the PCA method.

Firstly, we need to check the suitability of CATPCA, by using Bartlett's sphericity test. Then we verify the two following operational hypotheses: $\mathbf{H_0}$: The variables are not correlated in the population or $\mathbf{H_a}$: The variables are correlated in the population.

Table X - KMO and Bartlett's test about « *TOCs* compliance tax complexity index»

Kaiser-Meyer-Olkin measure of sampling adequacy		**0.677**
Bartlett's test of sphericity	Approx. Chi-Square	566.457
	df	10
	Sig.	0.000

Table X presents the results obtained from the Bartlett's Test, which present a value of 0.677 (between 0.6 and 0.7) and a $p = 0.000$ (>0.001), indicating a reasonable suitability, thus we reject the null hypothesis. The CATPCA is adequate.

Next, we check the communalities, *i.e.* the proportion of the variance explained by the variable components (see Table XI).

Table XI - Proportion of the variance explained by the variable components

Communalities	**Initial**	**Extraction**
Fiscal archive	1	0.73
Preparation of accounting information for fiscal purposes	1	0.659
Confused tax returns and unclear instructions	1	0.593
Tax obligations' computerization	1	0.496
The reduced assistance provided by tax administration staff	1	0.587

In this case all the variables have high communalities (all have values > 0.3), which means that all variables are strongly explained by components and contribute deeply to its definition.

In Table XII we can verify, by this exploratory study, that we have two components, which explain almost 61% of the total variance.

Table XII - Total of variance explained

Component	Initial eigenvalues			Extraction sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	2.022	40.44%	40.44%	2.022	40.44%	40.44%
2	1.044	20.88%	61.31%	1.044	20.88%	61.31%
3	0.762	15.25%	76.56%			
4	0.632	12.65%	89.21%			
5	0.539	10.79%	100.00%			

Thus, in Tables XII Table XIII, we justify the extraction by the Kaiser criterion, and we conclude that the explained variable is acceptable, because it presents a value ≥ 60%.

Table XIII - Rotated component matrix – *TOCs* compliance tax complexity index

Rotated component matrix[127]	Dimensions of compliance tax complexity	
	1 – *TOCs* context	2 – Tax administration context
Fiscal archive	**0.854**	0.03
Preparation of accounting information for fiscal purposes	**0.795**	0.163
Confused tax returns and unclear instructions	-0.035	**0.769**
The reduced assistance provided by tax administration staff	0.157	**0.75**
Tax obligations' computerization	0.432	**0.556**

Table XIV – *TOCs* compliance tax complexity index (PCA)* - non rotated matrix

Variables	Dimensions - compliance	
	Dim. 1 – *TOCs* context	Dim. 2 – Tax administration context
Fiscal Archive	**0.650**	-0.555
Preparation of accounting information for fiscal purposes	**0.696**	-0.418
Confused tax returns and unclear instructions	0.495	**0.590**
Tax obligations' computerization	0.623	**0.446**
The reduced help provided by tax administration staff	0.695	**0.117**
Explained variance (%)	**40.44%**	**20.88%**

* Component matrix KMO = 0.677; $p < 0.001$

Tables XIII and XIV present the interpretation of the components. They show the indicators most correlated to both components, henceforth designated as follows: Dimension 1 - Complexity related to *TOCs* context; Dimension 2 – Complexity related to tax administration context.

Tables XV to XIX present the process of **effective construction** of the legislative tax complexity index, by the PCA method.

[127] Rotation converged in 3 iterations; Rotation Method: Varimax with Kaiser Normalization.

Table XV - KMO and Bartlett's test « *TOCs* legislative tax complexity index»

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		**0.898**
Bartlett's test of sphericity	Approx. Chi-Square	6.036,756
	df	36
	Sig.	0.000

Table XVI - Proportion of the variance explained about « *TOCs* legislative tax complexity index»

Communalities	**Initial**	**Extraction**
Low perception and ambiguity of tax language	1	0.464
Tax laws are frequently changed	1	0.667
Tax laws use highly technical language	1	0.555
Very extensive tax codes	1	0.642
Very extensive articles with references to other articles	1	0.749
Many exceptions to the rules and transitional arrangements	1	0.721
Tax law is too dispersed	1	0.737
Transposition of EU tax legislation	1	0.575
International legislation	1	0.534

Table XVII - Total of variance explained about «*TOCs* legislative tax complexity index»

