UNIVERSITÀ DEGLI STUDI DI MILANO

UNIVERSITÀ DEL PIEMONTE ORIENTALE

PhD PROGRAM

ECONOMIC SOCIOLOGY AND LABOUR STUDIES – 29th cohort

FACTORS SHAPING TAX COMPLIANCE

A micro and macro research

to study the modern social contract

SPS/09, SPS/07, IUS/07, SECS-P/07, SECS-P/10, SECS-S/04, M-PSI/06

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ACADEMIC YEAR
2015/2016

The PhD program Economic Sociology and Labour Studies (ESLS) stems from the collaboration of three Universities, namely Università degli Studi di Brescia, Università degli Studi di Milano, and Università degli Studi del Piemonte Orientale “Amedeo Avogadro”. The University of Milan serves as the administrative headquarters and provides the facilities for most teaching activities.

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INTRODUCTION

For much of the last century, a popular and recurrent belief was that the tax evasion was disappearing and becoming a minor residue existing only in a few marginal enclaves of the modern economy (Geertz, 1963). This modernisation thesis has been increasingly refuted. Nowadays shadow economy is widespread and growing relative to the legitimate declared economy in many regions (Williams and Windebank, 2011), and it is becoming a prominent issue in global economy.

In recent decades many scholars in economics, sociology, political science, history, psychology and law have begun to recognize the central importance of taxation to modernity. Martin et al. (2009) written that this research has the potential to challenge conventional understandings of the world in which we live, rewriting conventional accounts of modernity itself by placing the social relations of taxation at the center of any historical or comparative account of social change.

Taxes formalize our obligations to public authority and among citizens, in many contemporary democracies it is one of the most relevant and diffused process that daily connect private and public sphere, including the constant instable balance between rights and duties.

Paying taxes is mandatory even if there is no state that can obtain tax revenue without a large share of quasi-voluntary compliance (Levi, 1988). Empirical observations and economic analysis show how punitive approach can be the wrong choice, since control and punishment are usually costly and reduce intrinsic motivation of citizens to share the cost of the state. Government policy has to mix carrot and stick, taxation involve the

dimension of imagined community (Anderson, 1991) and rulers need to maintain credibility and consensus simultaneously.

Historically taxation draw a distinction between the insiders and outsiders of a community (Adams, 1993), it describes different boundaries from citizenship but it is directly connected with political representation: probably all of the readers remember the famous episode of the Boston Tea party, when the famous principle 'no taxation without representation' was stated stronger. Thinking at the classic lessons of Locke (1690) we understand how tax payment and tax revenue administration are the contemporary exemplification of the social contract (Martin et al., 2009).

Taxation entails that private resources are spent – at least, theoretically – in favour of public interest, giving substance to the concept of generalize reciprocity and defining the inequalities that we accept and those we collectively seek to regress (see Tilly, 2009). Rights and taxation are strictly related because exercising rights is always costly, promoting social policies is clearly expansive and modern welfare state is possible thanks to structured – and heavy – fiscal system. Also negative rights, apparently without cost (such as the right of property) need to be supported by a public authority to be effective (Holmes and Sunstein, 2000). Where the state prefers to collect public resources, and consequently where it prefers to do not collect the private ones, influence reproduction of class and income inequality.

Considering tax compliance in terms of social contract we need to distinguish three different sides: tax revenue, tax expenditure and tax evasion. The propose of public expenditure and it quality, the choice of tax rate arrangement, the presence of distortions and free riding behaviours could widely modify the effect of public governments and consequently it could shape the social contract in many different ways.

Schumpeter (1918) sustained that studying tax payment process is crucial to understand the role of taxation as a symptom and as an engine of change in democracy and capitalism. Economist have produced shadow economy estimations, jurist have analysed formal tax system arrangement, psychologist have tried to explain which dynamics

involves the relationship between tax payer and state authority, finally sociologist have focused on relationship among citizens, state and society. The decision to evade is always considerable social in a broad sense, as it is dependent on cultural influences as well as other social factors including social comparisons, equity and fairness considerations (Cullis and Lewis, 1997).

Many theories coexist and empirical results highlight how social context can be responsible for anomalous variations. Alm (2011) underlines how measuring, explaining, and controlling evasion are deeply connected strands and moving forward with research on any of them requires that these connections be recognized.

The aim of this work is to shed new light onto the relation between socio-cultural individual traits and taxpayer mentality, adopting a sociological perspective to explore this field of research. Some models which consider socio-cultural factors already exists, especially in economic literature, even if they mainly adopt an economic approach to explain observed variables variations. Most studies treat motivation to pay taxes as a black box without discussing or even considering how it might arise or how it might be maintained (Torgler, 2007). Limited by data availability, this work offers a sociological reconstruction of the complex relationship between variables involved in tax compliance.

First chapter covers the main concepts regarding tax evasion literature, including a brief discussion of the self-interest approach and more details concerning the so called expanded model, which involve also social and cultural variables. Principal determinants of tax evasion are explored in their expected effects and the main issue of the education is introduced.

Second chapter develops a systematic empirical study at European level in order to clarify the overall effect of education on tax compliance decision process. Adopting the social contract framework, we expect an interaction among educational factors with different social and political contexts, that generates different dynamics between tax payers' education, opinion about government and tax morale.

Third chapter aims to evaluate the effect of education on the awareness of tax evasion problem focusing on Italy case. Compared to previous research, our analysis introduces two innovative approaches. Firstly, we exploit particular data availability to test if the relation under analysis is constant over time, secondly we adopt a causal approach considering the potential endogeneity of education.

Fourth chapter develops a statistical analysis at macro level in order to go beyond the self-interest approach, searching for empirical confirmation also from socio-cultural variables usually included into the expanded model. The large majority of economic theories focalize on micro data, and the problem of tax evasion estimation still remain among the more important challenges for empirical analysis of tax compliance. Analysing four different kind of tax evasion estimates this chapter try to shift the focus to the macro level, presenting a systematic study of the correlation between tax evasion with rational and non-strictly rational variables.

Each chapter is framed by theoretical introduction (chapter 1), but the main elements relating to the specific topic of research are recalled and extended to allow a fairly autonomous reading of each section.

THEORETICAL FRAMEWORK

Reassembling the puzzle

Trying to summarize the existing state of knowledge about tax compliance and tax evasion we can start from the works of Becker (1968) and Allingham and Sandmo (1972). These studies represent the first attempts to develop a framework for tax compliance behaviour. Here, individuals are viewed as maximizing the expected utility of the tax evasion gamble, evasion is just a function of opportunity considering essentially few variables such as detection probability, penalty structure, monetary cost of compliance, risk aversion and tax rate. Behind this model we observe that there is not any space for a voluntary compliance and almost every policy implication is focused on enforcement issues. Although Allingham and Sandmo (1972) model is elegant in its simplicity, many potentially relevant factors are necessarily omitted. Compliance decision seems likely to be affected by considerations not captured by the basic economics-of-crime approach (Alm, 2011).

Three strands of argument have been opposed to this neo-classical model.

The first line of objection emphasizing the subjective nature of the probability of being detected, with the result that individual perceptions of being caught when cheating on the tax code are much higher than objective probabilities of detection, in line with prospect theory (Kahneman and Tversky, 1979).

The second argument could be well summarized by the Slemrod's question (1992): «why do people pay taxes more or less honestly when cheating is easy and virtually undetectable?» In this new framework tax payer is no more an *homo oeconomicus* but a

citizen involved in pact with the state, where, even if the rationality of the tax compliance decision is still very relevant, some other elements – non rational and immaterial – have been studied (Martin et al 2009).

Thirdly, Graetz and Wilde (1985) and Andreoni et al. (1998) found that many taxpayer comply more fully than is predicted by the neo-classical approach. Similarly, in many countries the level of deterrence is too low to explain the high degree of tax compliance. Furthermore, there is a big gap between the amount of risk aversion that would grant such a compliance and the effectively reported degree of risk aversion (Torgler, 2003). «It seems that whilst the odds are heavily in favour of evaders getting away with it, the vast majority of taxpayers behave honestly» (Pyle, 1991).

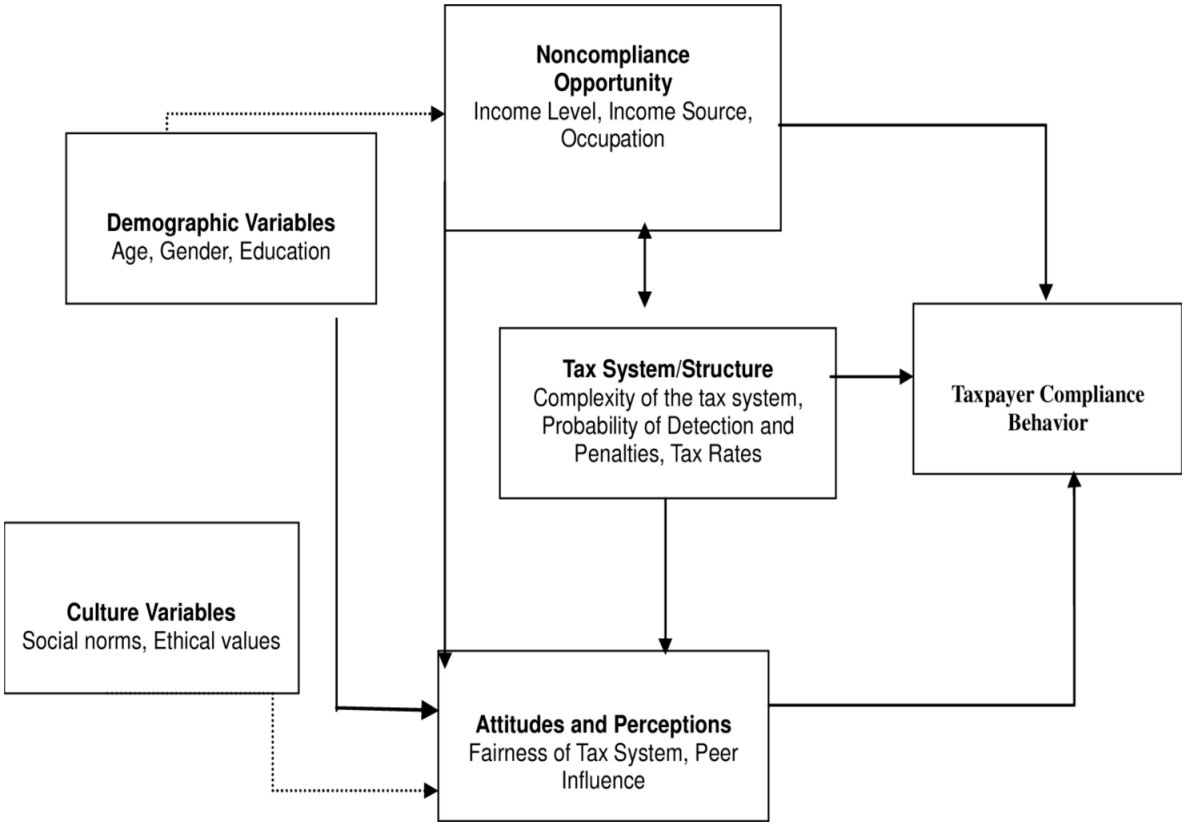
During eighties scholars were just beginning to grapple with the findings from other social sciences that could explain the observed compliance levels, such as a tax payer's sense of moral or social obligation to pay its taxes, which are more relevant for our research.

In 1992 Fischer et al. developed the so called expanded model that introduces four types of variable involved in tax compliance behaviour: (1) demographic variables (2) non-compliance opportunity (3) attitudes and perceptions, and (4) structure of tax system. More recently Chau and Leung (2009) suggest to add on a fifth category for Fischer's model, denominated (5) cultural factor, to better focalize how ethical values could change taxpayer compliance but no empirical results are yet provided. (Fig.1.1).

The intrinsic motivation to pay taxes has become a key explanatory variable for the observed level of tax compliance, it is usually called *tax morale* and marks a non-monetary factor in tax payer decision. From nineties this argument has been discussed in literature with a rapid grow of contributes starting from 2000 (Halla, 2011) .

Since taxation establishes a dynamic relationship between taxpayer and the state, some authors adopt the consolidated framework of social contract to tax payment (Anderson, 1991; Levi, 1989, 1997; Tilly, 2009) in order to draw a partially new framework and to better understand unexplored dynamics in expanded model.

Fig. 1.1 Fischer's model (1992) modified by Chau e Leung (2009, p. 38).



Micro approach

The more developed approach in literature studies individual's decision, it mainly tries to recognize the effect of environment, policy, social and cultural factors on tax payer behaviour. In this research field economic, psychology and sociology usually coexist.

Pickhardt and Prinz (2014) recently elaborated an interesting overview of different research methods to tax compliance (Fig.1.2). Experiments have the advantage that some important variable can be manipulated (such as detection probability, tax rate, income level or punishment) and, above all, frequently we can observe tax compliance behaviour directly.

Fig. 1.2: Academic disciplines and research approaches in tax evasion and compliance Pickhardt and Prinz (2014).

Approach ⟶ Subject ↓	Theoretical modeling	Empirical	Experimental	Agent-based
(Social) Psychology	x	x	x	
Sociology	x	x		
Economics	x	x	x	x
Econophysics	x			x

At the same time experimental methods has some other problems about auto selection bias and external validity, indeed it is difficult to generalise these results into the real world (Spicer and Thomas, 1982) even if laboratory experiments may offer the only opportunity to investigate the behavioural responses to policy changes (Alm et al. 1993).

On the contrary, using field data, the main issues is to work with consistent tax evasion estimations and struggle against social desirability of the answer (Lozza et al. 2013; Schneider, 2011). In order to solve this problem, the most part of researches adopt tax morale and not tax compliance as dependent variable. Data from official investigations are hardly ever available and data from other sources may be suspect: «if you could directly observe and measure a hidden activity, then presumably it could not really have been properly hidden in the first place» (Cowell, 1991).

Tax evasion is legal activities that are legally performed but no taxes are paid. It is different from *black economy* where legal activities are illegally performed and it is also different from *criminal* activities, which are illegal activities tout court.

It is not always simple separating these phenomena specially working with quantitative analysis based on questionnaire survey, generally we accept a broad interpretation of tax evasion, including also *black economy* notion and *tax avoidance* concept because the knowledge about tax evasion has quite unclear boundaries among respondents.

Below (Tab.1.1) we have reported the more common predicted sign considering the mean evaluation of social environment in contemporary democracies: particular cases are still possible, and some of these is going to be discussed further.

Tab 1.1 predicted sign of more common variables on tax morale in expanded model

Variable	sign
Age	+
Education	?
Gender: male	-
Employment status: employed	+
Income source: self-employer	-
Income level	-/+/-
Religiosity: church attendance	+
Complexity of tax system	-
Enforcement of law – probability of detection	-/+

- Older people usually show a positive association with tax morale. They may have acquired more social capital and they are strongly attached to the community so that this could generally reduce selfish orientations. (Torgler and Schneider, 2005a).
- Woman frequently appear more compliant than men (Torgler, 2005), but this result does not appear as robust (Lago-Peñas and Lago-Peñas, 2010).
- Religiosity seems to be positive connected with tax morale, van Staveren (2001) sustains that commitment to values shared within a community can provide an explanation for unselfish behaviour, since the motive resides in the value itself; Torgler (2006) provides

empirical evidences of the same hypothesis covering more than 30 countries at the individual level.

- Income source is a key variable because self-employed worker usually has more non-compliance opportunity and could activate a self-justification dynamic in answering questionnaire. Empirical results confirm constant negative association between self-employer and tax morale (Barone and Mocetti, 2011; Cannari and D'Alessio, 2007; Lozza et al., 2013; Torgler, 2007).
- Enforcement and probability detection usually reduce tax evasion and can increase tax morale (Filippin et al., 2013) but an excess of rigidity or punishment could decrease the perception of fairness and consequently shrink voluntary tax compliance (Andreoni et al., 1998; Widdowson, 1998), on the other hand positive inducements appear to support tax compliance efficiently also for firms and not only for tax payer (Alm and McClellan, 2012). Kirchler et al., (2008) provide a framework summarizing existing branches of tax compliance research. This framework rests on the assumption that the socio-political culture within a society determines the route to achieve cooperation within a state (Kirchler, 2007). If the interaction between authorities and taxpayers is characterized by mutual trust and by a prevailing service-client approach, taxpayers feel committed to the law and pay their taxes honestly and spontaneously; thus, they show voluntary tax compliance. Vice versa, in a climate of distrust with a low level of respect between tax authorities and the government, the authorities need to stress their power to regulate the citizens' behaviour. In this case, tax compliance is promoted by external incentives, such as audits and fines. «Within the slippery slope framework, tax compliance may be voluntary or enforced. Voluntary compliance is assumed to be high if taxpayers trust their authorities; enforced compliance is assumed to be high if taxpayers perceive the authorities to have a high level of power» (Lozza et al., 2013).

  Trust was found to be negatively related to coercive power and positively related to legitimate power. Both coercive power and legitimate power were correlated with

enforced compliance. However, the effect of enforced compliance leads to increased evasion (Kastlunger et al., 2013).

- Vogel (1974) adapted the work of Kelman (1965) to tax compliance and prosed a tripartite typology in order to analyse tax payer choices:
  - *Compliers* pay their taxes because they are required to do so and fear the consequences if they do not;
  - *Identifiers* are influenced by social norms and the beliefs and behaviours of people close or of importance to them;
  - *Internalizers* have a genuine consistency between their beliefs and their behaviour.
- Recently also political ideology started to be considered in tax compliance literature, even if analysis is limited to few countries. In Italian political context Lozza et al. (2013) highlight that left-leaning taxpayers expressed higher levels of voluntary cooperation but, at the same time, they are more prone to react negatively in case of coercive power of authorities. Otherwise right-leaning taxpayers appear more sensitive to enforced tax compliance and are more inclined to comply when trust in authorities is higher.
- The effect of income level frequently depends on economic context, usually the middle class shows higher tax compliance, despite lower and upper class seems to be less motivated to pay taxes (Mason e Lowry, 1981; Witte e Woodbury, 1985) even if other examinations observe a constant positive association between income and tax morale (Cannari and D'Alessio, 2007).
- Last but not least, the role of education seems uncertain: well-educated individuals give an higher values to the connection between taxation and services provided by the state. However, at the same time, they may also be more critical about the way state spends tax revenue (Torgler & Schneider, 2005b). This unclear association has been highlighted in recent analyses (McGee, 2011). Education could modify relationship with authority and imagined community (Anderson, 1991) influencing taxpayers network and social interaction. It shapes how taxpayers look to others in order to decide what is acceptable and expected within the social context.

Traditionally education system received many attentions by classical sociologists, it plays a crucial role in social reproduction (Durkheim, 1922) and it contributes in selecting forthcoming leadership. Institutional theory (see Meyer et al., 1977) also highlights how governments could devolve to education important purposes in order to improve state functions and reinforcing legitimacy and national identity. Assuming that some opposite dynamics coexist, we are going to find the overall effect of education on tax payer mentality in different countries. In case of unclear signs among countries we will try to observe differences and then try to work on new hypotheses. We will attempt to disentangle different effects, isolating for and against forces to tax morale, basically considering both intentional and unintentional effects of public education also with the support of Leroy tax cognitive categorization (2002).

Tab. 1.2 predicted sign of more common variables on tax morale in expanded model. Blue highlights variables involved in project research

Variable	**sign**
Age	+
Gender: male	-
Employment status: employed	+
Income source: self-employer	-
Income level	-/+/-
Religiosity: church attendance	+
Complexity of tax system	-
Enforcement of law – probability of detection	-/+
Left-wing political parties orientation (limited to Italy)	+
Education	Unclear

Macro approach

The decision to evade is always considerable social in a broad sense, as it is dependent on cultural influences as well as other social factors including social comparisons, equity and fairness considerations (Cullis and Lewis, 1997), and social norms have important influences on tax compliance behaviour (Bobek et al., 2013). Networks and communities of taxpayers are important categories for social interaction, for example multilevel analyses confirm that socialization under communist rule strengthens the relevance of community orientations in explaining individual tax morale (Trudinger and Hildebrandt, 2012).

Tax morale can be also seen as a way of supporting a collective to which the individual feels he or she belongs. According to the social psychology concept of social identity, an individual's identification with a collective is the result of processes of self-categorization that the individual undergoes (Brewer, 2001; Turner et al., 1987). If the individual identifies with a collective, that individual is most likely to do his or her best to cooperate and to follow the norms. Supporting the national community not only has an affective component, but also involves awareness of related duties and the willingness to achieve them.

Feld and Frey (2007) theorizing the existence of a psychological tax contract which goes beyond the traditional deterrence model and explains tax morale as a complicated interaction between taxpayers and the government. Some years before Frey (1997) had proposed three main ideas:

- Deterrence imposed by the tax authority may undermine individuals' intrinsic willingness to conform to tax laws.
- Tax morale comprises actions undertaken for their own sake, that is, without expectation of external reward, as well as internalized norm-guided behaviour.

- External interventions undermine intrinsic motivation when they are perceived to be intrusive by the individuals concerned and they raise intrinsic motivation when they are perceived to be supportive.

This relationship between taxpayers and tax authorities can be modelled as a relational contract that involves strong emotional ties and loyalties. Punishment still plays a role to provide deterrence, even if the satisfaction of taxpayers with what they get from the government mainly influences their tax morale. A genuine reward is obtained only if taxpayers as citizens have an inclusive, respectful relationship with the community. Citizens and government perceive each other as contract partners and treat each other with mutual respect (see also Anderson, 1991).