Component	**Initial eigenvalues**			**Extraction sums of squared loadings**		
	Total	**% of variance**	**Cumulative %**	**Total**	**% of variance**	**Cumulative %**
1	5.644	62.71%	62.71%	5.644	62.71%	62.71%
2	0.92	10.22%	72.93%			
3	0.622	6.92%	79.84%			
4	0.593	6.59%	86.43%			
5	0.355	3.94%	90.37%			
6	0.274	3.04%	93.41%			
7	0.242	2.69%	96.10%			
8	0.182	2.02%	98.12%			
9	0.17	1.88%	100.00%			

Table XVIII - Component matrix about « *TOCs* legislative tax complexity index»

Component matrix	**Component**
	1
Very extensive articles with references to other articles	0,865
Tax law is too dispersed	0,858
Many exceptions to the rules and transitional arrangements	0,849
Tax laws are frequently changed	0,817
Very extensive tax codes	0,801
Transposition of EU tax legislation	0,758
Tax laws use highly technical language	0,745
International legislation	0,731
Low perception and ambiguity of tax language	0,681

Table XIX - Questions which compose the « *TOCs* legislative tax complexity index»

Question (s) in the survey
16.1.Low perception and ambiguity of tax language
16.2.Tax laws are frequently changed
16.3.Tax laws use highly technical language
16.4. Very extensive tax codes
16.5. Very extensive articles with references to others articles
16.6. Many exceptions to the rules and transitional arrangements
16.7.Tax law is too dispersed
16.8. Transposition of EU tax legislation
16.9. International legislation

Cronbach's Alpha: 0.925; Explained variance: 62.71%

Tables XX to XXIV present the process of **effective construction** of the compliance tax complexity index, in *TOCs* context, by the PCA method.

Table XX - KMO and Bartlett's test «*TOCs* compliance tax complexity index»

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.500
Bartlett's test of sphericity	Approx. Chi-Square	219.505
	df	1
	Sig.	0.000

Table XXI - Proportion of the variance explained in the «*TOCs* compliance tax complexity index»

Communalities	Initial	Extraction
Fiscal archive	1	0.726
Preparation of accounting information for fiscal purposes	1	0.726

Table XXII - Total of variance explained about «*TOCs* compliance tax complexity index»

Component	Initial eigenvalues			Extraction sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	1.452	72.59%	72.59%	1.452	72.59%	72.59%
2	0.548	27.41%	100.00%			

Table XXIII - Component matrix «*TOCs* compliance tax complexity index»

Component Matrix	Component
	1
Fiscal archive	0.852
Preparation of accounting information for fiscal purposes	0.852

Table XXIV - Questions which compose the «*TOCs* compliance tax complexity index»

Question (s) in the survey
15.1.Fiscal archive
15.2.Preparation of accounting information for fiscal purposes

Cronbach's Alpha: 0.606; Explained variance: 72.59%

Tables XXV to XXX present the process of **effective construction** of the compliance tax complexity index, in tax administration's field, by the PCA method.

Table XXV - KMO and Bartlett's test of the «Index of compliance tax complexity in tax administration context »

Kaiser-Meyer-Olkin measure of sampling adequacy		**0.606**
Bartlett's test of sphericity	Approx. Chi-Square	218,498
	df	3
	Sig.	0.000

Table XXVI - Proportion of the variance explained about the «Index of compliance tax complexity in tax administration context»

Communalities	**Initial**	**Extraction**
Confused tax returns and unclear instructions	1	0.440
Tax obligations' computerization	1	0.535
The reduced assistance provided by tax administration staff	1	0.595

Table XXVII - Total of variance explained about the «Index of compliance tax complexity in tax administration context»

Component	**Initial eigenvalues**			**Extraction sums of squared loadings**		
	Total	**% of variance**	**Cumulative %**	**Total**	**% of variance**	**Cumulative %**
1	1.570	52.34%	52.34%	1.570	52.34%	52.34%
2	0.787	26.24%	78.58%			
3	0.643	21.24%	100.00%			

Table XXVIII - Component matrix - « Index of compliance tax complexity in tax administration context »

Component matrix	**Components**
	1
Confused tax returns and unclear instructions	**0.663**
The reduced assistance provided by tax administration staff	**0.771**
Tax obligations' computerization	**0.731**

Table XXIX - Questions which compose the «Index of compliance tax complexity in tax administration context»

Question (s) in the survey
15.3. Confused tax returns and unclear instructions
15.4. The reduced assistance provided by tax administration staff
15.5. Tax obligations' computerization

Cronbach's Alpha: 0.890; Explained variance: 52.34%

Table XXX - Transformation of the three indexes of tax complexity in categories

Values	**Categories**	**Legislative index (N)**	**Compliance index *TOCs* context (N)**	**Compliance index Tax administration context (N)**
Up to Level -1	1	111	147	147
> Level -1 to level 0	2	288	217	264
> Level 0	3	517	594	541