This contractual approach has some advantages over traditional neo-classical approaches because it sheds new lights on social dynamics involved in tax compliance. Each party has to agree to the contents of the contract. The way people are treated by the tax authorities affects cooperation levels. «If you can purchase a product from two different suppliers, would you choose the one that is more friendly and respectful when treating customers? The answer would be yes, providing the price differential was not too high. In a similar fashion, the way the tax office treats taxpayers plays a role» (Feld and Frey, 2007).

This approach also rests on the foundational contribution by Levi (1989) who proposed a theory of "quasi-voluntary compliance" to complement her theory of predatory rule. She uses this concept to describe how taxpayers choose to comply with their obligations instead of evading taxes. In contrast to the standard model of tax compliance derived from the economics of crime – which treats the decision to comply as a straightforward function of the risk of detection and the cost of punishment – Levi argues that taxpayer compliance has a "voluntary" element. Taxpayers comply with their obligations when they perceive their tax obligation as a fair exchange for private or collective goods provided by the ruler (Martin et al., 2009.) In this way tax authorities do not exercise a real coactive authority – for this reason compliance is 'quasi-voluntary' – but their main purpose is to

persuade the taxpayers that they are paying a fair price for services and for living in their community. Starting with Locke (1690) the contract theory of government and the consequent problem of consent still remain central to social sciences' discussion. State has bargaining power resting on three different resources:

- *Coercion* is the Hobbesian solution to the social contract. Evading taxes is illegal and people face sanction, but this approach presents two main problems: first of all searching for evasion is expensive, or, in other terms, we could say that it has high transaction cost (Coase, 1937); secondly coercion could reduce intrinsic motivation to pay taxes;
- *Ideological Compliance* is out of rational choice framework, it consists in a Kantian approach to tax payment, where citizens decide to pay taxes independently from external constrains. Ideological rests on personal conviction to avoid free riding actions;
- *Quasi-voluntary Compliance* is partially ideological, but it involves two important evaluations: (1) rulers will keep their bargains (2) other tax payer pay their taxes. Rulers can increase compliance by demonstrating that the tax system is fair. In case of perception of exploitation, tax compliance decrease sensibly because voluntary part of the mechanism breaks down. Favouritism towards special interest group, declining return their taxes, low contrast of free riding decrease voluntary compliance.

Torgler (2005) analyse how direct democracy affects tax morale, arguing that in this government arrangement rulers signals that taxpayers' preferences are taken into account in the political process. The more taxpayers can participate in political decision making by popular rights and the more the tax contract is based on trust, the higher the tax morale is. Taxpayers are treated as citizens with extensive rights and obligations. They are in the position to better monitor and control politicians via referenda. Discussing Switzerland cases, he found evidence that direct democracy significantly positive influences tax morale.

If taxpayers perceive that their interests are properly represented in political institutions and consider government to be helpful rather than wasteful, their willingness for staying in the official sector and complying with their tax obligations will increase (Torgler and Schneider, 2009).

Highest level of intended tax compliance and the lowest level of tax evasion were found in conditions of high trust and high power (Kogler et al., 2013). People who distrust the parliament are more likely than others to think that tax evasion is common, and the result holds for most of the taxes studied. If people stop trusting their leading politicians, social norms about tax compliance deteriorate and the possibilities of collecting taxes for maintaining the welfare state are reduced (Hammar et al., 2005),

In recent years some new paradigms have been developed in order to improve the relationship between citizens and fiscal authorities, i.e. the link between perceived service orientation and tax compliance, which is mediated by perceived trustworthiness of authoritiesm (Gangl et al., 2013). Three main patterns have been recognized (my elbaration based on Alm, 2011):

- *Standard Taxpayer* is the classical approach, widely considered by economic of crime. Reported tax base falls with more severe penalties and more certain detection of evasion because individuals substitute towards avoidance income.
- *Customer Taxpayer*: laboratory experiments results indicate clearly that strategies to improve compliance must be based on improved enforcement but also on an approach that emphasizes other administrative policies such as services in order to facilitate tax payment. With this strategy, agencies of revenue feed citizens as customer in private market sector and invest in providing services.
- *Citizens Taxpayer*: These results suggest that government can increase compliance by ensuring that citizens are well informed of the outcome of the vote, and that citizens trust that taxes will be spent in ways consistent with their wishes. Accountability and trust are the more relevant variable in order to reinforce social pact.

Leroy (2002) stated that the cognitive construction of tax payer rationality is heavily influenced by tax system complexity, not only in payment necessaries but also in economic dynamics: it is common to observe preferences for decreasing taxes and increasing services contemporary. Social representation of taxation has three main forms.

- *Tax-exchange*: where tax revenue basically is the possibility to provide public services, and taxation represent the cost of the rights (Holmes and Sunstein, 2000). This approach is clearly exposed to the problem of free rider, where tax payer can use public good without paying for these.
- *Tax-contribution*: in this case the main focus is on the concept of *no taxation without representation* where institutions, consent and self-determination play a central role in legitimacy of government.
- *Tax*-obligation: this framework is focused on law enforcement, there is no consent issue and tax payer is subjected to public authority. In its extreme representation tax-obligation include prejudice against tax authority and manifestation of fiscal revolt.

EDUCATION AND TAX MORALE IN EUROPE

Introduction

Looking at the tax payment as the actualization of the social contract likewise John Locke proposed in seventeenth century, where public services are bargained in exchange for taxes, it is clear the importance of an improved understanding of taxpaying attitudes and behaviors. At the base of the modern fiscal systems there is the elementary consideration that each right, even the more trivial, needs of resources to become effective.

The theme of public revenues is becoming more and more important during last years: on the one hand western counties are facing increasing difficulties dealing with welfare state sustainability due to the generalized decline of the growth, and, on the other hand, developing countries have to arrange a modern state with structured fiscal systems to manage the recent development. The more added value creation became immaterial the more the opportunity of taxation become complicated for public authority.

At the base of tax payment there is the elementary observation that each right, even the more trivial, needs of resources to become effective (Holmes and Sunstein, 2000). This is quite obviously in the case of positive right – speaking of social rights such as welfare, public healthcare system, and money provision – but it is still true also considering other negative liberties as the separation of powers, the possibility to have an army that defences nations, the police that guards for the law application. Not only services, but

whichever right provided by the state has a cost to not remain just words on paper. In this sense, taxes are considered as the real life-blood of modern democracies.

Which dynamics and which policies are involved in tax compliance? Alm (2011) underlines how measuring, explaining, and controlling evasion are deeply connected strands and moving forward with research on any of them requires that these connections be recognized. The decision to evade is always considerable social in a broad sense, as it depends on cultural influences as well as other social factors including social comparisons, equity and fairness considerations (Cullis and Lewis, 1997). Understanding how institutions shape and frame people's preferences and consequently their choices is pivotal to a full comprehension of societal regulatory mechanisms.

Historically taxation draw a distinction between the insiders and outsiders of a community (Adams, 1993), it describes different boundaries from citizenship and it is directly connected with democracy. The baseline of this model is quite similar to paradigm of the liberalism (Locke, 1690), where tax payment and tax revenue administration represent the contemporary exemplification of the social contract (Martin et al., 2009). Dealing with the interpretation of compliance and noncompliance decisions a multiple motivational framework has to be considered. Undoubtedly some results are explained by a rational choice paradigm but at least some compliance decisions also express a confirmation of a belief in the rightness of the policies and of the trustworthiness of the government actors implementing them. The decision to pay or to evade cannot be considered the mere results of a selfish calculous (Levi, 1997).

How education could influence the individual orientation towards tax payment? Is education significant in shaping tax payer opinion about taxes? This variable still remains quite obscure in its role within the non-self-interest frame. It is frequently involved in multipurpose and explorative analyses but rarely analytically explored in its contradictions.

Educational system is an important mechanism of social reproduction (Durkheim, 1922), where individual civic values and opinions about the legitimacy of the state are unavoidably influenced by school attendance. Citizens are usually involved in scholastic

program during the first years and for a long period of their life, where the contents of the teaching activities are widely defined by the state's authorities, and in many countries specific programs to support civic participation are supplied through the school. At the same time, it is possible that education also provides better tools to criticize and disapprove public resources management by government, and, in case of sophisticated avoiding strategies, it can also increase non-compliance opportunities.

This work tries to reassemble the puzzle and complete a systematic study focused on the role of education. Since both empirical results and theoretical assumptions seem to diverge we are going to suggest new explicative theses based on individual data analysis. A better comprehension of this variable in tax compliance decision process could offers new insight in quasi-voluntary theory, integrating the *non-self-interest models* explanation.

Literature Review

The first work in tax evasion literature was by Becker (Becker, 1968) at the end of 1960s, followed by the famous contribution of Allingham and Sandmo (1972). These works approach the tax evasion topic from a strictly rational point of view. Here, individuals are viewed as maximizing the expected utility of the tax evasion gamble, and evasion is just a function of opportunity. These models consider a limited set of variables: the choice to comply or not is forecasted considering the trade-off between *profit opportunity* and *detection probability*. The arbitrary element of decision is simply reduced in a coefficient of *risk propensity*. Recent studies take into account how non-compliance opportunity may play a role in taxpayer decisions, Kleven and colleagues (2011) emphasize that for third-party reported income the evasion rate is always extremely small, whereas for self-reported net income the tax evasion rate is incomparably bigger. Those results confirm that rational factors certainly play a prominent role in tax compliance process, even though some doubts still remain about the relevance of hypothetical differences among countries where cultural elements could influence taxpayers orientation (Andrighetto et al.,

2016; Zhang et al., 2016). Those findings in particular try to test the relationship between quality of government and citizens' willingness to comply with fiscal demands: surprisingly they show how British participants are more likely to under-declare their incomes in laboratory experiment than Italians, as well as Swedish do not reveal higher tax compliance than Italian taxpayer. Despite those inconsistent results with tax evasion rate of respective countries, some interrogatives are still on the table, indeed those laboratory experiments do not entirely reproduce the cultural influence of the context (Zhang et al., 2016). Complex elements – and concepts – as public authority and public good would be properly observed and manipulated by a laboratory experiment? Self-interest models seems to be affected by considerations not captured by the basic economics-of-crime approach (Alm, 2011): some assumptions appear controversial, and its results tend to overestimate tax evasion which results less diffused in real data then in previsions. Graetz and Wilde (1985) and Andreoni et al. (1998) found that many taxpayer comply more fully than is predicted by the neo-classical approach. Similarly, in many countries the level of deterrence is too low to explain the high degree of tax compliance. «It seems that whilst the odds are heavily in favor of evaders getting away with it, the vast majority of taxpayers behave honestly» (Pyle, 1991). So that, «Why do people pay taxes more or less honestly when cheating is easy and virtually undetectable?» (Slemrod, 1992). Even if the rationality of the tax compliance decision is still very relevant, some other elements – non rational and immaterial – need to be considered. These kind of objections have opened a new stream involving other disciplines with different instruments to explore the non-economic side of the topic.

Sociology theorized that tax payment and tax revenue administration is the actualization of the modern social contract (Martin et al., 2009) since taxation entails that private resources are spent – at least, theoretically – in favour of public interest, giving substance to the concept of generalize reciprocity and defining the inequalities that we accept and those we collectively seek to regress (see Tilly, 2009): rulers need to maintain credibility

and consensus simultaneously because every modern form of taxation extensively relay on tax payers cooperation.

Levi (1988) uses the concept of *quasi-voluntary compliance* to describe how taxpayers choose to comply with their obligations. In this way tax authorities do not exercise a real coactive power but their main purpose is to persuade the taxpayers that they are paying a fair price for services and for living in their community.

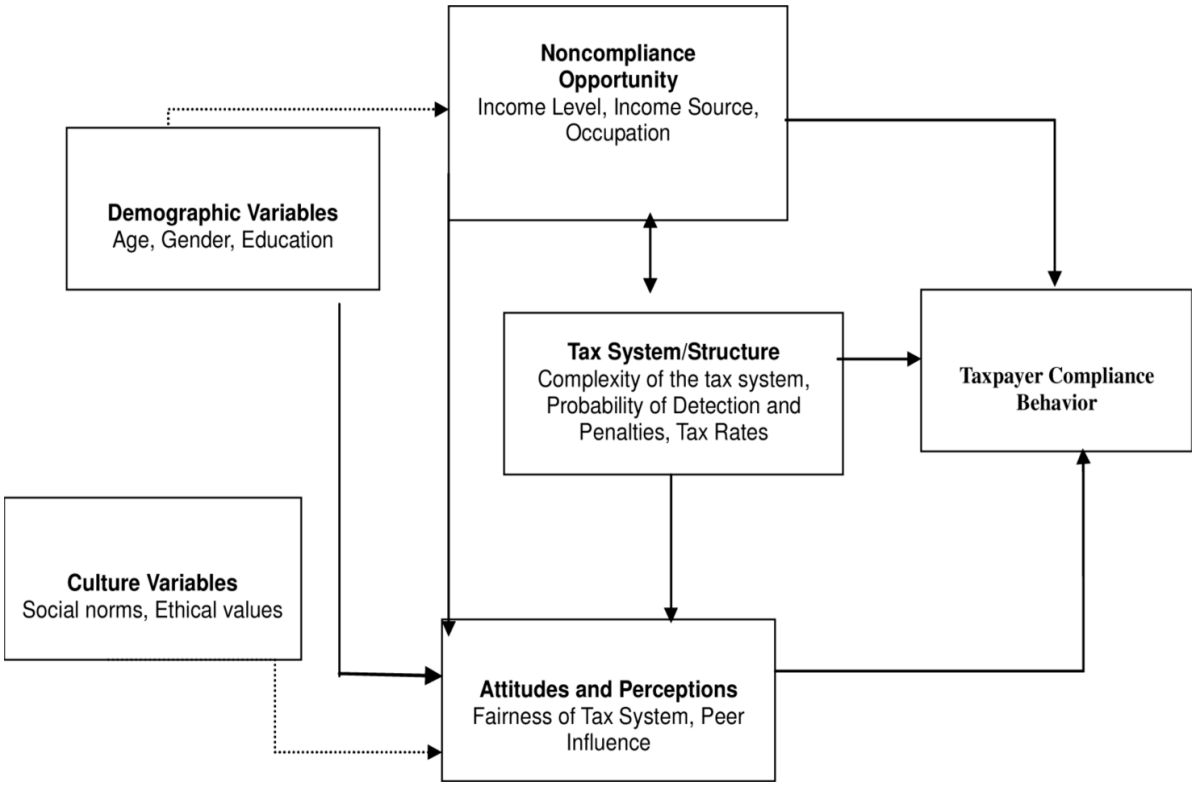
Four main interactions between citizenship and government have been theorized (Levi, 1997).

- *Coercion* likewise in Hobbesian paradigm, where evading taxes is simply illegal and tax evaders are going to face sanction. This approach presents two main weaknesses: first of all, searching for evasion is expensive, or, in other terms, we could say that it has high transaction cost (Coase, 1937); secondly a wrong coercion policy can even reduce intrinsic motivation to pay taxes, since government policy has to mix carrot and stick (see also Hofmann et al., 2014).
- *Habitual consent***,** where the reasons for conforming derive from habits rather than from calculations about how best to achieve desired ends. Obedience is actually incentive-based behavior. If customary obedience is in response to reinforcement (Herrnstein, 1990) it becomes obedience to a social norm, that is, a rule that regulates behaviour by means of sanctions.
- *Ideological consent***,** in case the causes of compliance are ideological or moral principles that motivate people to comply with - or resist - government demands with little regard to individual selective incentives. At its most extreme, a principled commitment is not affected by what others do.
- *Opportunistic obedience*: In this case compliance is influenced by a calculous, taking into account opportunity costs, government incentives and social pressure by peers. The costs and benefits of actions are usually both observable and measurable and thus are the most straightforward source of explanation for behavioral variation.

To study the opinion about taxes the concept of *tax morale* has been introduced, it indicates the intrinsic motivation to pay taxes, and it has been broadly discussed in literature with a rapid grow of contributes starting from 2000 (Halla, 2011). Fischer and collegues (1992) proposed the so called *expanded model* that introduces four classes of new *non-economic* variable involved in tax compliance behaviour: (1) demographic variables (2) non-compliance opportunity (3) attitudes and perceptions, (4) structure of tax system. The latter class still remains the core of the model and it comprehends the same variable of the self-interest approach, but other new elements have started to be involved in the analysis. The non-compliance opportunity considers individual characteristics and fairness of the tax system, introducing a relevant fields where measurements struggle to be consistent (cf Bordignon, 1993).

Recently, Chau and Leung (2009) suggest to add a fifth category for Fischer's model, denominated (5) cultural factor, to better focalize how ethical values could change taxpayer compliance, even though no empirical results are yet provided (see Figure 2.1).

Fig. 2.1: Fischer's model (1992) modified by Chau e Leung (2009, p. 38)



Education is part of demographic variables and it influences tax compliance behavior indirectly. A work dedicated to study exclusively the relationship between education and tax morale does not exists, but comparative analyses on tax morale determinants highlight a negative association between level of education and tax evasion rate (Richardson, 2006) studying aggregated data of geographical areas.

Focusing on micro level the role of education seems uncertain. This has been highlighted even in recent analyses (McGee, 2011).

The same variable education is traded differently within studies since it could be studied step by step, dividing by cycles, or just considering years of studying: some researches show a positive association between education and tax morale (Alm and Torgler, 2006; Lago-Peñas and Lago-Peñas, 2010; Torgler and Schneider, 2005a, 2005b) whereas other studies report a negative correlation (Eriksen & Fallan, 1996; Houston & Tran, 2001; Wenzel, 2005). These differences can be partially explained by the variation in

operationalization process or the variation in selection of the sample – sometimes is considered only specific group of respondents, typically student or household.

Hypothesis

Education is a particularly complex social process, where opposite dynamics seem to coexist. In order to hypothesize its role on tax morale we have to cope with a composite frame of potential relations. Recalling the distinction made by Levi (1997) about the compliance mechanisms it has expected an hypothetical effect for each interaction.

- *Coercion*. *Expected sign (-)* Well educated people may have better tools to evade or to avoid taxes, accessing easily to the specific knowledge in order to reduce decelerated income. In this work the difference between the concept of evasion and avoidance is not significant, since our variable of analysis is the tax payer mentality.
- *Habitual consent*. *Expected sign: (+/-)* Educational system is an important mechanism of social reproduction (Durkheim, 1922), and it is easily understandable how a better instruction could be associate with a more extended adoption of the socially accepted models. In Honk Kong during 1970s a specific educational policy were established to contrast corruption exploiting the social influence (Hauk and Saez-Marti, 2002). Trustworthiness of the government are usually, lightly, supported by education (Listhaug and Ringdal, 2007) even if this scenario is connected with government's choices where better educated citizens have also more tools to critic public resources management and to condemn possible asymmetric treatments. Where taxation is hardly opposed by the cultural elites of the country, and free riding behaviors largely accepted, a better education can decrease tax morale, providing enhanced argumentations against the unfair taxation.
- *Ideological consent*. *Expected sign: (+)* Citizens are usually involved in scholastic program during the first years and for a long period of their life. The contents of the teaching activities are widely defined by the state's authorities, (cf Meyer et al., 1977) and in many countries specific programs to support civic participation are supplied

through the school. Individual civic values and opinions about the legitimacy of the state are unavoidably influenced by school attendance, and a better education offers more opportunities to comprehend the exchange between rights and duties, taxes and public services. Therefore, ideological consent could be enhanced by school attainment.

- *Opportunistic obedience*. *Expected sign: (+)* Considering that social and cultural capital are usually linked, a potential non-compliance decision could suffer of a stronger censor by the peers in case of higher educated tax payers, consequently education may increase the personal price of tax evasion.

Empirically the analysis expects to find a significant association between education and tax awareness at individual level. Since this study is going to consider the opinion about taxes we suppose that possible ideological consent plays a dominant role, conditioning respondents towards more compliance propensity answers. At the same time, studying national level, heterogeneous outcomes are predicted in case of particular social context, where a diffused level of tax evasion decrease the individual motivation to support public finances, and the same cultural elites may lead the dissent against government.

Data and methods

Since our hypotheses are deeply connected to the political perception of citizens, we decide to test them through survey data in order to observe the phenomenon in his complexity without resort to artificial reproduction of composite dynamics.

The analysis conducted in this work is based on European Social Survey data (ESS), considering the second round organized in 2004 which is the only one including a specific part about tax opinions. The overall cases are 47.537 and 603 different variables have been considered. The sample includes all the people aged 15 or more and resident within private households, regardless of their nationality, citizenship, language or legal status.

Survey involves over 20 countries, more specifically: Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy,

Luxembourg, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, and United Kingdom. ESS Italian sample design was not signed off by the ESS sampling expert panel and no further documentation is currently available (for more details see ESS2 - 2004 documentation report) then it has been excluded from our analysis; at the same time, we preferred to restrict our sample to over 25 years old people in order to exclude those which have an age compatible with the standard length of educational system.

Independent variable – level of education – has been recoded simply combining the two categories "Upper-secondary education completed" and "Post-secondary, non-tertiary education" in a generic category "Upper-secondary education completed", whereas the other classes still maintain the original classification.