Appendix D: Variables transformation and joining of variables

Table I - Joining of the variables «Academic graduation» and «Curriculum with courses in taxation»

Academic graduation	Curriculum with courses in taxation	Academic graduation plus tax curriculum
Up to 9th grade	----	Up to 9th grade
> 9th to 12th grade	----	> 9th to 12th grade
University	No	University education (without tax curriculum)
	Yes	University education (with tax curriculum)

Table II - Transformation of the variable « *TOCs*' ways of develop activity»

Old variable		New variable	
Options	**N**	**Options**	**N**
Office of accountancy and taxation (1)	695	Office of accountancy and taxation	695
Company of other sector (2)	262	In-house accounting and taxation departments	297
Others	24		
1 + 2	11		

Table III - Transformation of the variable « *TOCs*' perception of tax system complexity»

Old variable		New variable – version 1		New variable – version 2	
Categories	**N**	**Categories**	**N**	**Categories**	**N**
Very simple	2	Low complexity	108	Low complexity	108
Simple	5				
Neither simple nor complex	101				
Complex	493	Complex	493	High complexity	886
Very complex	393	Very complex	393		

Table IV - Transformation of the variable «perception of the impact of the legislative changes»

Old variable		New variable	
Categories	**N**	**Categories**	**N**
Much simpler	1	Simpler	72
Simpler	71		
Unchanged	57	Unchanged	57
More complex	503	More complex	503
Much more complex	361	Much more complex	361

Table V - Transformation of the variable *TOCs*' noncompliant behaviour due to tax complexity

Old variable (3 ranks)		New variable (2 ranks)	
Categories	**N**	**Categories**	**N**
No	480	No	480
Yes	448	Yes	448
Do not want to answer	48	Treated as missing	48

Table VI and the texts above and below the table present the creation of an additive index to measure the frequency of *TOCs*' non-aggressive tax noncompliance behaviour, due to tax complexity. To achieve that objective, the *Chartered Accountants* who admitted having already entered into tax noncompliance, because of the great complexity of tax laws, were isolated (question 26 of the questionnaire) and an additive index was constructed with the frequency of the several causes of tax noncompliance, chosen by the professionals, by order of frequency (question 27 of the questionnaire) .

Table VI - Additive factor of the frequency of *TOCs*' non-aggressive tax noncompliance due to tax complexity

Likert scale (question 27)	Never	Rarely	Sometimes	Frequently	Always
Additive correspondent factor	1	2	3	4	5

Considering that question 27 presents seven causes of tax complexity to be classified through a Likert scale of 5 points, it was considered that a level in the additive index of: (i) 7 - is equivalent to the choice 1 in all causes; (ii) 14 - is equivalent to the choice 2 in all causes; (iii) 21 - is equivalent to the choice 3 in all causes; (iv) 28 - is equivalent to the choice 4 in all causes; (v) 35 - is equivalent to the choice 5 in all causes.

Considering those assumptions, we have constructed five categories of frequency. Next, we joined the 1st and the 2nd categories together, as well as the 4th and the 5th categories, due to the limited number of frequencies in the first and in the last ranks.

This way we were left with three other categories, divided as follows: 1st -«Yes – rarely» (Up to level 14, in the index); 2nd - «Yes - sometimes» (level 15 to level 21, in the index); 3rd - «Yes – frequently» (level 22 to level 35, in the index). Table VII presents the result of the transformation.

Table VII – Transformation of the variable *TOCs*' noncompliance due to tax complexity

Old variable		New variable	
Categories	**N**	**Categories**	**N**
No	480	No	480
Yes	448	Yes - rarely	141
		Yes - sometimes	199
		Yes - frequently	108
Do not want to answer	48	Treated as missing	48

Table VIII - Transformation of the variable «tax aggressiveness»

Old variable		New variable	
Categories	**N**	**Categories**	**N**
Refuse	640	Refuse	640
Consider	250	Not refuse	257
Accept	7		
Do not want to answer	79	Treated as missing	79

Appendix E: Crosstabs

Table I – Crosstab: *TOCs* legislative tax complexity index categorized by their perception of tax system complexity

Perception of tax system complexity		Levels on *TOCs* legislative tax complexity index		
		Lower	Medium	High
Lower complexity	Count	29	41	28
	Expected	11.9	30.8	55.3
	%	26.13%	14.24%	5.42%
High complexity	Count	82	247	489
	Expected	99.1	257.2	461.7
	%	73.87%	85.76%	94.58%

Table II – Crosstab: *TOCs* compliance tax complexity index categorized by their perception of tax system complexity

Perception of tax system complexity		Levels on *TOCs* compliance tax complexity index		
		Lower	Medium	High
Lower complexity	Count	24	17	63
	Expected	16	23.6	64.5
	%	16.33%	7.83%	10.61%
High complexity	Count	123	200	531
	Expected	131	193.4	529.5
	%	83.6%	92.17%	89.39%

Table III – Crosstab: Index of compliance tax complexity in tax administration context categorized by their perception of tax system complexity

Perception of tax system complexity		Levels on the Index of compliance tax complexity in tax administration context		
		Lower	Medium	High
Lower complexity	Count	21	37	44
	Expected	15.8	28.3	58
	%	14.29%	14.02%	8.13%
High complexity	Count	126	227	497
	Expected	131.3	235.7	483
	%	85.71%	85.98%	89.29%

Table IV – Crosstab: *TOCs*' age categorized by gender

TOCs' Gender		Age				Total
		Up to 35 years old	> 35 to 50 years old	> 50 to 65 years old	> 65 years old	
Male	Count	42	160	262	75	539
	Expected	87.1	220.2	189	42.7	539
	%	7.8%	29.7%	48.6%	13.9%	100.0%
Female	Count	117	242	83	3	445
	Expected	71.9	181.8	156	35.3	445
	%	26.3%	54.4%	18.7%	0.7%	100.0%

Table V – Crosstab: Clients' (employers') turnover categorized by *TOCs'* gender

Clients' (employers') turnover		*TOCs*' gender		Total
		Male	Female	
Up to €500,000	Count	180	157	337
	Expected	185.2	151.8	337
	%	33.2%	35.4%	34.2%
> €500,000 to €2 million	Count	194	179	373
	Expected	205	168	373
	%	35.8%	40.3%	37.8%
> €2 million to €10 million	Count	117	87	204
	Expected	112.1	91.9	204
	%	21.6%	19.6%	20.7%
> €10 million to €50 million	Count	39	17	56
	Expected	30.8	25.2	56
	%	7.2%	3.8%	5.7%

> €50 million	Count	12	4	16
	Expected	8.8	7.2	16
	%	2.2%	0.9%	1.6%

Table VI – Crosstab: *TOCs*'age categorized by their perception of tax system complexity

Perception of tax system complexity		***TOCs*' age**				**Total**
		Up to 35 years old	**> 35 to 50 years old**	**> 50 to 65 years old**	**> 65 years old**	
Lower complexity	Count	12	35	49	10	106
	Expected	17.1	43.3	37.2	8.4	106
	%	7.5%	8.7%	14.2%	12.8%	10.8%
High complexity	Count	147	367	297	68	879
	Expected	141.9	358.7	308.8	69.6	879
	%	92.57%	91.3%	85.8%	87.2%	89.2%

Table VII – Crosstab: *TOCs*'gender categorized by their perception of tax system complexity

Perception of tax system complexity		***TOCs*' gender**		Total
		Male	**Female**	
Lower complexity	Count	64	43	107
	Expected	58.8	48.2	107
	%	11.7%	9.6%	10.8%
High complexity	Count	481	403	884
	Expected	486.2	397.8	884
	%	88.3%	90.4%	89.2%

Table VIII – Crosstab: relation between *TOCs*' tax knowledge and their perception of tax system complexity

Perception of tax system complexity		**Levels of *TOCs* tax knowledge index**						**Total**
		Level 6	**Level 7**	**Level 8**	**Level 9**	**Level 10**	**Level 11**	
Lower complexity	Count	4	12	10	26	39	17	108
	Expected	7.5	14.6	20	26.7	24.2	15	108
	%	5.8%	9.0%	5.4%	10.6%	17.5%	12.3%	10.9%
High complexity	Count	65	122	174	220	184	121	886
	Expected	61.5	119.4	164	219.3	198.8	123	886
	%	94.2%	91.0%	94.6%	89.4%	82.5%	87.7%	89.1%

Table IX – Crosstab: relation between *TOCs*' customers'/employers' turnover and their perception of tax system complexity

Perception of tax system complexity		**Customers'/employers' turnover**					**Total**
		Up to €500,000	**> €500,000 to €2 million**	**> €2 million to €10 million**	**> €10 million to €50 million**	**> €50 million**	
Lower complexity	Count	42	47	12	4	2	107
	Expected	36.7	40.5	22.1	6.1	1.7	107
	%	12.4%	12.6%	5.9%	7.1%	12.5%	10.8%
High complexity	Count	297	327	192	52	14	882
	Expected	302.3	333.5	181.9	49.9	14.3	882
	%	87.6%	87.4%	94.1%	92.9%	87.5%	89.2%