As statistical tool a logistic regression model is adopted, this allows to test correlation between dependent and independent variable taking into account a set of covariates and, at the same time, producing estimation of goodness of fit. Up to fifteen variables are included in regression model; they have been selected considering the literature about tax compliance determinants. The most extended model includes: (1) gender (2) age (3) voting at election (4) healthcare satisfaction (5) main source of income of the family (6) trust in people (7) interesting in politics (8) trust in legal system (9) trust in parliament (10) politics orientation (11) church attendance (12) money and honesty (13) income level of the family (14) employment relation (15) reading newspaper.

Binary logistic regression models have been developed considering as dependent variable the dichotomization of the following question:

> «How wrong, if at all, do you consider the following ways of behaving to be?
> Someone paying cash with no receipt so as to avoid paying VAT or other taxes».

The resulting categorical variable has more than two levels and this suggest the implementation of a multinomial logistic models. Nevertheless, multinomial models imply not only a set of estimates for each country, thus resulting in a large amount of output to display, but also a reduction in the number of cases, consequently artificially reducing the

statistical significance of differences based on education. In any case, results are robust to the different type of model given that multinomial models confirm substantially the findings we are going to display.

Table 2.1 reports the detailed codification, *refusal* and *no answer* are considered as missing values, instead *don't know* and *not aware* are classified as *low tax-morale*, together with the other two negative answer. Doing that, just a clearly censure of tax evasion is categorized as high value of tax morale.

This kind of studies present a couple of typical risks: on one side tax evasion is an hidden activity by definition, and its analysis through questionnaires may become problematic due to the presence of social desirability biases. Secondly, dealing with tax compliance and tax awareness any operationalization necessarily reduces the consistency between the variable and the abstract concept in its complexity.

Country level it has been preferred since it is the most relevant to study the interaction between citizens and governments. However, the European level still remain interesting and a brief elaboration is proposed as well in order to test a largest set of covariates thanks to the increased number of observation considered in the same model.

Tab. 2.1 dichotomization of the depended variable

Answer	%	Classification
Not wrong at all	09.32	not aware
A bit wrong	31.65	not aware
Wrong	38.16	aware
Seriously wrong	16.30	aware
Refusal	00.09	missing
Don't know	04.36	not aware
No answer	00.11	Missing

Nonetheless including a large set of variable present two problems. First of all, we have to take into account the collinearity problem, which reduce the possibility to disentangle the effect of the single variables included in the logistic regression. In order to partially reduce this effect, control variables are grouped and introduced step by step in four different models which allow to observe possible changes in their coefficients and statistical significance. Secondly, deciding to explore the national level the number of observations is not sufficient to ensure significance for the whole set of covariates, so that in the country analysis it has been decided to include just gender, age, source of income and income level of the family. The latter two are partially correlated, but considering that they refer to different concepts it has been decided to maintain both the elements.

Possible omitted variables could represent a problem for endogeneity, especially cultural background may contemporary influences both education and tax morale, so that our studied relationship could be conditioned by an antecedent variable – i.e. parents' education – which potentially generate a spurious effect. Unfortunately, data availability does not consent to adopt statistical tools in order to prevent this kind of problem since cultural background is not tested in the survey.

Results

Results of the aggregated model (Tab 2.2) are divided in three different columns, this allows to observe the modification of the coefficients after the introduction of different sets of covariates. Surprisingly the upper secondary respondents are the most prone to justify tax evasion, while less than secondary express the stronger censure.

Model 1 considers the effect of education keeping stable gender and age. This trend does not change in Model 2 adds some control variables in order to avoid confounding factors. In Model 3 the complete set of covariates are included and in just the lower secondary become no more significant.

Tab 2.2 Microdata. Logistic regression models, results in odds ratio. Dependent variable: tax aware (yes y=1) (no y=0). Source: ESS data, 2004. Country variable is included but not displayed

		Mod1	Mod2	Mod3
Education (upper sec)	less than lower sec.	1,01	1,07*	1,07
	lower secondary	1,03	1,04	1,04
	tertiary education	1,21***	1,22***	1,18***
Gender (female)	male	0,95**	0,94**	0,95*
	no answer	0,75	0,71	0,76
Age (35-44)	(25-34)	0,91**	0,91***	0,92**
	(45-54)	1,15***	1,15***	1,17***
	(55-64)	1,36***	1,35***	1,35***
	(>65)	1,43***	1,41***	1,38***
Reading Newspaper (<0,5h)	no time		0,93**	0,94**
	0,5 – 1 h		1,09***	1,08***
	> 1h		1,05	1,02
Voting (yes)	abstention			0,91*
	not available			1,18**
Healthcare satisfaction (medium)	low			0,99
	high			1,11***
Source of income of the family (salary)	self-employment	0,86***	0,87***	0,86***
	farming	0,89*	0,85**	0,80**
	pension	1,08**	1,08**	1,09**
	social benefit	1,04	1,00	1,03
	other no answer	0,93	0,93	0,91
Trust in people (medium)	low			1,13***
	high			1,02
Trust in legal system (middle)	low			0,97
	high			1,09***
Trust in politicians (medium)	low			0,86***
	high			1,18***
Political orientation	left			1,02

(center)	right			1,18
	do not answer			0,98
Church attendance	often			1,18***
(rarely)	never			0,96
	1000 – 2500		0,93	0,94
Income	2500 – 5000		0,86***	0,86***
(up to 1000 euro)	over 5000		0,90*	0,91
	not declared		0,91**	0,93*
	Numbers of obs.	38.598	34.777	31.894
	Pseudo R2	0,057	0,063	0,071

The microdata's study at national level present at least three interesting outcomes: in 9 countries tertiary education is associated with a greater disapproval of tax evasion. Czech Republic presents less tax morale associate with lower education titles, whereas university education is not significantly different from upper secondary, meaning that education plays a positive role but *upper secondary* is not different from highest title.

The Greece is the only case where higher education shows the opposite sign, even if lower secondary titles still remain associated with lower tax morale. In this scenario most educated people tend to justify tax evasion more than people with high school diploma.

The other countries do not display a significant trend, excepted for the case of Luxemburg, where the less then lower secondary category shows the higher level of tax morale.

Interaction between education with level of income and source of income has been tested without significant result. Due to the lack of data about one of the variable included in the model, Estonia, Ukraine and Sweden are not tested, and Iceland has been excluded. The latter one does not report the main source of the income of the family, while Estonia and Ukraine do not include measurements about income level.

Tab 2.3 Microdata. Logistic regression models, results in odds ratio. Dependent variable: tax aware (yes y=1) (no y=0). Source: ESS data, 2004. Over 25 years old. Other variables included but not displayed: gender, age, source of income, income level of the family.

		FR	DE	ES	NO	FI	HU	DK	NL
Education (upper sec)	< low. sec	1,07	1,26	1,12	X	1,24	0,80	0,56	1,03
	low. sec	1,04	0,73*	1,16	0,92	1,26	1,27	1,12	1,23
	tertiary	1,66***	1,30***	1,37*	1,52***	1,50***	1,40**	1,72***	1,55***
N. of obs.		1.621	2.390	1.357	1.158	1.725	1.294	1.281	1.740
		CZ	LU	UK	AT	BE	CH	IE	GR
Education (upper sec)	< low. sec	0,21**	1,43***	1,27	1,48	1,21	1,03	0,92	0,92
	low. sec	0,76**	1,04	0,91	1,26*	1,18	1,17	0,86	0,67**
	tertiary	1,11	1,25	0,95	0,74	1,13	1,19	1,00	0,71**
N. of obs.		2.615	1.331	1.563	1.814	1.480	1.946	1.981	2.176
		PL	PT	SI	SK	TK	Non testable		
Education (upper sec)	< low. sec	0,37**	0,79	0,73	0,15***	1,15	Estonia		
	low. sec	0,87	1,15	0,86	0,98	1,32	Ukraine		
	tertiary	1,07	1,29	1,04	1,57**	1,06	Sweden		
N. of obs.		1.346	1.559	1.137	1.106	1.431	Iceland		

Discussion

Tertiary education widely contributes to sustain tax morale, even if this effect is not univocal. The remaining largest part of the countries display non-significant results, and further studies with more available observations would be necessary in order to consolidate this kind of outcomes. Also the aggregated dataset highlights the positive role of tertiary education compared to upper secondary diploma, confirming a general tendency which support the hypothesis that education reinforces tax awareness.

The role of education seems to vary among countries, as demonstrated by the Greece's data. Education probably interacts with social context, such as the government's consensus and the level of evasion, which may generate a negative reaction against the problem of reciprocity in contributing to public necessities.

Considering the geographical scores' differentiations, it is possible to depict two main trends. Main countries display a positive association between education and tax morale. In this group are included northern countries and continental most populous nations as France, Germany and Spain. Also Hungary and Czech Republic, which were going to enter in European Union at that time can be included in the same group. Luxembourg and Greece are the anomalies, here the studied relationship change its sign. Interestingly these two countries present a particular story about fiscal systems: Greece has suffered of problems both with public finances and tax evasion, while Luxemburg has been involved in a financial scandal occurred during period of analysis.

Can these elements explain the variances? Resting on the social contract theory it is possible to speculate that in Greece the cultural elites were the more critic against government, there were no credible commitments and public resource management were perceived as unfair. If more educated people are more aware of the social contract behind the exchange between taxation and public services, it is plausible that they are also the more dissatisfied of the costs of the rights.

Conclusions

Literature on factors shaping tax compliance counts on contributions from many disciplines. Sociology and political studies mainly concentrate on theory elaborations, while economics and psychology pay more attention to empirical analyses. Two main approaches have been proposed: a self-interest model, working especially on rational choice theory, and the alternative framework, also called extended. Statistical studies about the latter offer a consolidated frame around the role of individual preferences in shaping tax awareness since many variables have been explored with a fair consistency. On the contrary, the role of education is uncertain and debated. This work tries to adopt a multidisciplinary approach in order to reassemble the puzzle and complete a systematic study focused on the role of education. Starting from the social contract theory it is proposed a new explicative thesis, based on individual data analysis. A better comprehension of this variable in tax compliance decision process could offers new insight in quasi-voluntary theory, integrating the *non-self-interest* explanation.

Opposite dynamics seem to coexist: education enhances compliance because it can improve habitual obedience and ideological compliance reinforcing civicness and clarifying the connection between rights and duties, but, and the same time, it can also discourage compliance as better educated citizens have more tools to criticize resource management by governments, and they have access to more sophisticated instruments and opportunity to evade.

Statistical analyses support the theory about the coexisting of some opposite dynamics. At national level tertiary education is positive associated with tax morale in nine countries, while it has negative effect in two cases, Greece and Luxembourg, which had particular fiscal and social conditions at the time of the survey. This variation seems to point out that the relationship between education and tax morale could have a context-specific trait.

Aggregated data investigation confirm that tertiary education generally plays a clear positive role on tax morale.

A definitive judgement about the role of education has to be postponed to the fulfilment of more specific studies, preferably checking results consistency with less direct questions and developing a more articulated operationalization of the tax morale concept.

EDUCATION AND TAX MORALE IN ITALY

* This chapter is for the most part an English translation of a peer reviewed article recently published in Italian and co-authored by Roberto Impicciatore:
Benzoni, M., and Impicciatore, R. (2015). Cultura fiscale e istruzione in Italia. Scuola Democratica, 6(1).

Introduction

In a period when the financial crisis and growth in public debt are central elements to the economic and political debate, the significance of inland revenue issues might seem obvious, however the relationship between taxes and the benefits they provide for citizens continues to remain barely discussed and often disregarded. Taxes are often seen by tax payers as a sacrifice, a compulsory deduction by governments whose aim is to reduce private wealth, without considering that most of the rights granted by liberal democracies wouldn't be sustainable without the financial support provided by a contribution from the public (Holmes and Sunstein, 2000). This kind of intolerance appears to have distant origins in Italy. In an article published in *La Rivoluzione Liberale* [The Liberal Revolution] (Gobetti, 1924), Piero Gobetti wrote that "Italian tax payers curse while paying the Government; they don't realise that, by paying, they fulfil their sovereign role. Duty is

perceived as a duty". It is probably the case that, given the resources paid to the treasury don't take the form of a financial contribution in exchange for an equitable return - i.e. it is not a payment for a service received - it is harder to grasp the relationship between costs borne and benefits received (Fichera, 2011). On the other hand, it is exactly this characteristic that makes tax leverage a redistributive tool, and therefore also makes it the means by which social inequality is contained, one of the fundamental principles of the Italian constitution.

Education plays a primary role in increasing the awareness of citizens of the connection between tax and civil and social rights. Indeed, the school system can increase the awareness of students regarding the issue of tax evasion, giving them the educational tools necessary to understand the positive value of contributing to the needs of the community. However, an inverse relationship shouldn't be excluded, whereby higher educational levels lead to a disincentivising effect towards tax compliance and contribute to a better knowledge of tax evasion opportunities, whilst simultaneously offering more tools for criticism and disagreement with the management of public resources. The objective of this work is to evaluate which of these two mechanisms prevails in Italy.

With respect to previous studies on the Italian situation (Barone and Mocetti, 2011; Cannari and D'Alessio, 2007; Filippin et al., 2013; Fiorio and Zanardi, 2006), there are two innovative aspects to the approach we took. Firstly, we adopted a diachronic perspective, analysing data covering more than a decade. This made it possible to verify whether the relationship we were analysing remained stable over time or if, on the contrary, it had been affected by other factors, for example, the recent financial crisis. The second aspect is related to the decision to adopt a causal approach, thus making it possible to take the potential endogeneity of education into account with regards to its effect on people's awareness of the tax evasion issue. The strategy adopted consists of developing multi-variable regression models, which consider potentially correlated non-observed heterogeneity factors. In so doing it is possible to assess the effect of education whilst

excluding hidden factors that could potentially influence educational choices and the propensity to being more aware of the tax evasion issue.

The data used comes from multi-purpose ISTAT (Italian National Institute of Statistics) surveys: 'Aspetti della vita quotidiana [Aspects of everyday life]' (AVQ) for the period 1998-2010, and the 'Indagine sui bilanci delle famiglie italiane [Italian family budgets survey]' (IBFI) conducted by the Bank of Italy (Banca d'Italia) in 2004. In both surveys information was collected on academic study paths and on the perception of tax evasion as a priority issue for the country. In particular, the data provided by ISTAT enabled the relationship between education levels and tax evasion awareness to be evaluated diachronically; whereas the data provided by Banca d'Italia allowed a causal approach to be adopted taking into account the endogeneity of education.

The article is structured as follows: paragraph 1 covers the main concepts and the terminology regarding tax evasion and the Italian and International literature on the motivations for tax compliance, focussing on the role of education; paragraph 2 describes the data and the analysis methods used; in paragraph 3 the results deriving from the ISTAT AVQ data are described and paragraph 4 presents the key results of the analysis on the Banca d'Italia IBFI data. Finally, a number of final conclusions and considerations are drawn.

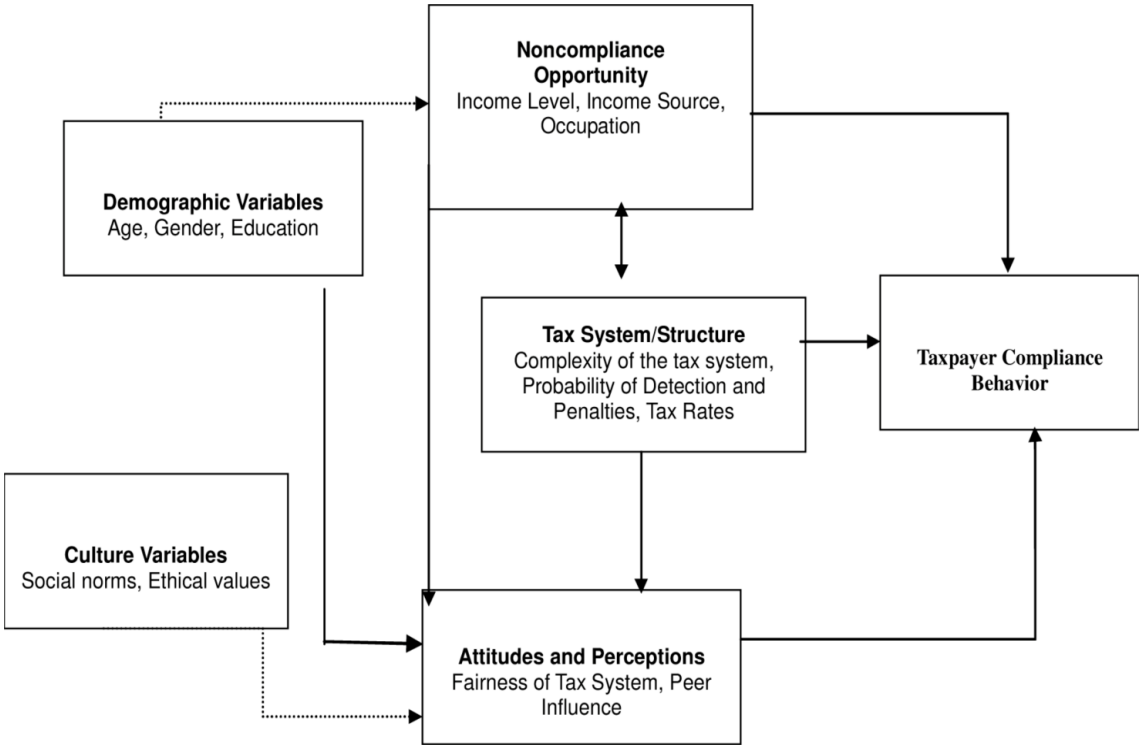
Literature Review

Discussing tax evasion means collating and examining a vast and diverse set of semantic references which often make it difficult to express oneself unequivocally on the subject. In this study the term tax evasion is used in its common meaning, which is the generic set of behaviours through which a person shirks their duty to pay tax, and which is the opposite of tax compliance. This choice is motivated by the fact that we propose to investigate tax evasion not in terms of violating tax legislation, but purely as a social perception(Bovi, 2006)(Bovi, 2006)(Bovi, 2006) (Bovi, 2006). Furthermore, it is important to underline that the terms tax and duty are used synonymously.

Existing literature on the causes of tax evasion has been inspired by the work of Allingham and Sandmo (1972) who theorised a model called 'financial self-interest' (cf. Fischer *et al.,* 1992) which predicted the tax evasion behaviours of tax payers on the basis of a series of economic variables. When published, the above-mentioned work, based on the idea of logical choice deriving from a cost/benefit ratio, was quite successful. However, subsequent empirical research soon showed that the reasons for tax compliance didn't just originate from financial considerations (Jackson and Milliron, 1986; Fischer *et al.,* 1992). To test the financial self-interest model it is necessary to conduct experiments which artificially reproduce the tax payers' choice conditions, not allowing for the possibility to generalise results for generating useful suggestions that could inform government fiscal policy making (Santoro, 2010).

New models were created in an effort to overcome these limitations: they were no longer based on the logical cost-benefit calculation, but on a more complex approach, which also takes into consideration variables that are not strictly logical, in an attempt to not just analyse the behaviour per se, but to concentrate on the perception of the phenomenon. This enabled the experimental restrictions of the standard model to be removed, no longer presuming to predict tax payer behaviour, but aiming to study their opinions with statistical analysis tools, thus achieving more reliable results that could be used for policy making purposes (Lago-Peñas and Lago-Peñas, 2010). The expanded model, which considers non-economic variables, and which we chose as a reference for this study, identifies five cause categories for tax compliance, as shown in Figure 3.1.

Fig. 3.1: Fischer's model (1992) modified by Chau e Leung (2009, p. 38).



In particular, it can be seen that the demographic variables category, which includes education, is linked both to the non-compliance opportunity and to the attitudes and perceptions category. Indeed, existing literature hypothesizes that education on the one hand provides the specific knowledge of the tax system to enable tax evasion, and on the other increases tax payers' awareness that money paid to the Government generates a return in terms of collective well-being. Furthermore, it is also possible that more educated people have better tools for criticism of and disagreement with the management of public resources, possibly reducing their consent regarding taxation (Torgler and Schneider, 2005a, 2005b). The existence of these contrasting dynamics explains the variability in statistical data that we observe in literature: it is conceivable that one of the components could prevail over another as a result of certain external factors (Chan *et al.,* 2000).

Comparative surveys divided by geographical area show how lower tax evasion rates correspond to higher average levels of education (Richardson, 2006), but the correlation between education and tax compliance on a case by case basis shows a relationship that is not unequivocal. Some studies show a negative correlation between education and the willingness to pay tax (Lago-Peñas and Lago-Peñas, 2010; Torgler and Schneider, 2005a, 2005b;Alm and Torgler, 2006)), whilst others show a positive correlation (Eriksen and Fallan, 1996; Houston and Tran, 2001; Benno Torgler, 2005; Wenzel, 2005b). It must be specified that these studies are based on heterogeneous samples, with the exception of Richardson (2006) – which relates to the rate of tax evasion with national indicators originating from different statistical sources – only Lago-Peñas and Lago-Peñas (2010), Torgler (2005), Torgler and Schneider (2005a, 2005b), Wenzel (2005) deal with the subject of tax evasion awareness using surveys based on samples that fully represent the population. Eriksen and Fallan (1996) and Kasipillai together with other authors (Kasipillai et al., 2003) especially focus on the effect of specific knowledge on tax issues and show a positive correlation between education and tax compliance.

There are few studies which apply statistical analysis methods to the Italian situation. The most recent and significant are based on the same survey on Italian family budgets (IBFI) conducted by Banca d'Italia in 2004 (Fiorio and Zanardi, 2006; Cannari and D'Alessio, 2007; Lubian and Zarri, 2011; Barone and Mocetti, 2011, 2012; Filippin et al., 2013). These studies show a positive correlation between education and awareness of the tax evasion issue. However, these studies do not consider the potential distortive effect introduced by the endogeneity of education on the relationship system under study.

Data and methods

The analysis conducted in this study is based on two different sources: the multi-purpose ISTAT surveys: 'Aspetti della vita quotidiana [Aspects of everyday life]' (AVQ) for the years 1998, 2002, 2006 and 2010; and the 'Indagine sui bilanci delle famiglie italiane [Italian family budgets survey]' (IBFI) conducted by the Bank of Italy (Banca d'Italia) in 2004. Both

surveys, despite not being specifically structured to study tax evasion, provide valuable information useful for evaluating the awareness of the interviewees with respect to the subject in question. In particular, in the AVQ survey the interviewees were asked to select the three main priority issues (from a list of 11 options, one of which was tax evasion and another the generic category 'other'), whilst in the IBFI survey the interviewees were asked how serious they believe the tax evasion issue is and how much they agree with the following statement: 'Not paying tax is one of the most serious offences a citizen can commit, because it damages the entire community'.

Both surveys have advantages and limitations. The ISTAT AVQ survey has the main advantage of being a yearly survey, which enables the relationship between education and tax evasion awareness to be analysed diachronically. Specifically, we considered the surveys conducted in 1998, the first to include a question on the principle problems facing Italy, 2002, 2006 and 2010, the most recent, at the time of writing, that included information on the issues facing Italy. Furthermore, each of these surveys was based on a large and representative sample of the Italian population, more than forty-five thousand people. Bearing in mind the purpose of our research, the principal limitation of the AVQ survey was the lack of information related to the family of origin, and hence the main factors explaining the interviewee's educational level. This lack of information denies us the possibility to develop simultaneous models that are able to take into account the endogeneity of the educational choices in our causal system. On the other hand, this is possible using the Banca d'Italia data, which provides detailed information on family background, however, it is limited to just a single calendar year (2004) and the study sample consists only of heads of families born in odd-numbered years. This factor significantly reduces the sample size and limits its representativeness, which therefore renders its characteristics different from those of the general population (Fiorio and Zanardi, 2006). This is only partially compensated for by the application of post-stratification techniques.

Regardless of the source, our analytical approach was to select people from 25 to 65 years of age. People under the age of 25 were excluded on the grounds that they probably hadn't yet finished their studies, whilst those over 65 were excluded due to the fact that the distribution of their level of educational qualifications strongly tends towards the lower end of the educational spectrum.

The AVQ data analysis was undertaken using binary logistic regression models, which estimate the effect of the educational qualification level on the propensity to consider tax evasion as one of the country's main three problems, considering control factors such as gender, age, area of origin, marital status, number of children, job category and sector, family income. However, using this procedure doesn't guarantee that the estimate of the effect of the educational qualification level expresses a real causal effect, or that it was spending more or less time within the educational system that actually changed the person's tax morality. Indeed, it is possible that people with a higher educational qualification level constitute a section of the population with a greater awareness regarding tax. In other words, it is possible that the relationship between education and tax awareness is only apparent and that there are actually aspects that haven't been observed that could influence both parameters, thus generating a spurious effect. If this possible selection effect is not taken into consideration, the estimates generated by the multivariate regression models could be distorted.

A way to avoid this problem is to consider two regression models together: one relating to tax awareness (based on the educational level and on a series of regressors) and one relating to the probability of acquiring a high educational qualification level (based on a second series of regressors). Education would no longer be an exogenous variable, but would become endogenous in so far as it is potentially correlated to the individual's characteristics and to their family of origin. By adding a residual term to each equation, we can completely take the non-observed heterogeneity (which wouldn't be explained by the totality of the regressors) into account. The combined estimate of the two regression models, provided that the residuals are correlated, makes it possible to take into

consideration the presence of the non-observed factors effect that can influence both the educational choices and the propensity to being aware of the issue of tax evasion. This type of model, known as simultaneous equations, and widely used in literature in other areas (see, for example, Amemiya, 1978; Heckman 1979; Hausman 1983; Lillard 1993), is especially useful for our purposes as it enables us to separate the selection effect from the causal effect. The estimate of the model parameters, using the maximum likelihood ratio model, was made using the aML software (Lillard and Panis, 2003). Since the answer variables of the two equations are dichotomous, the two equations are Probit equations. It is hypothesised that the residuals are distributed as a bi-dimensional Normal distribution. A strong correlation between the residuals indicates the presence of non-observed individual factors that could influence both decisions. It is for the above-mentioned reasons that the use of simultaneous models is limited to the IBFI survey.

The choice of control factors to be added to the regression models was made following the indications provided by previous research. In addition to the classic basic demographic characteristics (gender, age, marital status and area of residence), the job status of the interviewee was also considered, making a distinction between self-employed and permanent employee and highlighting whether or not the individual was a civil servant[1]. Only the IBFI provided information on annual family income, whilst the AVQ provided information on number of children. Regarding the covariates vector for the education equation, we considered, in addition to age, gender and geographical area, also information regarding family background, for example the size of the family of origin, the educational qualification level and the profession of the parents. These last two items of information refer to the period when the parents were the same age as the interviewee.

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[1] The job category is defined on the basis of the interviewee's occupation at the time of the interview. For this reason retirees, housewives, people unable to work, unemployed people, students and so on fall into the 'missing' category. To increase the informative value of this variable, when this data was missing, the job category of the spouse (if the interviewee was married at the time of the interview) or of the parents (if single and still living with the family of origin) was considered. This enabled us to recover, depending on the survey year, between 15 and 20% of the cases classified as 'missing'.

Using the information regarding the occupation of the parents, the family class was defined on the basis of the 'domination principle' (Erikson, 1984): the family acquired its class based on the higher of the two levels of the parents' occupations.

Results

ISTAT survey 'Aspects of everyday life' data analysis results

Table 3.1 shows the answers, in percentage terms and divided by survey year, to the question 'Of the issues facing Italy, which, in your opinion, are the three highest priorities?' Please note that column sums are greater than 100 since it was possible to provide more than one answer (up to 3). We can see that tax evasion awareness is 22% in 1998, it then decreases in the following years before increasing again to 25.1% in 2010: we hypothesize that this variability is linked to external factors, such as awareness campaigns and the general economic trend. As the economic crisis took hold, unemployment concerns seemed to rise, growing by ten percentage points between 2006 and 2010. Conversely, concerns with respect to issues surrounding the national health service substantially decreased in later years, going from 26 to 18%.

Tab 3.1 'Of the issues facing Italy, which, in your opinion, are the three highest priorities?' Please note that column sums are greater than 100 since it was possible to provide more than one answer (up to 3)

	1998	**2002**	**2006**	**2010**
Unemployment	79,7	74,4	71,6	81.6
Criminality	54,9	53,1	57,7	51.9
Tax Evasion	22,0	17,3	19,3	25,1
Environment	17,4	21,8	16,8	15,5
National Debt	11,3	14,8	13,4	12,2
Healthcare System	22,7	26,1	26,0	18,0
Education	5,5	6,6	6,0	7,1
Justice	8,4	11,7	11,7	13,7
Immigrations	28,2	30,5	27,4	25,1
Poverty	16,2	18,9	27,8	27,6
Other	1,0	2,0	2,1	5,4

Turning now to the relationship between education and awareness of the tax problem (Table 3.2), we can see that individuals who rate tax evasion among the three highest priority problems in Italy are above all those with a university degree, followed by those educated to upper secondary standard and those to lower secondary standard. This relationship between the two variables, confirmed by all four surveys analysed, becomes stronger with time.

Tab 3.2 Percentage of individuals including tax evasion among the three highest priority problems in Italy

		1998	2002	2006	2010
Education	less than lower sec.	18.6	14.1	13.6	14.7
	lower secondary	19.9	15.1	16.3	18.2
	upper secondary	24.9	18.5	20.3	26.8
	tertiary education	27.6	22.2	26.3	36.2
Gender	male	25.0	19.7	22.2	27.8
	female	19.1	14.4	15.8	21.3
Geographical area	north	24.3	18.8	22.0	27.2
	center	24.4	19.6	21.2	29.2
	south	17.5	13.3	13.7	18.3
Age	25-34	19.3	15.4	15.2	21.4
	35-44	21.8	16.2	18.7	23.8
	45-54	24.3	18.8	21.6	25.2
	55-65	23.2	18.9	21.9	30.2
Marital status	single	22.0	18.1	18.4	25.4
	married	22.1	16.7	19.2	24.5
	sep./div.	21.5	17.1	19.2	22.8
	widowed	19.2	15.7	16.5	18.6
Number of children	0	24.2	18.8	22.1	26.8
	1-2	21.7	16.9	18.4	24.0
	3+	18.6	13.6	14.4	20.7
Source of income	self-reporting	15.2	13.0	14.8	18.2
	professional	18.1	15.9	19.7	26.0
	worker	20.5	15.4	15.9	18.6
	salary PA	27.0	21.6	22.9	33.2
	salary	28.9	20.1	24.2	33.0
	no answer	21.1	10.1	13.1	13.9
TOT		22.0	17.0	19.0	24.5
n		44376	28227	24887	24291

We noticed that women, people residing in Southern Italy and younger subjects were among the categories that rarely placed tax evasion as one of the three highest priority problems in Italy. The employment situation for these categories is often less favourable and this could be a contributory factor as to why their attention may be focused on issues other than tax evasion. If these hypotheses were true, it would create a vicious circle: due to the lack of will or inability of the Government to satisfy the needs and expectations of the people, some disadvantaged categories would lose interest in the tax issue, rendering it more difficult for the Government to find the necessary resources to assist them.

The results also highlight different levels of awareness between different job categories: permanent employees are more aware of the issue than the self-employed and, within each of these two categories, the higher the occupational prestige (and therefore income), the higher the awareness regarding tax evasion. This is consistent with that which was observed by Cannari and D'Alessio (2007), which indicated a negative relationship between propensity to evade tax and income.

Finally, families with children are less inclined to include tax evasion as one of Italy's priority issues than those without children. This difference could be due to the fact that families with children might perceive that taxation is not adequately progressive.

Tab 3.3 Microdata. Logistic regression models, results in odds ratio. Dependent variable: tax aware (yes y=1) (no y=0)

		1998		2002		2006		2010	
Education	less than lower sec.	0.66	***	0.77	***	0.65	***	0.54	***
(upper sec)	lower secondary	0.79	***	0.85	***	0.82	***	0.70	***
	tertiary education	1.10	**	1.19	***	1.42	***	1.49	***
Gender (female)	male	1.43	***	1.50	***	1.60	***	1.54	***
Geographical area	center	1.00		1.04		0.94		1.09	*
(north)	south	0.69	***	0.69	***	0.61	***	0.64	***
Age	25-34	0.82	***	0.88	**	0.73	***	0.80	***
(35-44)	45-54	1.27	***	1.26	***	1.27	***	1.15	***
	55-65	1.35	***	1.31	***	1.33	***	1.57	***
Marital status	single	1.02		1.13	***	0.98		1.06	
(married)	sep./div.	0.83	***	0.95		0.88	**	0.87	**
	widowed	0.88	*	1.05		0.88		0.76	**
Number of children	1-2	0.87	***	0.93	*	0.82	***	0.92	**
(0)	3+	0.83	***	0.79	***	0.67	***	0.90	
Source of income	worker	1.54	***	1.28	**	1.10	**	1.05	
(self-reported)	salary PA	1.92	***	1.71	***	1.47	***	1.74	***
	salary	1.97	***	1.49	***	1.52	***	1.74	***
	other	1.45	***	0.92		1.02	**	0.89	
-2loglikelihood		45396		25134		23236		25609	
n		44376		28227		24887		24291	

Table 3.3 shows the results of the application of binary logistic regression models related to the probability of rating tax evasion as one of the three main problems facing Italy. The results clearly show that, for all survey years, the educational qualification level is positively linked to tax evasion awareness. This result appears to be consistent with the hypothesis

that education serves to make people more aware of the fact that taxation is an important way of contributing to the lives of those in the community, whilst it clearly contrasts with the hypothesis that people with higher levels of education are more intolerant towards taxation and as a result see tax evasion as a minor offence. In addition, we can see a growing relationship regarding the differences between the educational qualification levels, which tend to increase across the years. For example, when compared to those educated to upper secondary standard, people holding a university degree show an odds ratio of greater than 10% in 1998, by 2010 this has grown to 50%.

In Table 3.3 we can also see that age appears to be positively linked to a higher awareness of tax evasion, confirming the findings of previous research (Jackson and Milliron, 1986; Tittle, 1980). In light of this relationship, it would appear to be of interest to evaluate the interaction between level of education, age and tax evasion awareness. Focussing on the most recent available survey, that of 2010, Table 3.4 shows the odds ratios for each age group as a function of educational qualification level. It shows a particularly high propensity among those who possess a university degree and are at least 55 years old. Conversely, there is a rather low odds ratio among 25-34 year-olds who are educated to only primary school level. In other words, the effect of the educational qualification level is particularly great among thirty-year-olds who didn't finish compulsory education and sixty-year-olds with a university degree.

Tab 3.4 Interaction bet education and age. Logistic regression models. Results in odds ratio. Dependent variable: tax aware (yes y=1) (no y=0)

Age	25-34		35-45		45-54		55-65	
elementary	0.23	***	0.55	***	0.47	***	0.66	***
lower secondary	0.64	***	0.75	***	0.67	***	0.76	***
upper secondary	1		1		1		1	
tertiary education	1.40	***	1.51	***	1.52	***	1.56	***

Banca d'Italia survey 'Italian family budget' data analysis results

The 2004 IBFI survey by Banca d'Italia addressed the following questions: a1. 'In general, of the problems facing Italy, tax evasion is: very serious/ serious/ equal to the others/ marginal/ non-existent'; a2. 'How much do you agree with the following statement: not at all, a little, indifferent, pretty much or very much?: Not paying tax is one of the worst crimes that a citizen can commit because it damages the entire community'.

Having decided to consider a person aware of tax evasion someone who answers very serious or serious to the first question and very much or pretty much to the second, we developed a simultaneous equation model whereby we simultaneously modelled tax evasion awareness (separately analysed with the two above-mentioned questions) as a function of educational qualification level and other control factors, and the propensity to having an upper secondary school or university education standard. The results, both for traditional unrelated equation models and for simultaneous equation models, are shown in Table 3.5.

Focusing on the education factor, we can see that in the simultaneous models, the positive effect of a high educational qualification level on the awareness of tax evasion is confirmed, if not actually strengthened. It seems clear that being educated to upper secondary standard means an increased propensity to considering tax evasion a serious problem for Italy and one of the worst crimes that one could commit. There is little difference, however, between those educated to upper secondary standard and those with a university degree. In any case, this allows us to highlight that even when taking the potential endogeneity of education into account, the results obtained from the ISTAT data, and based on non-simultaneous models, are largely confirmed. There are therefore elements that confirm that education simulates awareness of the fact that taxation is an important aspect of citizenship.

Table 3.5 also highlights the negative correlation between non-observed heterogeneity factors, indicating there are unexamined factors that have contrasting effects on the two equations considered: on one hand they increase the propensity to having an education

level higher than that of compulsory education, and on the other they decrease the perception that tax evasion is a serious crime against the community. We don't have sufficient information to properly interpret this result, it would require further research to better analyse this aspect. Merely for exercise purposes, we could speculate that it concerns factors related to a liberalist and privatistic vision due to which on the one hand the advantages and potential of a high educational qualification level are recognised, and on the other, taxation and the welfare system it supports are perceived as an obstacle to economic growth (cf. Berti and Kirchler 2002).

The only differing aspect between the IBFI and ISTAT data is the difference between people with upper secondary level qualifications and those with a university degree. We believe it is important to briefly focus on this aspect. This result could be connected to the different sample compositions (remembering that the IBFI survey is limited to heads of families) or to a difference in question formulation. However, other analyses on the IBFI data (not shown here), highlight interesting peculiarities: differently from people with upper secondary level qualifications, university graduates demonstrate a kind of justification for the assertion that not paying tax is acceptable if taxation is thought to be unfair, and agree less with the statement that paying tax is one of the fundamental duties of a citizen. With respect to these two questions, university graduates demonstrate more commonality with interviewees possessing lower educational qualification levels. For this reason, of those who achieve higher educational qualification levels, if on the one hand they demonstrate a greater awareness of the tax evasion issue and its importance, on the other it becomes apparent that they exhibit a certain degree of discontent towards uncritical, passive behaviours against the tax system.

Tab 3.5 simultaneous equation models (a1) considering the issue of tax evasion very serious (a2) considering evasion one of the worst problems of the community (b) to have at least a high school diploma

		tax evasion very serious				Not paying tax is one of			
		indip.		simult		indip.		simult	
Education (upper sec)	less than lower	-0.22	**	-0.85	***	-	**	-0.72	***
	lower secondary	0.09		-0.70	***	-	**	-0.60	***
	tertiary education	0.00		-0.09		-		-0.12	
Gender (female)	male	0.16	**	0.19	**	0.10		0.12	
Geographical area (north)	center	0.20	***	0.27	***	0.15	*	0.21	*
	south	-0.08		-0.08		-	**	-0.21	**
Age (35-44)	25-34	-0.09		-0.17		-	*	-0.27	*
	45-54	0.15	**	0.24	**	0.14	*	0.22	**
	55-65	0.24	***	0.44	***	0.23	***	0.40	***
Marital status (married)	single	-0.09		-0.15		-		-0.16	
	sep./div.	-0.14		-0.25	*	-	***	-0.44	***
	widowed	0.05		-0.05		-		-0.26	
Source of income (self-reported)	worker	0.17	**	0.28	**	0.18	**	0.31	**
	salary PA	0.32	***	0.44	***	0.41	***	0.57	***
	salary	0.14		0.18		0.20	**	0.26	*
	other	0.19	*	0.27	*	0.16		0.23	
Family income (rif. 24.000-36.000)	Less than 12.000	-0.17	*	-0.21		-	***	-0.41	***
	12.001-18.000	-0.08		-0.10		-	*	-0.23	*
	18.001-24.000	-0.09		-0.11		-		-0.18	
	36.001-54.000	-0.09		0.12		0.00		-0.00	
	54.001-81.000	0.14		0.17		0.03		0.03	
	81.00 or more	-0.05		-0.11		0.11		0.12	
		secondary education				secondary education			
Gender (female)	male			0.23	***			0.23	***
Age (35-44)	25-34			-0.11				-0.10	
	45-54			-0.02				-0.00	
	55-65			-0.55	***			-0.54	***
Geographical area (north)	center			-0.05				-0.05	
	south			-0.16	*			-0.16	*
father education (lower sec)	elementary			-0.88	***			-0.87	***
	upper sec or			0.23				0.23	
	no answer			-0.79	**			-0.79	**
mother education (lower sec)	elementary			-0.06				-0.07	
	upper sec or			0.89	***			0.93	***
	no answer			-0.08				-0.08	
Social origin (worker)	salary			0.94	***			0.95	***
	manager			1.41	***			1.38	***
	entrepreneur			0.82	***			0.78	***
	self-reported			0.43	***			0.41	***
	no answer			0.13				0.13	
children in family of (only child)	2			0.06				0.05	
	3			-0.23	*			-0.21	*
	4			-0.37	***			-0.39	**
	5+			-1.01	***			-1.02	***

residual correlation		-0.54 ***		-0.36 *
loglikelihood	-2990.77	-2986.22	-2704.78	-2703.23
N	2524	2524	2524	2524

Conclusions

From our research a clear positive relationship between level of education and tax evasion awareness has emerged. Previous studies covering the Italian situation (Cannari and D'Alessio, 2007; Fiorio and Zanardi, 2006; Lubian and Zarri, 2011) were all based on the same IBFI survey, but, even though they revealed a positive link, consistent with the results of this study, they only considered a single year and didn't exclude potential spurious effects deriving from a possible selection effect.

This study introduced two new elements to the analysis: a diachronic perspective making it possible to highlight possible changes in the relationship between education and awareness of the tax evasion issue over a period of more than a decade, and a causal approach which takes into account the potential endogeneity of school and university education. The analysis carried out on the ISTAT AVQ data for the years from 1998 to 2010 using logit models and on the Banca d'Italia IBFI data using the simultaneous equation models with correlated residuals, confirm that a better educational qualification level increases negative attitudes towards tax evasion. Furthermore, considering the AVQ data analysis, it seems that the difference in tax evasion awareness recorded between people with different levels of education increases with time, probably related to external factor variations, such as awareness campaigns on the issue.

These results are in line with the institutional theory for the creation of educational systems (Meyer et al., 1977; Strang and Meyer, 1993), which asserts that education is one of the legitimisation tools of modern countries: it gives the citizens the necessary competences for fulfilling their administrative and tax obligations, but also enables the development of a collective identity and a sense of belonging to the political community, which are necessary requirements for a taxation system aimed at the redistribution of wealth.