Table X – Crosstab: relation between *TOCs*' ways to develop activity and their perception of tax system complexity

Perception of tax system complexity		***TOCs*' ways to develop activity**		**Total**
		Office of accountancy and taxation	**In-house taxation departments**	
Lower complexity	Count	76	32	108
	Expected	75.7	32.3	108
	%	10.9%	10.8%	10.9%
High complexity	Count	619	265	884
	Expected	619.3	264.7	884
	%	89.1%	89.2%	89.1%

Table XI – Crosstab: relation between *TOCs*' age and their non-aggressive tax noncompliance behaviour and tax aggressiveness, due to tax complexity

TOCs' age		Tax noncompliant non-aggressive behaviour, due to tax complexity?		Participation in aggressive tax planning schemes, by using tax complexity	
		No	Yes	Refuse	No refuse
Up to 35 years old	Count	94	57	94	47
	Expected	78.1	72.9	100.4	40.6
	%	62.3%	37.7%	66.7%	33.3%
> 35 to 50 years old	Count	175	207	238	128
	Expected	197.6	184.4	260.6	105.4
	%	45.8%	54.2%	65.0%	35.0%
> 50 to 65 years old	Count	164	151	236	73
	Expected	163.0	152.0	220.0	89.0
	%	52.1%	47.9%	76.4%	23.6%
> 65 years old	Count	43	29	65	8
	Expected	37.3	34.7	52.0	21.0
	%	59.7%	40.3%	89.0%	11.0%

Table XII – Crosstab: relation between *TOCs*' gender and their non-aggressive tax noncompliance behaviour and tax aggressiveness, due to tax complexity

Tax noncompliant non-aggressive behaviour, due to tax complexity?		*TOCs*' gender		Participation in aggressive tax planning schemes, by using tax complexity		*TOCs*' gender	
		Male	Female			Male	Female
No	Count	239	239	Refuse	Count	348	289
	Expected	260.4	217.6		Expected	350.6	286.4
	%	47.4%	56.8%		%	70.7%	71.9%
Yes	Count	265	182	No refuse	Count	144	113
	Expected	243.6	203.4		Expected	141.4	115.6
	%	52.6%	43.2%		%	29.3%	28.1%

Table XIII – Crosstab: relation between *TOCs*' tax knowledge and their non-aggressive tax noncompliance behaviour and tax aggressiveness, due to tax complexity

Level		Tax noncompliant non-aggressive behaviour, due to tax complexity?		Participation in aggressive tax planning schemes	
		No	Yes	Refuse	No refuse
Level 6	Count	28	28	42	18
	Expected	29.0	27.0	42.8	17.2
	%	50.0%	50.0%	70.0%	30.0%
Level 7	Count	69	57	89	29
	Expected	65.2	60.8	84.2	33.8
	%	54.8%	45.2%	75.4%	24.6%
Level 8	Count	97	77	117	49
	Expected	90.0	84.0	118.4	47.6
	%	55.7%	44.3%	70.5%	29.5%
Level 9	Count	121	110	166	58
	Expected	119.5	111.5	159.8	64.2
	%	52.4%	47.6%	74.1%	25.9%
Level 10	Count	102	103	135	66
	Expected	106.0	99.0	143.4	57.6
	%	49.8%	50.2%	67.2%	32.8%
Level 11	Count	63	73	91	37
	Expected	70.3	65.7	91.3	36.7
	%	46.3%	53.7%	71.1%	28.9%

Table XIV – Crosstab: relation between *TOCs*' customers'/employers' turnover and their non-aggressive tax noncompliance behaviour and tax aggressiveness, due to tax complexity

TOCs' customers'/employers' turnover		Tax noncompliant non-aggressive behaviour, due to tax complexity?		Participation in aggressive tax planning schemes, by using tax complexity	
		No	Yes	Refuse	Do not refuse
Up to €500,000	Count	182	140	232	76
	Expected	166,8	155,2	219,6	88,4
	%	56.5%	43.5%	75.3%	24.7%
> €500,000 to €2 million	Count	164	181	242	92
	Expected	178,7	166,3	238,1	95,9
	%	47.5%	52.5%	72.5%	27.5%
> €2 million to €10 million	Count	101	88	122	62
	Expected	97,9	91,1	131,2	52,8
	%	53.4%	46.6%	66.3%	33.7%
> €10 million to €50 million	Count	22	29	31	20
	Expected	26,4	24,6	36,4	14,6
	%	43.1%	56.9%	60.8%	39.2%
> €50 million	Count	9	7	9	6
	Expected	8,3	7,7	10,7	4,3
	%	56.3%	43.8%	60.0%	40.0%