Casual censure of tax evasion is not a certain guarantee of tax compliance. As illustrated by Cannari and D'Alessio (2007), the correlation between the propensity to evade tax and the indicators of income tax evasion and undeclared work, suggests that attitudes towards the tax evasion issue tend to turn into actual behaviours.

The results of this analysis can help us to make some general remarks on how it is possible to rethink the entire tax culture. The recovery of evaded tax is a cyclical theme that constantly returns to the heart of the political agenda. Economic stagnation and restrictions imposed by the European Union have put the Italian state budget in difficulty and successive governments have had to face the issue of finding the necessary resources for maintaining high levels of public expenditure. The global financial crisis, which started in 2008, further exacerbated this problem and led to deeper difficulties for Italian sovereign debt. The drop in tax revenue, caused by the decrease in the gross domestic product, was combined with an increase in expenditure required for dealing with higher levels of unemployment and increased social hardship brought about by the financial crisis. Despite the fact that Prodi's second government and the Monti government put a lot of effort into highlighting the fact that higher tax compliance can only be achieved by rethinking the cultural principles through which the Government and the people approach the taxation issue, the tools available to the Government for reinforcing tax compliance are currently used rather incoherently.

In general, two lines of attack can be identified: firstly, public disapproval towards tax evasion, secondly, the incentive to share taxation as a necessary tool for achieving objectives that contribute to each individual and the entire community. In Italy in recent years all efforts have been concentrated on the first of these lines of attack, almost at the complete expense of the second; focussing attention on the disapproval of those who avoid paying tax runs the risk of being exposed to rapid changes in feeling, without fiscal fidelity becoming a shared ingrained principle that goes beyond temporary social and political orientations, thus meaning it won't become an implicit fundamental basis for the whole community. An alternative approach could be to work towards providing and

consolidating concrete reasons for tax payers to voluntarily choose to contribute to public expenditure. Education could play a key role in achieving this aim, similar to the Hong Kong situation in the seventies, when an experimental anti-corruption programme initiated through schools – in conjunction with preventative and law enforcement policies - achieved great results. Over a 15-year period the widespread culture of illegality was curtailed, removing the support for corruption in two ways: firstly, acts of corruption were prosecuted more strongly, and secondly, the small cultural revolution initiated in schools supported the demand for more lawfulness and gave consent to the repressive actions that followed (cf. Guiso, 2012; Hauk and Saez-Marti, 2002).

Similarly, we believe that in Italy it is necessary to instigate a paradigm shift which, rather than being oriented towards generating animosity towards evaders, is geared towards consolidating the interest of citizens in an equal distribution of taxes, supporting an idea of taxation that is not simply perceived as a sacrifice, but as a way to "correct inequalities and social-economic imbalance, in favour of individual liberties and to protect public well-being and social rights" (Gallo, 2011).

BEYOND SELF INTEREST MODEL

A MACRO ANALYSIS

Introduction

Taxation issue is a crucial prospective to analyse more of the recent turning points of modern and contemporary history. Beginning with Tocqueville who explored the relationship between fiscal and social status in his essay 'The Old Regime and the Revolution' it becomes clear how choices in public finance had potential consequences on emerging modern regimes (see Leroy, 2010). The same Boston Tea Party protest still inspire contemporary politics in USA, the famous slogan 'No Taxation Without Representation' led the protest that conduct to American Revolution, and tax revenue and its management still represent the most important element of change for modern democracy.

Nowadays fiscal sociology mainly deals with two different dimensions of studying. On one side the dichotomy between macro and micro level of analysis. The latter can be tested empirically more easily, since it can be explored by statistical tools or quasi-experiment methodology, vice versa the macro approach faces more difficulties to be analysed empirically due to the intrinsic heterogeneity of available data. The second dichotomy is the contrast between a strictly rational approach and a modern social contract theory, which extend the researchers attention to social and political context. Self-interest approach just considers a limited set of elements in order to study tax compliance, focusing especially non-compliance opportunities at institutional level.

The decision to evade is always considerable social in a broad sense, as it is dependent on cultural influences as well as other social factors including social comparisons, equity and fairness considerations (Cullis and Lewis, 1997); recently some interesting studies about tax authorities' interaction with taxpayers have been developed (see Gangl et al., 2015). The focus on individual rational considerations should be supplemented by an alternative approach based on the idea that community feelings and a sense of duty towards society determine an individual's tax morale (Trudinger and Hildebrandt, 2012). We do not suppose that rational considerations and social elements are mutually exclusive, but we assume that both play a role in tax evasion outcomes. This relationship between taxpayers and tax authorities can be modelled as a relational contract that involves strong emotional ties and loyalties. Punishment still plays a role to provide deterrence, even if the satisfaction of taxpayers with what they get from the government mainly influences their tax morale. A genuine reward is obtained only if taxpayers as citizens have an inclusive, respectful relationship with the community. Citizens and government perceive each other as contract partners and treat each other with mutual respect (see also Anderson, 1991).

Until today just a smaller number of works tried to provide empirical evidences of the modern social contract theory, and it has been just theoretical. This work tries to propose a slight progress in this field – although aware of empirical limitations – presenting a large set of statistical covariations in order to observe how tax evasion rate and socio-cultural variables appear linked. A properly causal approach is not applicable, and the purpose of this study will be to test and describe the relationship among variables within a complex system of complex elements.

Literature Review

The first work in tax evasion literature was by Becker (Becker, 1968) at the end of 1960s, followed by the famous contribution of Allingham and Sandmo (1972). These works approach the tax evasion topic from a strictly rational point of view. Here, individuals are

viewed as maximizing the expected utility of the tax evasion gamble, and evasion is just a function of opportunity. These models consider a limited set of variables: the choice to comply or not is forecasted considering the trade-off between *profit opportunity* and *detection probability*.

The arbitrary element of decision is simply reduced in a coefficient of *risk propensity*. Even if this model is elegant in its simplicity, the compliance decision seems to be affected by considerations not captured by the basic economics-of-crime approach (Alm, 2011): some assumptions appear controversial, and its results tend to overestimate tax evasion which results less diffused in real data then in previsions.

Graetz and Wilde (1985) and Andreoni et al. (1998) found that many taxpayer comply more fully than is predicted by the neo-classical approach. Similarly, in many countries the level of deterrence is too low to explain the high degree of tax compliance. «It seems that whilst the odds are heavily in favour of evaders getting away with it, the vast majority of taxpayers behave honestly» (Pyle, 1991). So that, «Why do people pay taxes more or less honestly when cheating is easy and virtually undetectable?» (Slemrod, 1992). Even if the rationality of the tax compliance decision is still very relevant, some other elements – non rational and immaterial – need to be considered. These kind of objections have opened a new stream involving other disciplines with different instruments to explore the non-economic side of the topic.

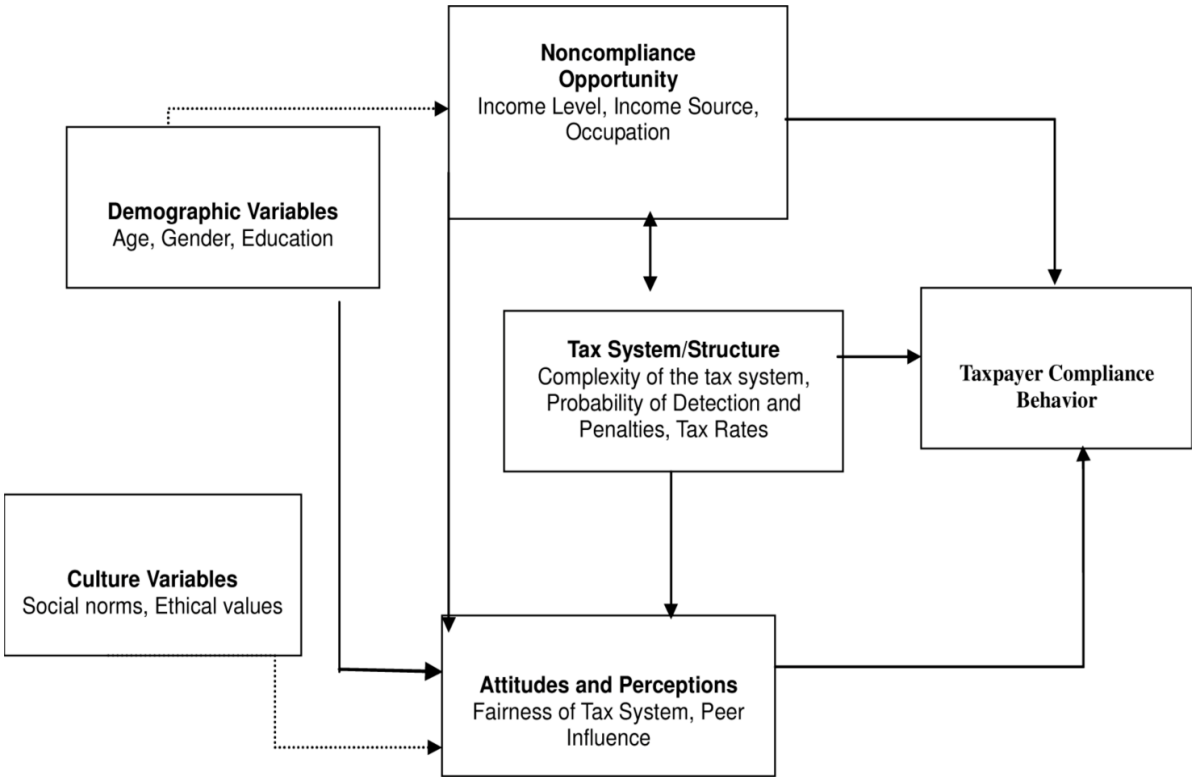
Sociology theorized that tax payment and tax revenue administration is the actualization of the modern social contract (Martin et al., 2009) since taxation entails that private resources are spent – at least, theoretically – in favour of public interest, giving substance to the concept of generalize reciprocity and defining the inequalities that we accept and those we collectively seek to regress (see Tilly, 2009): rulers need to maintain credibility and consensus simultaneously because every modern form of taxation extensively relay on tax payers cooperation. Levi (1988) uses the concept of *quasi-voluntary compliance* to describe how taxpayers choose to comply with their obligations. In this way tax

authorities do not exercise a real coactive power but their main purpose is to persuade the taxpayers that they are paying a fair price for services and for living in their community. Fischer and collegues (1992) proposed the so called *expanded model* that introduces four classes of new *non-economic* variable involved in tax compliance behaviour.

The tax climate in a given society can vary on a continuum between a hostile, antagonistic and a more friendly cooperative, synergistic state. In an antagonistic climate, tax authorities have to enforce tax compliance via audits and fines. In a synergistic climate, however, taxpayers perceive tax authorities as part of the same community and hence, show voluntary tax compliance. Although considerable efforts have been devoted to understanding social psychological factors affecting tax morale and hence tax compliance, much has yet to be known about the antecedents of intrinsic and voluntary motivation to pay taxes (Brizi et al., 2015).

While trust is widely recognized as a strong determinant of cooperation, empirical evidence is less clear on power: severe fines may lead towards compliance or even have the opposite effect. Trust is found to be negatively related to coercive power and positively related to legitimate power. Both coercive power and legitimate power are correlated with enforced compliance. However, the effect of enforced compliance leads to increased evasion (Kastlunger et al., 2013).

Fig. 4.1: Fischer's model (1992) modified by Chau e Leung (2009, p. 38).



(1) demographic variables (2) non-compliance opportunity (3) attitudes and perceptions, (4) structure of tax system. Recently, Chau and Leung (2009) suggest to add a fifth category for Fischer's model, denominated (5) cultural factor, to better focalize how ethical values could change taxpayer compliance, even though no empirical results are yet provided (see Figure 4.1).

Research questions

If the role of non-compliance opportunity appears clear and consistent during the years, the macro correlation between social contract variables and tax evasion rate is not well studied yet. The social contract theory argues that the extent to which a non-compliance behaviour is considered tolerable depends on the perception on that a community gives to that behaviour, since the social and cultural characteristics of a country influence the

diffusion and the perception of tax evasion. This work is seeking for recurrent conditions that characterize social contract. Highest level of intended tax compliance and the lowest level of tax evasion were found in conditions of high trust and high power (Kogler et al., 2013). People who distrust the parliament are more likely than others to think that tax evasion is common, and the result holds for most of the taxes studied. If people stop trusting their leading politicians, social norms about tax compliance deteriorate and the possibilities of collecting taxes for maintaining the welfare state are reduced (Hammar et al., 2005).

Tab. 4.1 - Selected variables to conduct statistical analysis on macro area.

Variable	Level of analysis	Stat. testability
Demographic (Age, gender, education)	Micro	Direct
Cultural (e.g. individual ethic)	Micro	Proxy
Individual Attitudes	Micro	Proxy
Individual non-compliance opportunity	Micro	Direct
Tax system structure	Macro	Proxy
Structural non-compliance opportunity	Macro	Proxy
Social contract	Macro	Proxy
Cultural variables (e.g. social norms)	Macro	Proxy

From the whole set of variables proposed by Chau and Leung (2009) only a subset of these is eligible to conduct a macro study with statistical tools, since the variables have to be measurable with certain level of homogeneity among countries (see Tab 2 for an overview)

- Question 1. Are non-compliance opportunities associated with tax evasion?

Studying non-compliance opportunity basically we have to distinguish two different side of the declaration of income. The moment of production and the moment of sale.

About the moment of production, a recent analysis conducted by Kleven and colleagues (2011) show how the non-compliance opportunities play a crucial role in determining

evasion: it has been demonstrated how – also in a northern country as Denmark, usually considered a low tax evasion country – the level of evasion for self-reported income seems to be comparable with the rest of Europe. Consequently, the largest amount of evasion appears to be influenced by the productive system, and how it generates non-compliance opportunity. This is typically the case of enterprises dimensions: the biggest are the company, the narrowest are the possibilities to evade and vice versa.

Considering the moment of sale, two main elements appear to be relevant. The first one is the dimension of the economy, since a more developed economy is on average more formalized than a smaller one. The second point is the traceability of the transaction; looking at the possibility to explore this effect it is supposed that the largest is the number of electronic payment, the lower is the possibility to remain undeclared.

– Question 2. Are social contract elements associated with tax evasion?

The usage of tax revenues affects tax-compliance behaviour (Doerrenberg, 2015). Rights and taxation are strictly related because exercising rights is always costly. (Holmes e Sunstein, 2000). Promoting social policies is clearly expansive, and modern welfare state is possible thanks to structured and heavy fiscal system. Also *negative rights*, apparently without cost - such as the right of property - need to be supported by a public authority to be effective. In contrast to the standard model of tax compliance derived from the economics of crime, Levi (1988) argued that citizen's compliance has a "voluntary" element. Taxpayers comply with their obligations when they perceive their tax obligation as a fair exchange for private or collective goods provided by the ruler (Martin et al., 2009; Bodea and Lebas, 2013). It is relevant to investigate not only the importance of objective variables such as the tax burden, rate of public expenditure, or the density of regulation, but also the subjective perceptions, expectations, attitudes and motivations such as tax morale or the (perceived) institutional quality; empirical results confirm that higher institutional quality lead to a smaller shadow economy (Torgler and Schneider, 2009). Trust-building actions seem to be better than deterring measures. In a society where the tax authority respects the taxpayers and applies transparent and fair procedures, in fact

where trust and tax compliance are higher, tax evasion is lower and thus the level of taxation can be reduced (Lisi, 2014), moreover, recent studies also highlights that having voice on tax contributions and on tax distribution leads to higher compliance (Casal et al., 2016).

In this work the healthcare satisfaction has been selected as a relevant proxy of public services. Then it follows that trust and satisfaction about the government are expected to be negatively related with tax evasion.

Data and methods

One of the main problem in comparing different country on these kind of variables is the data's homogeneity. Statistics can be very different even considering the same subject, since they are often produced by different institutions with differentiated and not always clear methodology.

Tax evasion rate is the dependent variable. Its estimation is a quite complex calculus by definition, since tax evasion is a non-registered activity. During the years more than one methods have been developed in order to estimates tax evasion rate.

- The *discrepancy* between national expenditure and income statistics.
- The *discrepancy* between the official and actual labour force.
- The *transactions* approach. This approach has been fully developed by Feige. It is based upon the assumption that there is a constant relation over time between the volume of transaction and official GNP.
- The *currency demand* approach.
- The *physical input* studying anomalies in electricity consumption.
- *MIMIC* model. The idea of the MIMIC model application is to examine the relationships between the latent variable size of shadow economy activities and observable variables in terms of the relationships among a set of observable variables by using their covariance information (Schneider 2011).

Economy's scholars are largely debating about which one could be considered the most reliable procedure. Schneider's estimates (Schneider et al., 2010) probably represent the best known results, indeed they are also proposed by an international institution such as The World Bank. They have the real advantage to cover a large number of countries and are intended to cover the whole underground economy. However, Feige (2016) has recently advanced some critics about the internal validity of Schneider's estimates, highlighting how in same cases these indexes are very far from other calculus produced by reliable institutions. So that, in order to consolidate our results each analysis has been performed through all the most recognized estimations, and each relevant difference has been discussed (see Tab 4.2). Clearly, by choosing a different source of data imply to reduce the number of cases and it consequently shrinks statistical efficacy.

Tab. 4.2 - Overview of the tax estimations rate – dependent variable.

Source	Coverage	Homogeneity	Year
Schneider – World Bank	+100	High	2007
United Nations	Industrialized Countries	Medium	2008
OECD (N1+N6)	Subset OECD	Medium	2012
EU Commission – VAT GAP	EU Countries	High	2014

Independent variables have been divided in three groups, respectively *Non-compliance opportunity, Social Contract, Fiscal System Arrangement* also implemented as c*ontext control variables.* Since they represent three composite concepts, the analysis has been performed adopting some proxy.

About fiscal system arrangement these variables have been selected:

(1) The *Financial Secrecy Index – FSI* - The FSI measures two things, one qualitative and one quantitative. The qualitative measure looks at a jurisdiction's laws and regulations, international treaties, and so on, to assess how secretive it is. It gets assigned a secrecy

score: the higher the score, the more secretive the jurisdiction. The second, quantitative, measurement attaches a weighting to take account of the jurisdiction's size and overall importance the global market for offshore financial services.[2]

We expect that the lower is the FSI, the lower is tax evasion.

(2) *GDP*. Gross domestic product is an aggregate measure of production equal to the sum of the gross values added of all resident institutional units engaged in production. The sum of the final uses of goods and services (all uses except intermediate consumption) measured in purchasers' prices, less the value of imports of goods and services, or the sum of primary incomes distributed by resident producer units.[3]

Generally, GDP represents a mere control factor, and comparing industrialized economy its role would be not so relevant in tax compliance process.

(3) *Total tax Revenue as percentage of GDP*. Tax revenue is defined as the revenues collected from taxes on income and profits, social security contributions, taxes levied on goods and services, payroll taxes, taxes on the ownership and transfer of property, and other taxes. Total tax revenue as a percentage of GDP indicates the share of a country's output that is collected by the government through taxes. It can be regarded as one measure of the degree to which the government controls the economy's resources. This indicator relates to government all government levels.

Some authors conjecture that a higher tax rate could generate a negative reaction in tax payer, which consequently tend to better justify tax evasion. Consequently, we expect a positive effect on tax evasion.

About non-compliance opportunity these variables have been selected:

(1) GDP/Enterprises ratio. It is an aggregate measure useful to evaluate the average dimension of the company. The higher is the coefficient, the lower is the fragmentation of

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[2] http://www.financialsecrecyindex.com/faq

[3] https://stats.oecd.org/glossary/detail.asp?ID=1163

production structure of the economy. We expect that this ratio is negatively associated with tax evasion.

(2) *Percentage of enterprises with more than 50 employees*. This index is similar to the previous one, but it is more refined to identify the share of big companies on the total number of productive activities of the country.

(3) *Number of electronic transaction per capita*. This index represents the relative diffusion of electronical transactions, and differently form the share of card payment on the total amount of transaction it is not exposed to self-selection bias.

We expect that the higher is the number of Electronic payment the lower is the tax evasion rate.

About social contract elements these variables have been selected:

(1) Trust in government. Trust in government represents the confidence of citizens and businesses in the actions of governments to do what is right and perceived as fair. Most importantly the legitimacy of governments is built on being trusted by their citizens, as trust is mainly an enabler of fluent and effective interactions between governments and citizens (OECD, 2015).

We forecast that the higher is tax government the lower is tax evasion.

(2) *Mortality following acute myocardial infarction (AMI)*. A good indicator of acute care quality is the AMI case-fatality rate. This indicator measures the percentage of people who die within 30 days following admission to hospital for AMI. The measure reflects the processes of care, such as timely transport of patients and effective medical interventions. This indicator is influenced by not only the quality of care provided in hospitals but also differences in hospital transfers, average length of stay and AMI severity.

We expect that the lower is the AMI, the lower is also tax evasion.

(3) *Healthcare satisfaction*. Since the satisfaction for the healthcare system is strictly related with the expectations diffused among citizens about how a good healthcare

should be, this index of perceived quality is relevant to explore how tax payers tend to frame this public service into the social contract paradigm.

We expect that the higher is the satisfaction, the lower is tax evasion.