Table XV – Crosstab: relation between *TOCs*' ways to develop activity and their non-aggressive tax noncompliance behaviours and tax aggressiveness, due to tax complexity

TOCs' ways to develop activity		Tax noncompliant non-aggressive behaviour, due to tax complexity?		Participation in aggressive tax planning schemes, by using tax complexity	
		No	Yes	Refuse	Do not refuse
Office of accounting and taxation	Count	328	322	466	163
	Expected	335.5	314.5	449.1	179.9
	%	50.5%	49.5%	74.1%	25.9%
In-house taxation departments	Count	150	126	173	93
	Expected	142.5	133.5	189.9	76.1
	%	54.3%	45.7%	65.0%	35.0%

Table XVI – Crosstab: relation between *TOCs*' propensity for tax noncompliance behaviour, due to tax complexity, and tax aggressiveness and their perception of tax complexity

Perception of tax system complexity		Tax noncompliant non-aggressive behaviour, due to tax complexity?		Participation in aggressive tax planning schemes, by using tax complexity	
		No	Yes	Refuse	No refuse
Lower complexity	Count	66	33	70	24
	Expected	51.2	47,8	67.1	26.9
	%	66.7%	33.3%	74.5%	25.5%
High complexity	Count	414	415	570	233
	Expected	428.8	400.2	572.9	230.1
	%	49.9%	50.1%	71.0%	29.0%

Table XVII – Crosstab: relation between *TOCs*' propensity for tax noncompliance behaviour, due to tax complexity and their perception of the legislative tax complexity index

TOCs legislative tax complexity index		Tax noncompliant non-aggressive behaviour, due to tax complexity?		Participation in aggressive tax planning schemes, by using tax complexity	
		No	Yes	Refuse	Do not refuse
Low	Count	62	40	78	17
	Expected	52.8	49.2	67.2	27.8
	%	60.8%	39.2%	82.1%	17.9%
Medium	Count	156	116	182	76
	Expected	140.7	131.3	182.5	75.5
	%	57.4%	42.6%	70.5%	29.5%
High	Count	228	260	330	151
	Expected	252.5	235.5	340.3	140.7
	%	46.7%	53.3%	68.6%	31.4%

Table XVIII – Crosstab: relation between *TOCs*' propensity for tax noncompliance behaviour, due to tax complexity and their perception of the compliance tax complexity indices

Tax noncompliant non-aggressive behaviour, due to tax complexity?		*TOCs* compliance tax complexity index			Index of compliance tax complexity in tax administration context		
		Low	Medium	High	Low	Medium	High
No	Count	73	96	294	77	133	251
	Expected	70.5	107.0	285.5	74.3	125.4	261.2
	%	53.3%	46.2%	53.0%	53.5%	54.7%	49.6%
Yes	Count	64	112	261	67	110	255
	Expected	66.5	101.0	269.5	69.7	117.6	244.8
	%	46.7%	53.8%	47.0%	46.5%	45.3%	50.4%

Table XIX – Crosstab: relation between non-aggressive tax noncompliance and the importance of the relation between tax complexity and involuntary tax noncompliance

Tax noncompliant non-aggressive behaviour, due to tax complexity?		Agreement or disagreement with the relation				
		Strongly disagree	Disagree	I do not agree nor disagree	Agree	Strongly agree
No	Count	22	64	76	234	68
	Expected	18.5	41.1	57.0	243.6	103.8
	%	61.1%	80.0%	68.5%	49.4%	33.7%
Yes	Count	14	16	35	240	134
	Expected	17.5	38.9	54.0	230.4	98.2
	%	38.9%	20.0%	31.5%	50.6%	66.3%

Table XX – Crosstab: relation between non-aggressive tax noncompliance and the importance of the relation between tax complexity and their fear of making mistakes

Tax noncompliant non-aggressive behaviour, due to tax complexity?		Agreement or disagreement with the relation				
		Strongly disagree	Disagree	I do not agree nor disagree	Agree	Strongly agree
No	Count	8	18	40	222	180
	Expected	7.7	10.3	33.5	205.1	211.3
	%	53.3%	90.0%	61.5%	55.8%	43.9%
Yes	Count	7	2	25	176	230
	Expected	7.3	9.7	31.5	192.9	198.7
	%	46.7%	10.0%	38.5%	44.2%	56.1%

Table XXI – Crosstab: relation between *TOCs*' propensity to participate in aggressive tax planning, provided by tax complexity, and the psychological factors and fears