(4) *Redistribution of income*. Among the main tasks of governments are guaranteeing that citizens have equality of opportunity and even access to basic public services. Governments should also assist those experiencing poverty by ensuring the attainment of a minimum standard of living. Based on the societal agreement, governments could play a more or a less important role in income redistribution through taxes and transfers. In order to evaluate and synthetize this complex process, it has been estimated a ratio between the Gini coefficient after taxes and transfers and Gini before tax and transfers: in this way the reduction operated by the government is relative to the global inequality, e.g. the same point of reduction generates a higher value for the case with the lower global inequality.

Tab. 4.3 - Overview of the expected sign related to tax evasion rate.

Variable	**sign**
GDP/Enterprises ratio	-
Percentage of enterprises with more than 50 employees	-
Number of electronic transaction per capita	-
Trust in government	-
Mortality following acute myocardial infarction (AMI)	-
Healthcare satisfaction	-
Redistribution of income	-
Financial Secrecy Index – FSI	+
GDP	Neutral
Total tax revenue as percentage of GDP	+

Results

Figures 4.3, 4.4 and 4.5 present the covariation between the MIMIC tax evasion estimates and *non-compliance variables*. The first and the third graphs confirm expected signs, whereas the second one shows an unclear relation.

As expected *GDP/Enterprises ratio*, and the *number of electronic transaction per capita* are negatively related with tax evasion rate, while the *Percentage of enterprises with more than 50 employees* highlights a less clear relation. Please note that the set of countries varies in relation to data availability.

Appendix 2 shows how the same analyses replicated with the remaining dependent variables generally confirms outputs, excepted for the tax evasion rate calculated by United Nations in 2008 where the association is inverted.

Figures 4.6, 4.7 and 4.8 display the covariation between the MIMIC tax evasion estimates and *social contract variables*. The first graph (Figure 4.6) confirms that tax evasion appears to be negatively related with trust in governments. Also the second graph (Figure 7) supports our hypothesis, where healthcare satisfaction is clearly indirectly associated with tax evasion. Otherwise the last graph (Figure 4.8) does not confirm our theory because the redistribution of income is not explicitly correlated with tax compliance.

Appendix 3 reports the same elaboration for the other tax evasion estimates, and the same trend are confirmed.

In order to take into account the role of potential intervenient variables some linear multivariate regressions have been analysed, and a set of controls has been introduced. Appendix 1 summarizes the results where the outcomes appear largely consistent with the two-way analysis.

Fig. 4.3 – Tax Evasion and GDP/Enterprises ratio.

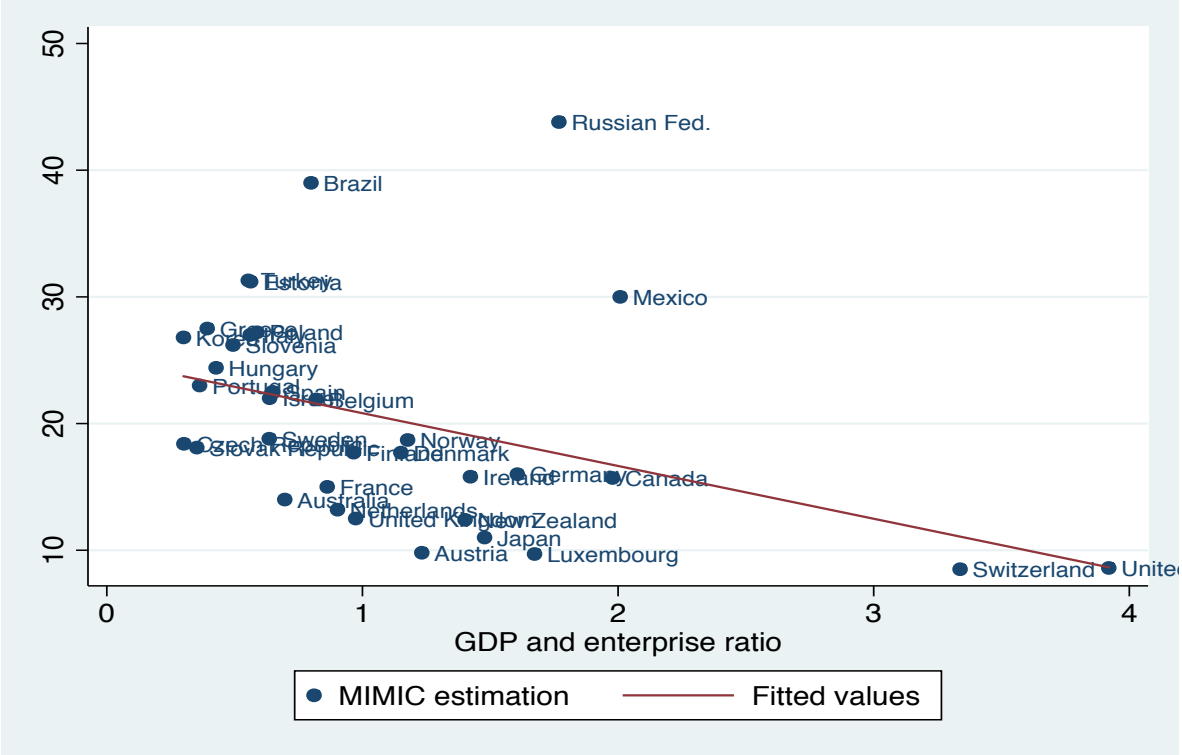


Fig. 4.4 – Tax Evasion and Percentage of enterprises with more than 50 employees.

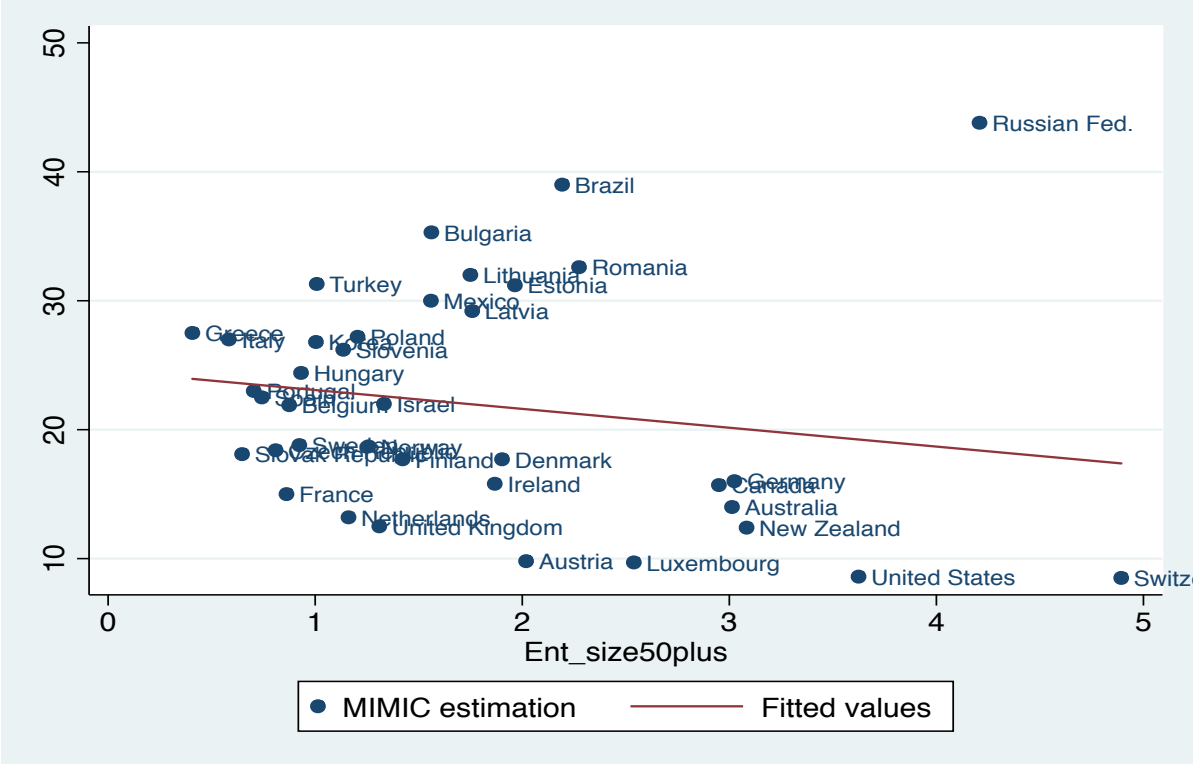


Fig. 4.5 – Tax Evasion and Number of electronic transaction per capita.

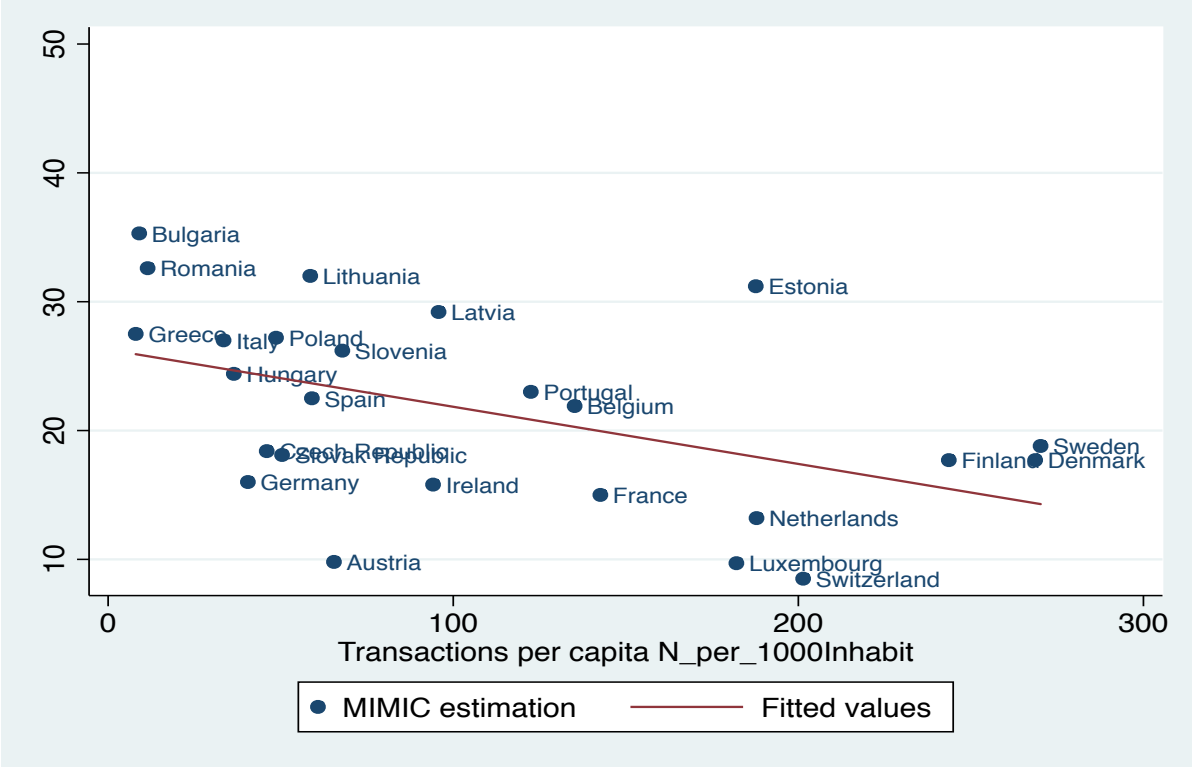


FIG. 6 – Tax Evasion and Trust in governments.

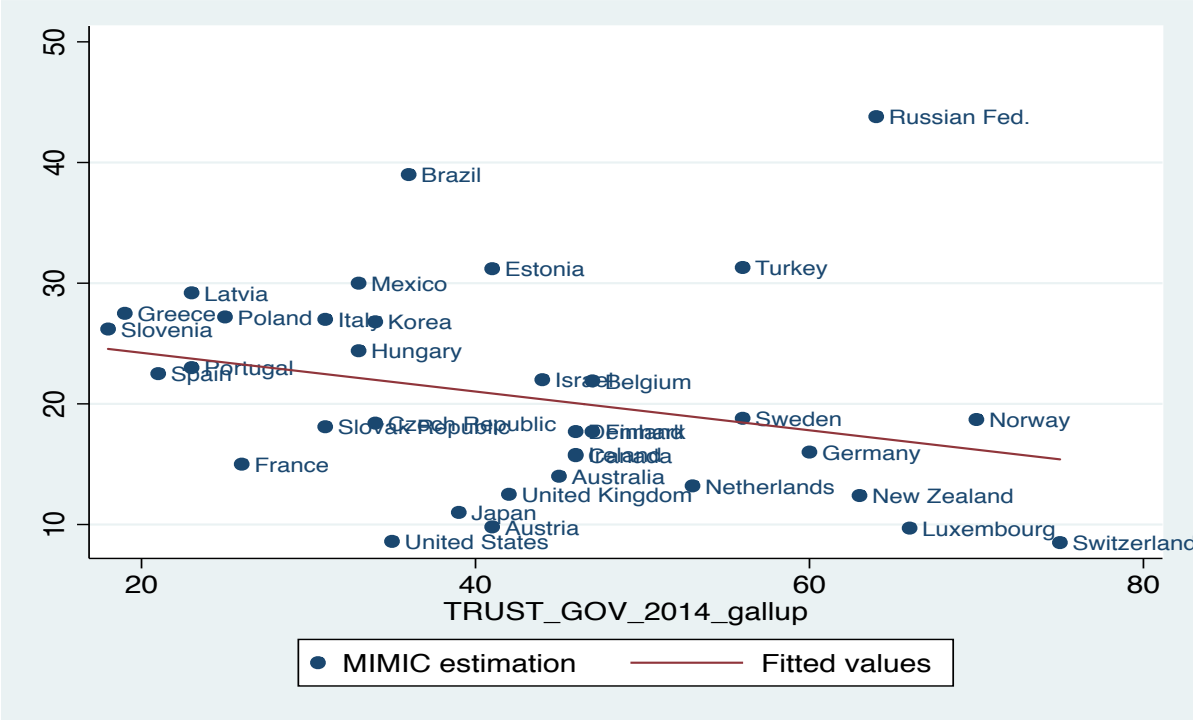


Fig 4.7 – Tax Evasion and Healthcare satisfaction.

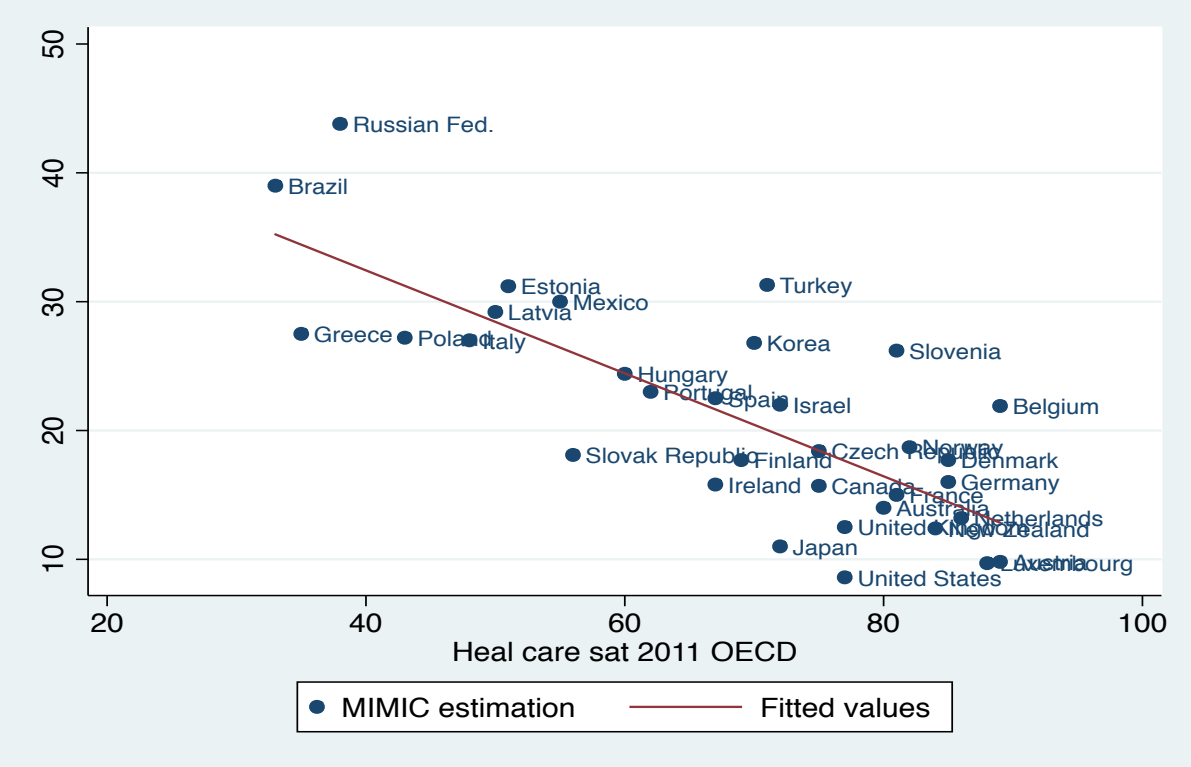
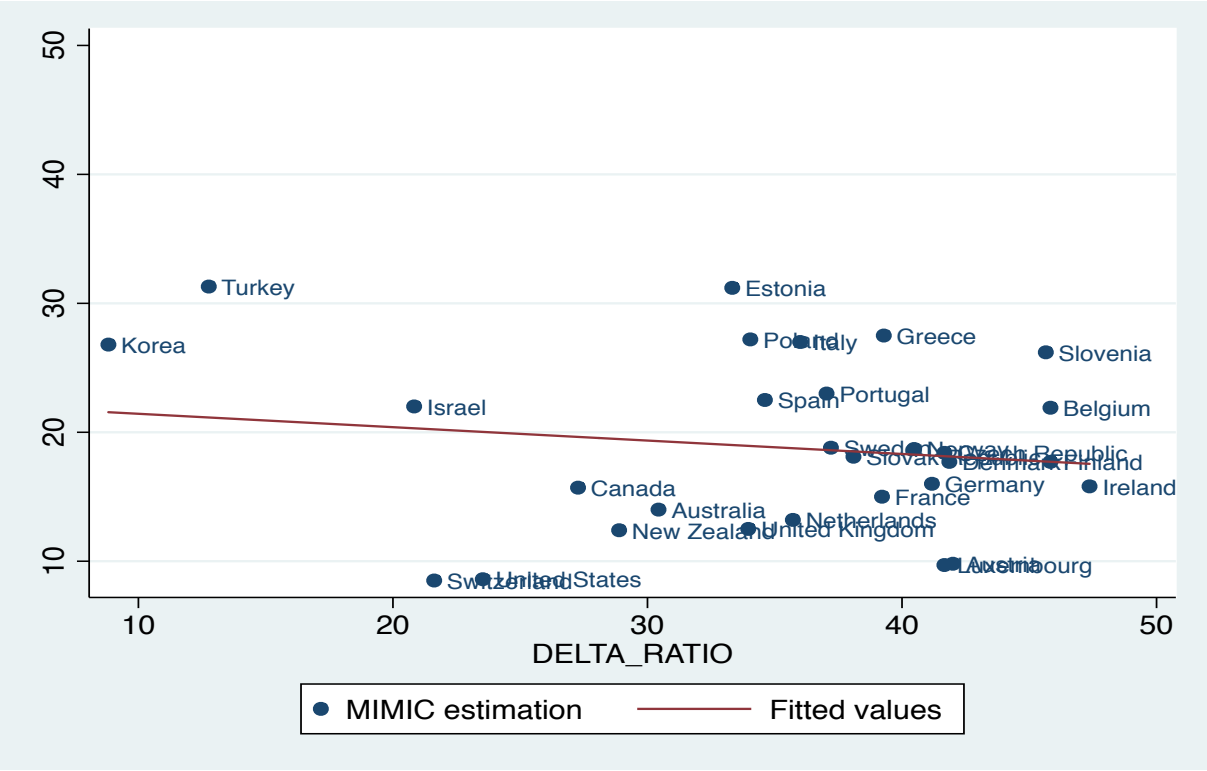


FIG. 4.8 – Tax Evasion and Gini delta ratio



Conclusions

The large majority of economic theories focalize on micro data, and the problem of tax evasion estimation still remain among the more important challenges for empirical analysis of tax compliance. The social and cultural characteristics of a country influence the diffusion and the perception of tax evasion. The extent to which a non-compliance behaviour is considered tolerable depends on the perception on that a community gives to that behaviour.

It is important to identify any common pattern that offer better comprehension of tax payer mentality despite evading taxes has universal negative impact on institutions. Even if we sustain that cultural dimension is crucial in understanding tax compliance, we start checking for non-compliance opportunity expecting a positive association with tax evasion. This is one of the corner stone of standard model but it has also a central importance in expended model. For instance, literature analysed the case of Denmark where for total self-reported net income, the tax evasion rate is equal to 41.6%, whereas for third-party reported income it is below 1% (Kleven et al., 2011).

Analyzing four different kind of *tax evasion estimates* this work tries to shift the focus to the macro level, presenting a systematic study of the correlation between tax evasion with *rational* and *non-strictly rational* variables. As expected the role of non-compliance opportunity appears more relevant then the socio-cultural variables, but, even without the possibility to develop a cause-effect framework, the recurrent association between cultural and tax system variables empirically support the hypothesis about the role of social contract.

Tab 4.4 revise the whole empirical results.