Factors that *TOCs*' ponder when making their decisions			Importance of psychological factors and fears				
			No importance	Little importance	With some reasonable importance	Important	Very important
Tax professionals' propensity to take riks	Refuse	Count	76	57	73	200	166
		Expected	72.7	56.6	87.4	195.8	159.4
		%	73.1%	70.4%	58.4%	71.4%	72.8%
	No refuse	Count	28	24	52	80	62
		Expected	31.3	24.4	37.6	84.2	68.6
		%	26.9%	29.6%	41.6%	28.6%	27.2%
The aggressiveness of tax client / employer	Refuse	Count	81	119	110	168	88
		Expected	76.2	113.2	127.9	176.1	72.7
		%	74.3%	73.5%	60.1%	66.7%	84.6%
	No refuse	Count	28	43	73	84	16
		Expected	32.8	48.8	55.1	75.9	31.3
		%	25.7%	26.5%	39.9%	33.3%	15.4%
The fear of losing customers / being dismissed	Refuse	Count	132	155	126	106	53
		Expected	114.1	147.7	135.1	116.2	58.8
		%	81.0%	73.5%	65.3%	63.9%	63.1%
	No refuse	Count	31	56	67	60	31
		Expected	48.9	63.3	57.9	49.8	25.2
		%	19.0%	26.5%	34.7%	36.1%	36.9%

The probability of tax noncompliance being detected	Refuse	Count	50	54	85	223	156
		Expected	43.3	54.5	99.9	220.8	149.5
		%	80.6%	69.2%	59.4%	70.6%	72.9%
	Do not refuse	Count	12	24	58	93	58
		Expected	18.7	23.5	43.1	95.2	64.5
		%	19.4%	30.8%	40.6%	29.4%	27.1%
The fear of penalties, imposed on the costumer/employer's sphere	Refuse	Count	27	34	79	220	210
		Expected	25.8	35.6	85.2	222.1	201.2
		%	73.0%	66.7%	64.8%	69.2%	72.9%
	Do not refuse	Count	10	17	43	98	78
		Expected	11.2	15.4	36.8	95.9	86.8
		%	27.0%	33.3%	35.2%	30.8%	27,1%
The fear of tarnishing the tax professional's image	Refuse	Count	15	15	59	193	297
		Expected	17.6	19.7	65.4	197.7	278.6
		%	60.0%	53.6%	63.4%	68.7%	75.0%
	Do not refuse	Count	10	13	34	88	99
		Expected	7.4	8.3	27.6	83.3	117.4
		%	40.0%	46.4%	36.6%	31.3%	25.0%
The penalties imposed by the *OTOC*	Refuse	Count	30	50	101	201	192
		Expected	28.9	48.6	113.4	201.4	181.7
		%	73.2%	72.5%	62.7%	70.3%	74.4%
	Do not refuse	Count	11	19	60	85	66
		Expected	12.1	20.4	47.6	84.6	76.3
		%	26.8%	27.5%	37.3%	29.7%	25.6%
The possible reversals of debt for the professional	Refuse	Count	36	33	70	195	236
		Expected	35.1	37.2	72.2	185.8	239.8
		%	72.0%	62.3%	68.0%	73.6%	69.0%
	Do not refuse	Count	14	20	33	70	106
		Expected	14.9	15.8	30.8	79.2	102.2
		%	28.0%	37.7%	32.0%	26.4%	31.0%
The personal and professional ethics	Refuse	Count	3	3	29	175	381
		Expected	5.7	4.2	42.4	179.6	359.1
		%	37.5%	50.0%	48.3%	68.9%	75.0%
	Do not refuse	Count	5	3	31	79	127
		Expected	2.3	1.8	17.6	74.4	148.9
		%	62.5%	50.0%	51.7%	31.1%	25.0%
Tax morality	Refuse	Count	9	16	58	219	276
		Expected	12.7	23.3	73.3	226.3	242.5
		%	50.0%	48.5%	55.8%	68.2%	80.2%
	Do not refuse	Count	9	17	46	102	68
		Expected	5.3	9.7	30.7	94.7	101.5
		%	50.0%	51.5%	44.2%	31.8%	19.8%
The perception of tax injustice	Refuse	Count	16	22	87	221	225
		Expected	16.8	30.1	97.4	219.3	207.4
		%	66.7%	51.2%	62.6%	70.6%	76.0%
	Do not refuse	Count	8	21	52	92	71
		Expected	7.2	12.9	41.6	93.7	88.6
		%	33.3%	48.8%	37.4%	29.4%	24.0%