- Considering outcomes tested over four different dependent variables both the mean dimension of enterprises and the electronic transactions are negatively correlated with tax evasion, confirming the relevant role of *non-compliance opportunity* in tax evasion dynamics.

- *Trust in government* and *Healthcare satisfaction* are observed with the same expected results, whereas redistribution of income does not seem to have a significant effect.
- The remaining results are tested only on the mimic model, and they have not confirmed expectations, offering responses of uncertain sign also because of the limited number of cases involved in the statistical analysis.

Tab. 4.4 – Summary of the results, expected sign and empirical results

Variable	**sign**	**W. B. 2007**	**OECD 2012**	**U. N. 2008**	**VAT_GAP 2014**
GDP/Enterprises ratio	**-**	✓	✓	✓	X
Percentage of ent. > 50 emp.	**-**	✓	✓	X	?
N: of e-transaction per capita	**-**	✓	✓	✓	✓
Trust in government	**-**	✓	✓	✓	✓
Healthcare satisfaction	**-**	✓	✓	✓	✓
Redistribution of income	**-**	X	X	X	X
AMI	**-**	X			
Financial Secrecy Index – FSI	**+**	X			
GDP	**Neutral**	✓			
Total tax revenue as percent of GDP	**+**	X			

CONCLUSIONS

The relation between duties and rights in contemporary democracies is a thin line. One of the main tasks for governments is to manage private resources for public purposes, ensuring through the tax system a fair treatment for citizens and make the civil and social rights truly effective. Indeed, tax revenues are the "life-blood" of the modern state (Braun 1975). Without them it is hard to imagine how states could sustain welfare or defense programs; maintain infrastructures like roads, airports, schools, and public transportation systems; regulate business and markets; enforce property rights and the law; or support commerce (Campbell, 2009).

The issue of tax non-compliance is constitutive of any tax system throughout history, but only during the past thirty years the subject of compliance become a recognized research area within economics. Self-interest model has found numerous and solid empirical evidences over the years even though it tends to underestimate the real rate of compliance. This kind of discrepancy has opened new prospects about the role of sociological and psychological aspects, establishing a field of study that holds together different disciplines, where each one contributes with its theoretical framework and its methodologies. In this kind of multidisciplinary area this work would be integrated, mainly by drawing its working hypotheses from the theory of the social contract and studying them with empirical methods of statistical tools.

The most significant limitation of studying tax compliance is related to the available data. Attempting to study it using questionnaire interviews or macro data is undoubtedly a simplification, a fact that becomes clearly evident in light of the outlined theoretical framework. On the other hand, laboratory experiments do not entirely reproduce the complex and social variable such as cultural influence of the context (Zhang et al., 2016). Observing public authority or public good in a laboratory context generates evident problem of external validity, how is it possible to properly study political elements taking out political background?

Due to its crucial, but often underestimated importance, the governments' fight against tax evasion should include a better knowledge of the phenomenon through the study of more detailed data, which could provide a better insight into different aspects of tax evasion, even though the relationship with an hidden phenomenon is complex and represents a constitutive constraint of this field of study.

At micro level our analysis mainly concentrates on the role of education, considering in particular the effect of education on tax morale. It represents quite an interesting open question, since both empirical results and theoretical assumptions seem to diverge. On the one hand, the education system may play a key role increasing awareness of the problem of evasion and of the link between taxes and civil rights. On the other hand, higher educated individuals may show a lower tax morale since they have more opportunities for evading taxes and better tools to criticize public resources management. The same statistical analysis present inconstant outcomes.

Our work develops a systematic empirical study at European level in order to clarify the overall effect of education on tax compliance decision process. Adopting the social contract framework, we hypothesize an interaction among educational factors with different social and political contexts, that generates different dynamics between tax payers' education, opinion about government and

tax morale. Logistic regressions results show how tax morale is positively associated with tertiary education in several countries, even if focusing on national cases a more contrasted story emerges, supporting the hypothesis that the interaction between education and tax payer mentality could have a context-specific trait. Our country-analysis just discloses some different dynamics in different countries but their studying and interpretation still remain part of future researches.

Concentrating our attention to Italian case it has been possible to adopt more sophisticated analysis thanks to a wider data availability. This analysis aims to evaluate the effect of education on the awareness of tax evasion problem but, compared to previous research, it introduces two innovative approaches. Firstly, we use repeated surveys in order to test if the relation under analysis is constant over time, secondly we adopt a causal approach considering the potential endogeneity of education. The empirical analysis shows that a higher education increases the awareness of tax evasion problem, thus clearly confirming the importance of the education curriculum for promoting tax compliance by citizens in Italy.

At macro level the last chapter try to empirically study some theoretical assumptions stated by the new stream of fiscal sociology. Tax systems are forms of a social contract that influence and specify relationships between individuals and their government and society. A broad literature discuss how tax systems are the result of struggles, conflicts, negotiations, and compromises among citizens and rulers, framing taxation principally as a relational concept but they are mainly qualitative works. Additional steps can be taken expanding the methodology in quantitative field (Campbell, 2009). This contribution aims to study statistical correlation between tax evasion rate and two different branches of covariates: a first group of non-compliance opportunities and a second group of social and cultural variables. Both seem to be confirmed, with a prominent role of the first

one but with clear outcomes about a consistent relation between tax evasion and social contract elements.

ACKNOWLEDGMENTS

I would like to thank ESLS Faculty and my working colleagues for their constructive advices received along these years.

I also thank both reviewers for their useful comments that improved this work.

For valuable suggestions, thanks are due to Giuseppe Marino, Giuseppe Porro, Lynne Oats, Michele Giammateo and Norman Gemmell.

A special thanks also to Exeter - TARC researchers and participants to the Shadow Conference 2015.

Finally, I wish to express my gratitude to Roberto Impicciatore, for his generous support and encouragement during this research.

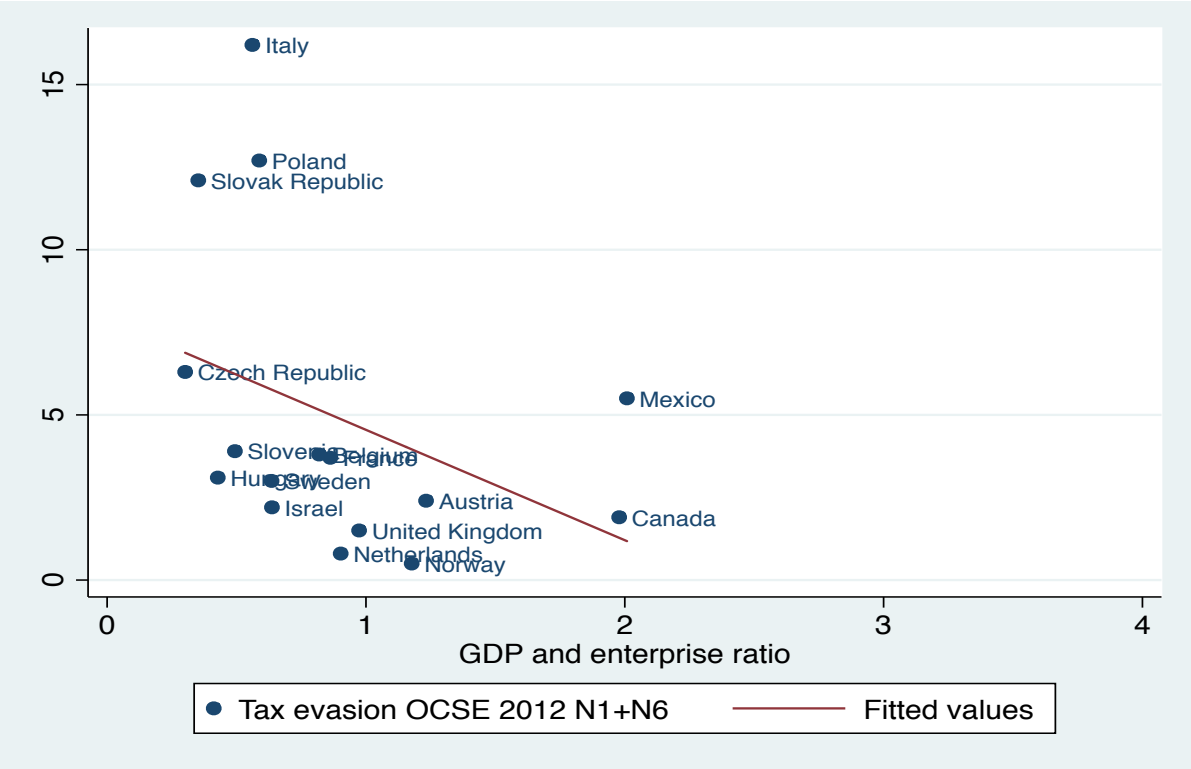
Appendix 1

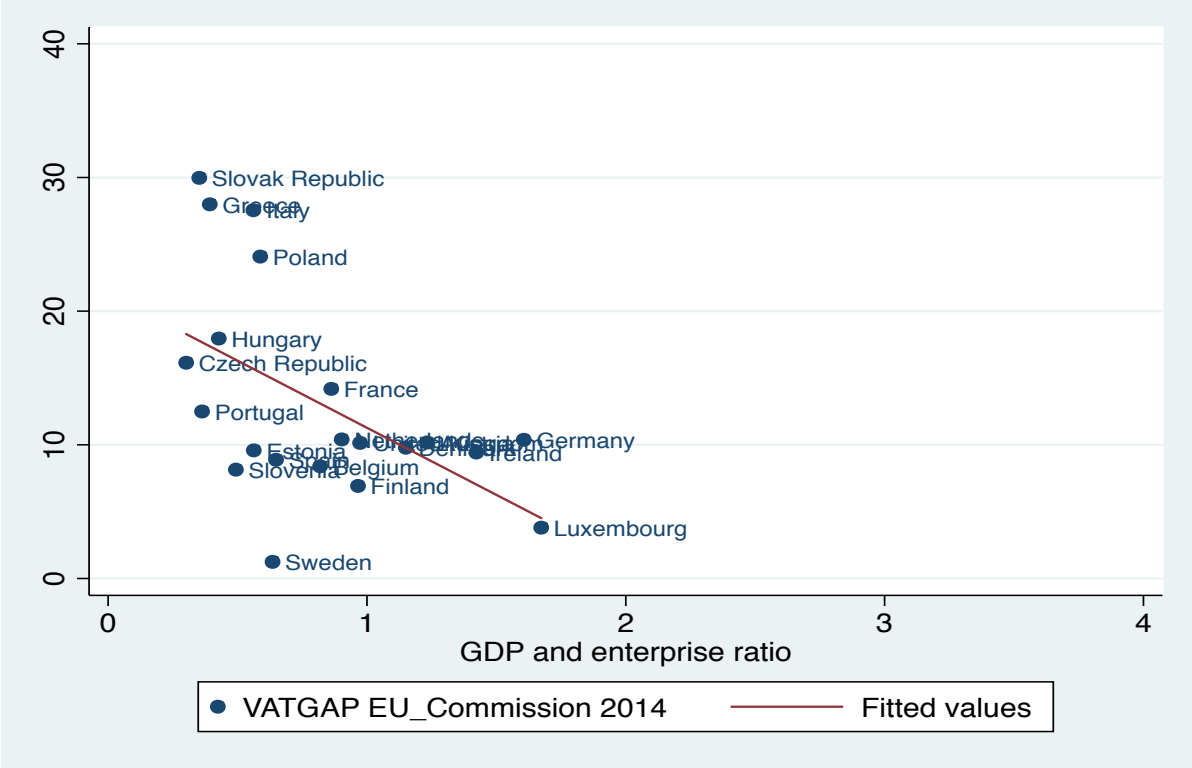
Linear regression model. Dependent variable: Tax Evasion estimated with MIMIC model (Schneider 2007)

	Mod1	Mod2	Mod3	Mod4	Mod5	Mod6	Mod 7
GDP	- 0,001	- 0,002	- 0,003	- 0,009	-0,000	-0,000	-0,000
GDP/Enterprises ratio	- 5,933***						
Total Tax Revenue	- 0,28*	- 0,361**	- 0,178	- 0,182	- 0,026	- 0,225	+ 0,108
Percentage of enterprises with more than 50 employees		- 4,441***	- 2,565*		- 2,294*	- 4,045***	
Trust in government				- 0,233***			
Mortality following acute myocardial infarction (AMI)						+ 0,350	
Healthcare satisfaction			- 0,213***		-0,235**		
Redistribution of income							- 0,216
Financial Secrecy Index – FSI					- 0,001		
Numbers of obs.	32	31	29	32	20	28	29
Constant	35,20	39,71	45,70	36,68	41,15	30,90	29,59
Adjusted R2	0,355	0,4451	0,524	0,308	0,587	0,514	0,041

Appendix 2

TAX EVASION AND GDP/ENTERPRISES RATIO

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Italy
Poland
Hungary
Czech Republic
France
Portugal
Germany
Estonia
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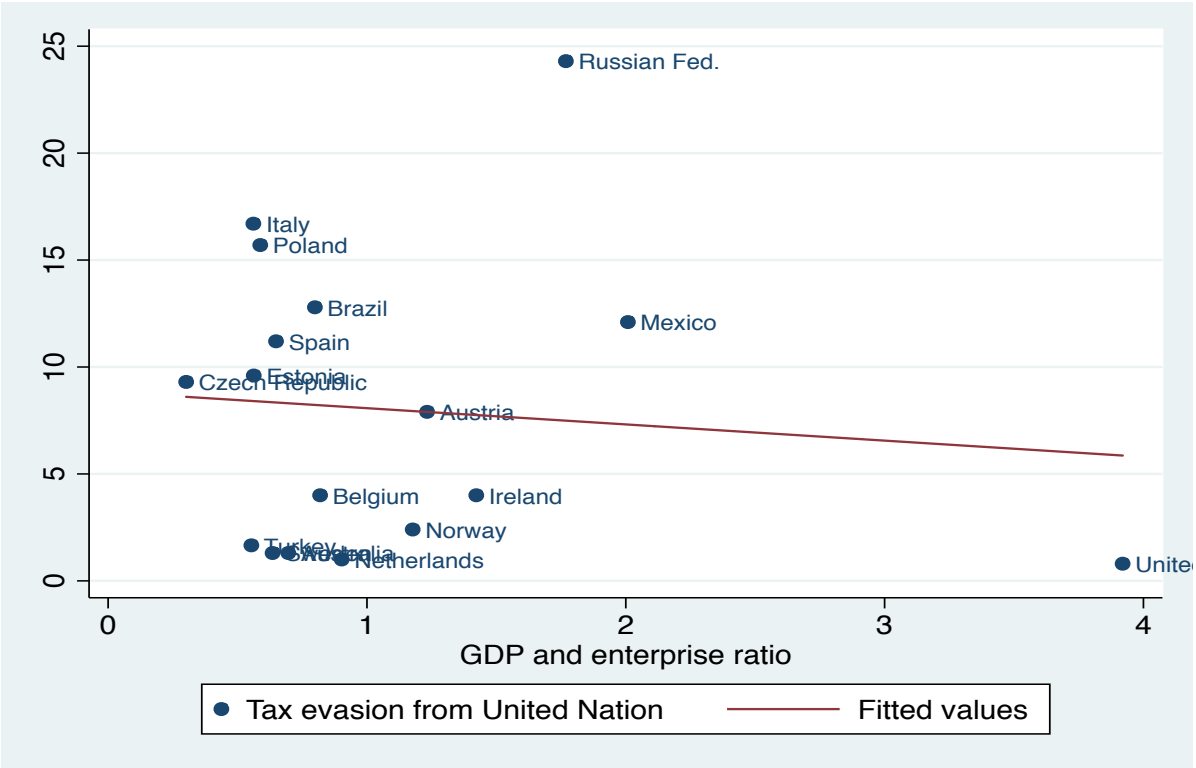
GDP and enterprise ratio
VATGAP EU_Commission 2014
Fitted values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Norway
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1
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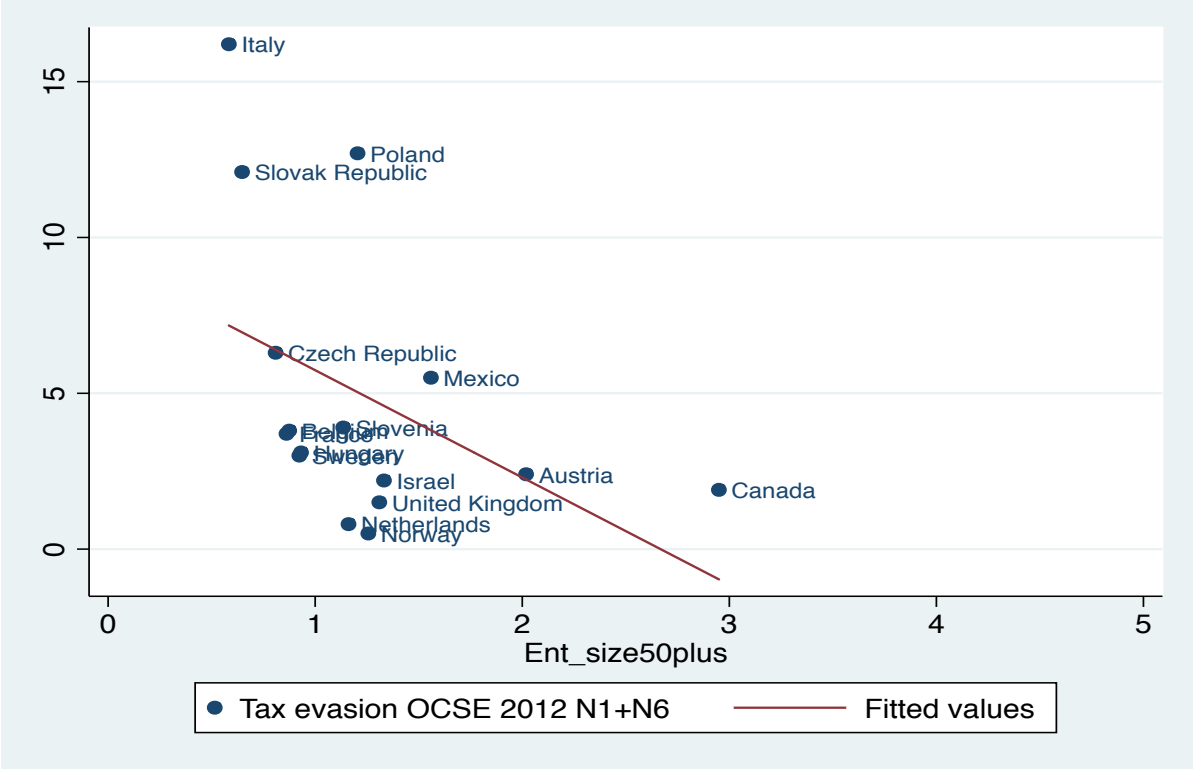
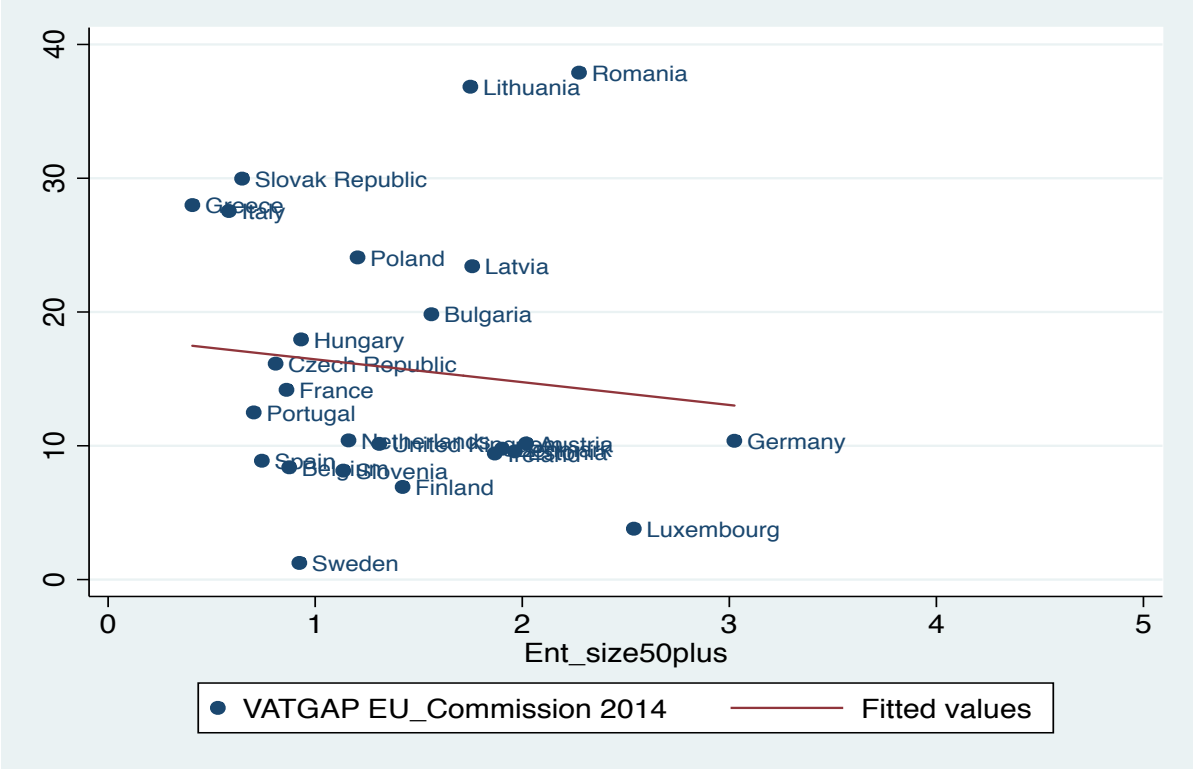
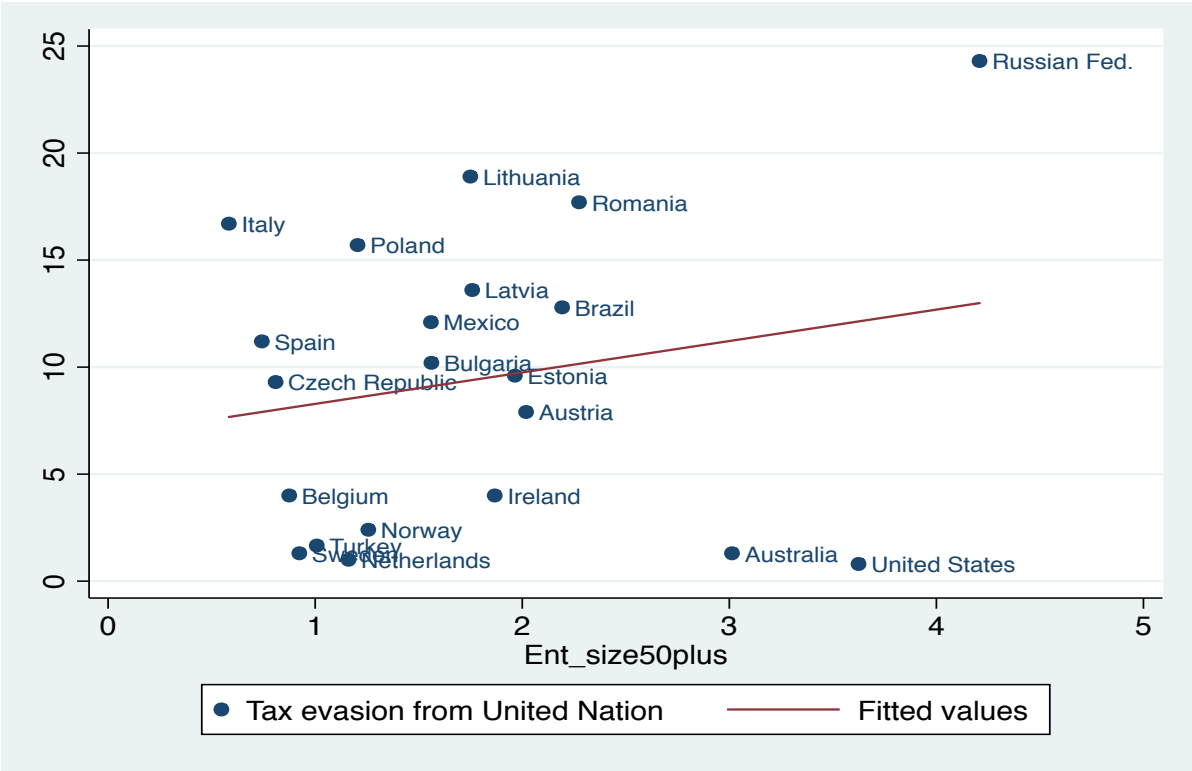
GDP and enterprise ratio
Tax evasion from United Nation
Fitted values