Appendix F: Additional statistical treatment

Table I – *TOCs*' suggestions for tax simplification

Suggestions for tax simplification	Frequency
Legislative stabilization	916
Simplification and clarification of the legislative language	527
Simplification of the tax obligations to small business	517
Simplification of tax returns and the inclusion of examples	272
Introduction of prior consultation in the legislative changes	188
Creation of a tax code for non-residents' taxation	34

Table II – Measures of central tendency

Numb.	Question	Mode	Median	Mean	S. Deviation
16	Tax laws are frequently changed	5	5	4.44	0.925
16	Tax law is too dispersed	5	5	4.36	0.966
16	Many exceptions to the rules and transitional arrangements	5	5	4.24	1.002
16	Low perception and ambiguity of tax language	5	4	4.18	0.954
16	Very extensive articles with references to other articles	5	5	4.21	1.030
16	Very extensive tax codes	5	4	4.01	1.047
16	Transposition of EU tax legislation	4	4	3.98	0.963
16	Tax laws use highly technical language	4	4	3.98	1.003
16	International legislation	4	4	3.88	1.002
15	Preparation of accounting information for fiscal purposes	4	4	4.14	0.810
15	Tax obligations computerization	4	4	4.02	0.961
15	The reduced help provided by tax administration staff	5	4	3.98	1.048
15	Confused tax forms and unclear instructions	4	4	3.68	1.135
15	Fiscal archive	4	4	3.60	1.067
17	Index of tax updating	30	30	29.76	3.906
18	Fulfilment of tax obligations	5	5	4.78	0.504
23	Tax complexity increases involuntary tax noncompliance	4	4	3.81	1.001
23	Tax complexity increases voluntary tax noncompliance	4	3	2.89	1.168

Figure I – Clients' (employers') turnover categorized by *TOCs'* gender

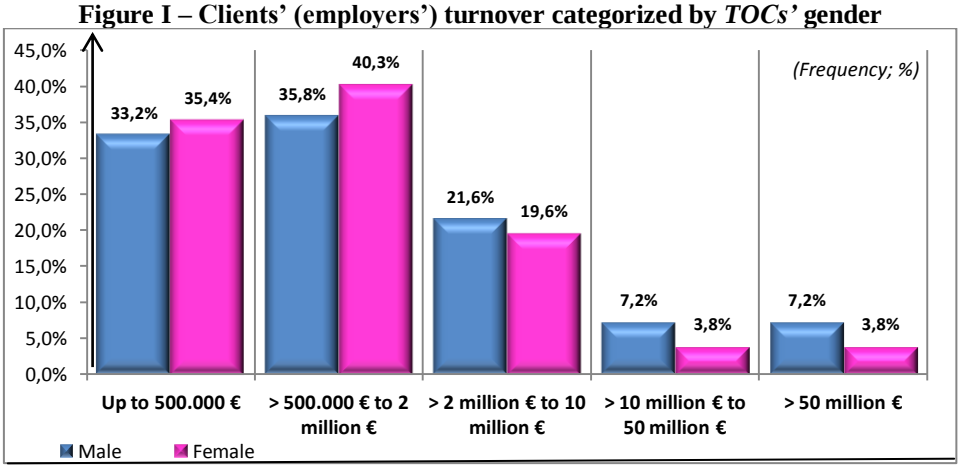
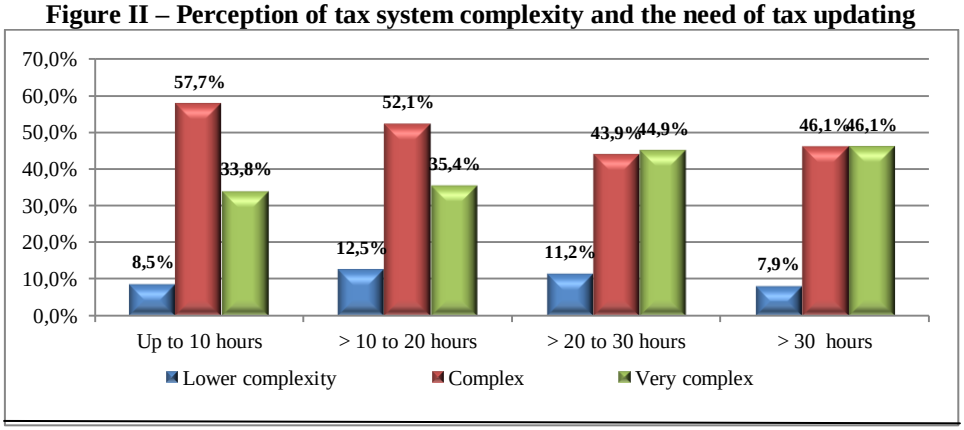


Figure II – Perception of tax system complexity and the need of tax updating



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