TAX EVASION AND PERCENTAGE OF ENTERPRISES WITH MORE THAN 50 EMPLOYEES.



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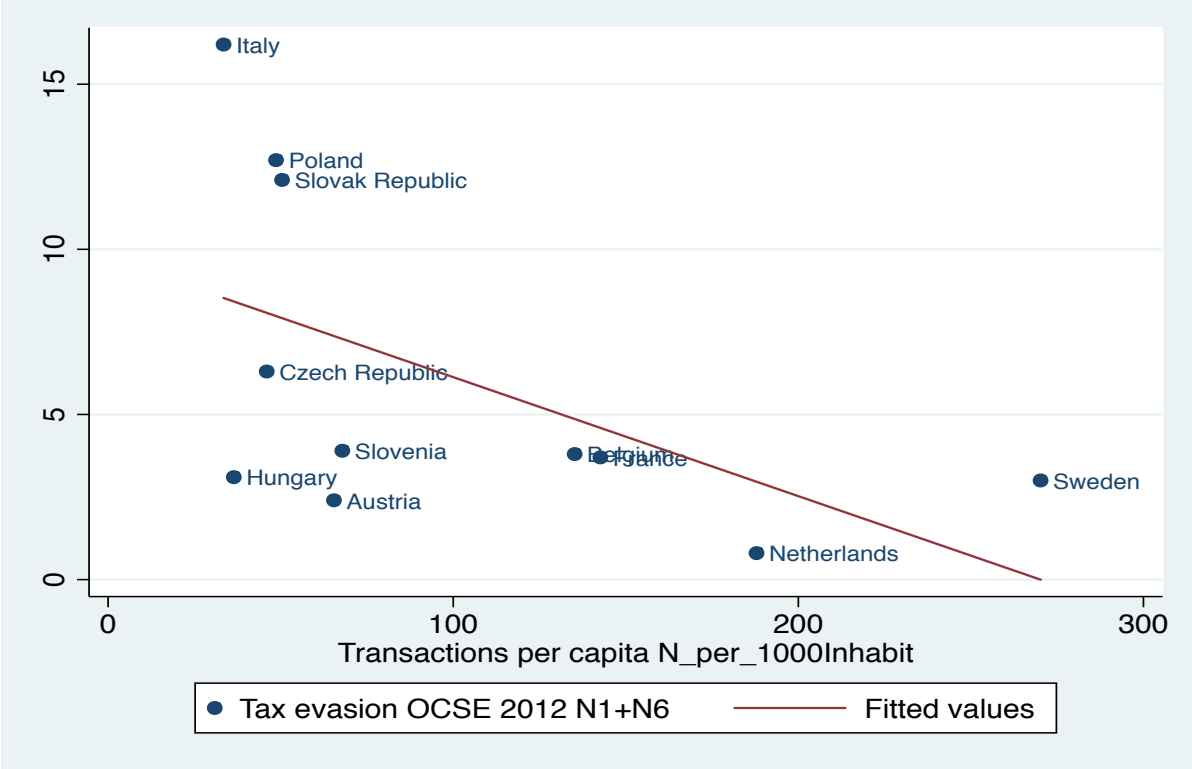
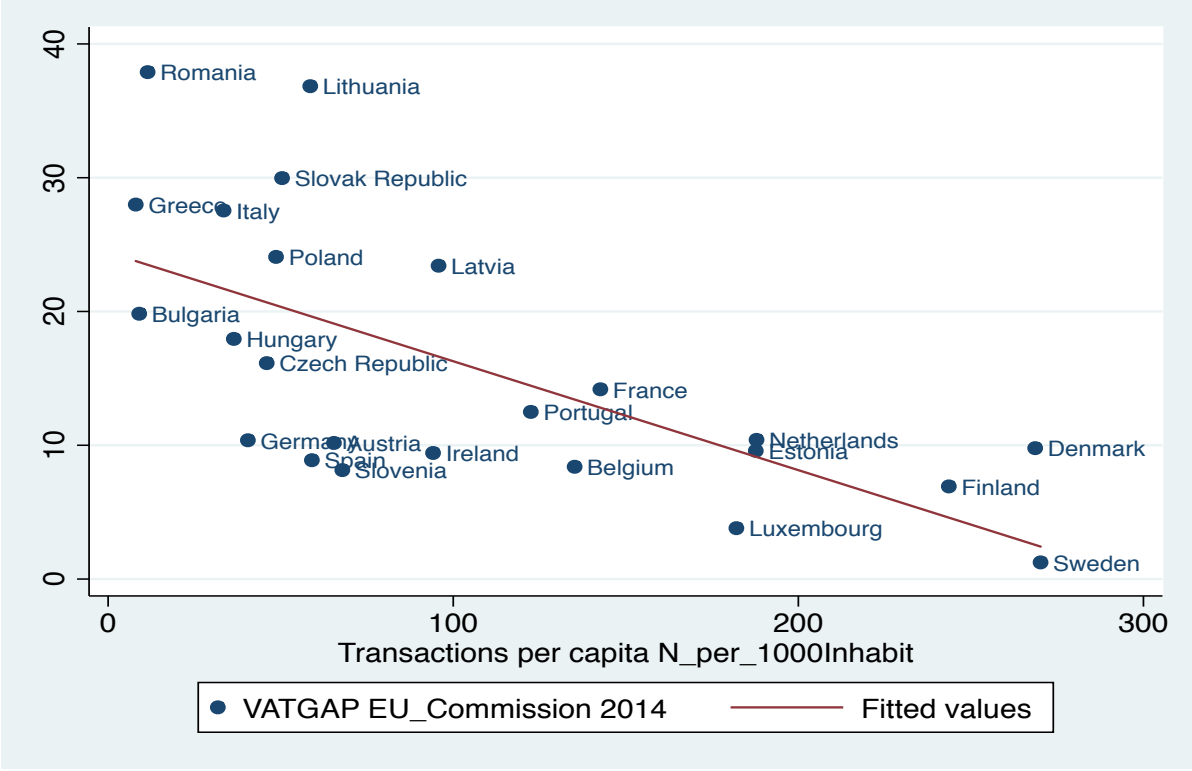
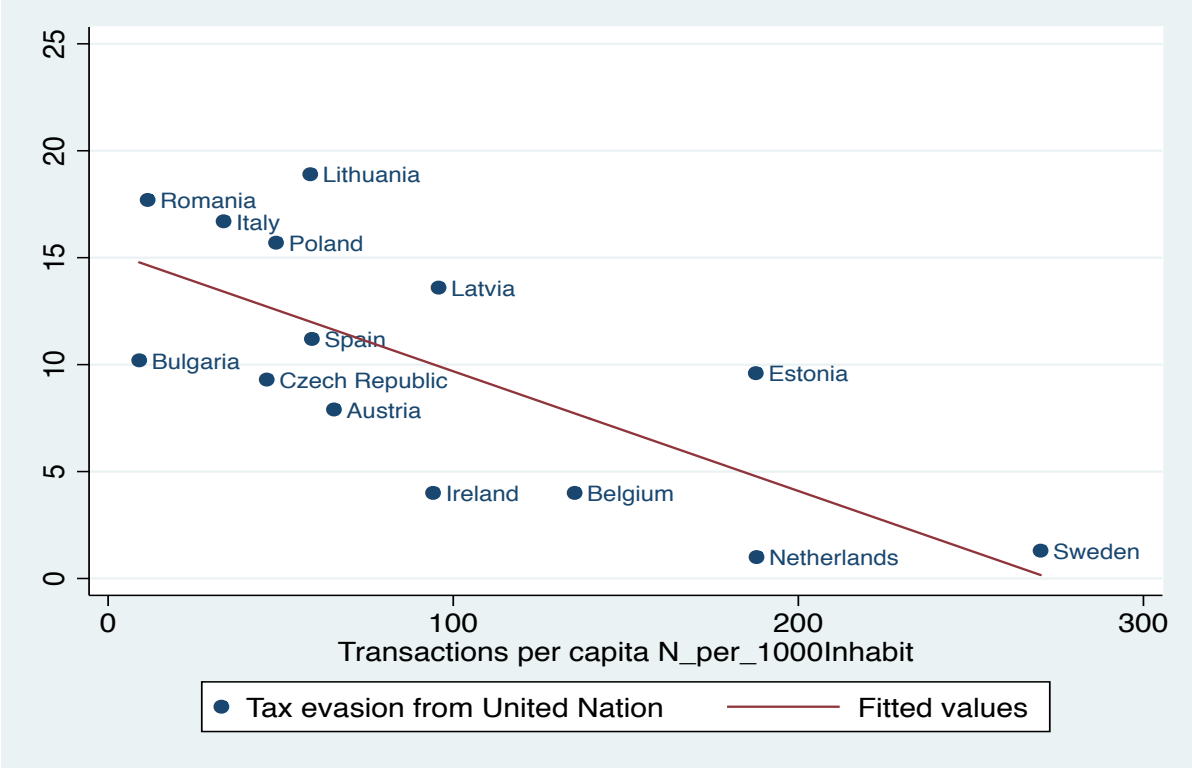
Tax evasion from United Nation
Fitted values

TAX EVASION AND NUMBER OF ELECTRONIC TRANSACTION PER CAPITA



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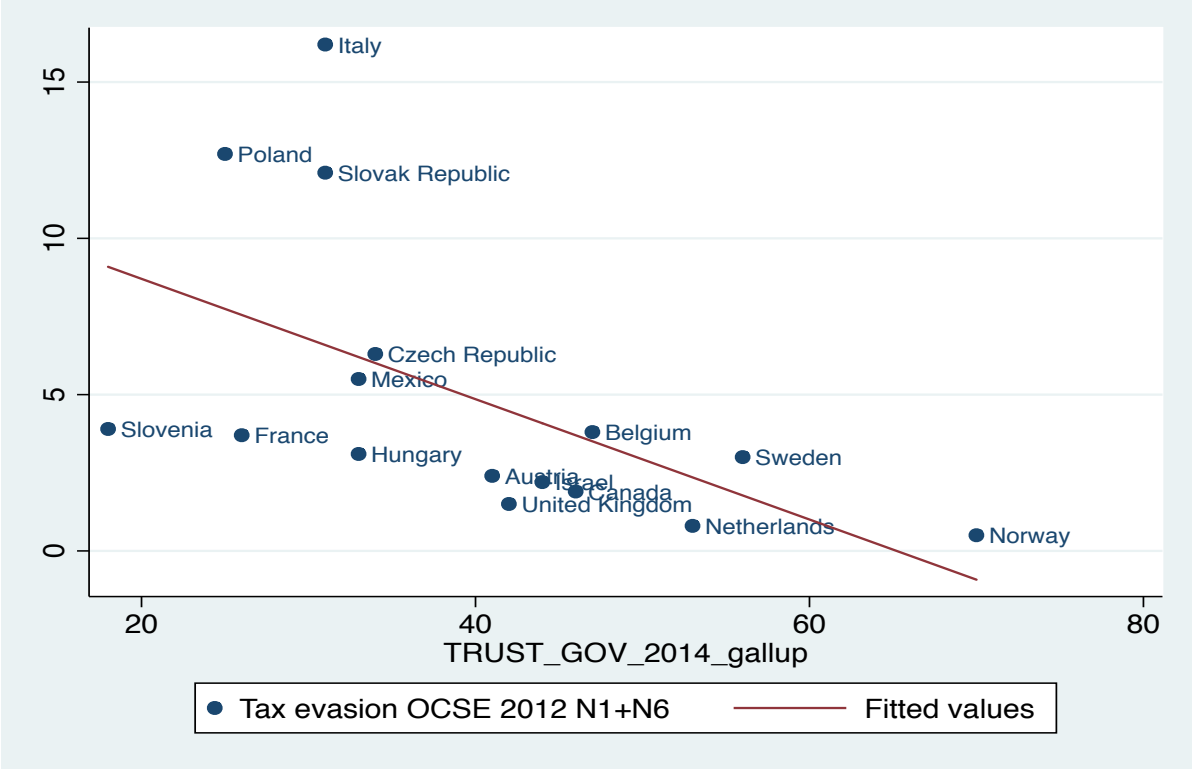
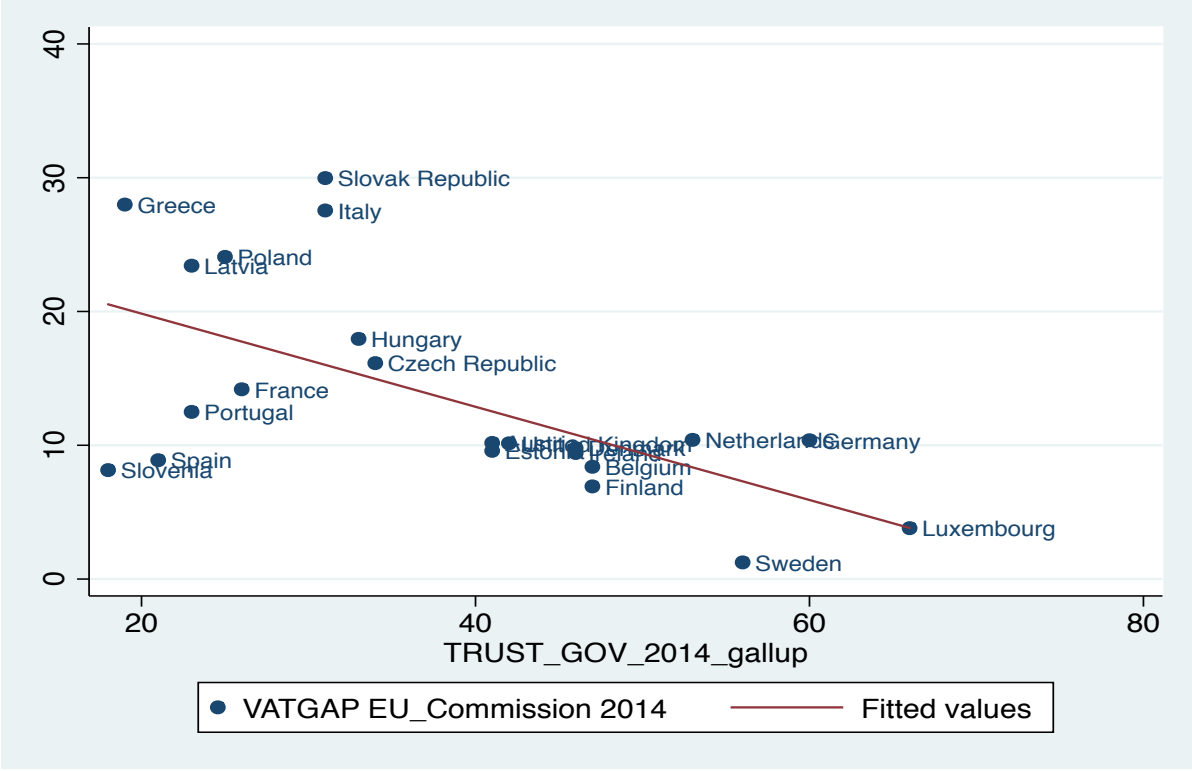
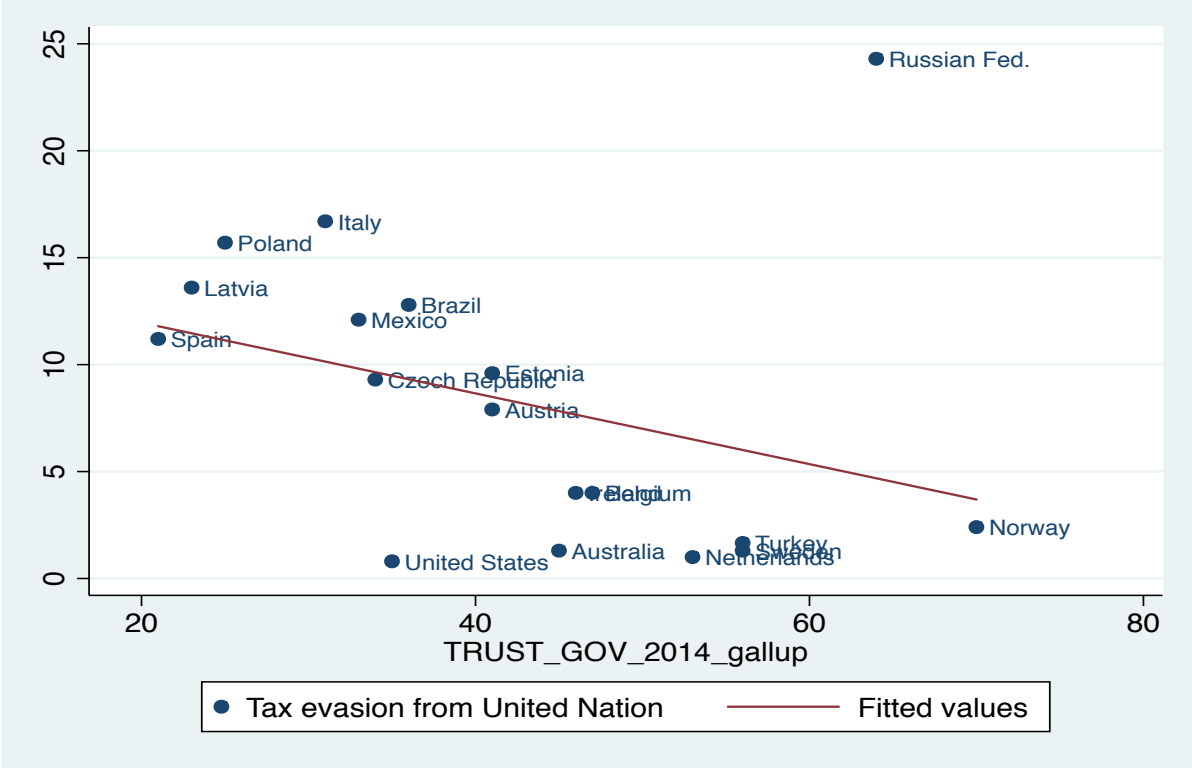
Tax evasion from United Nation
Fitted values

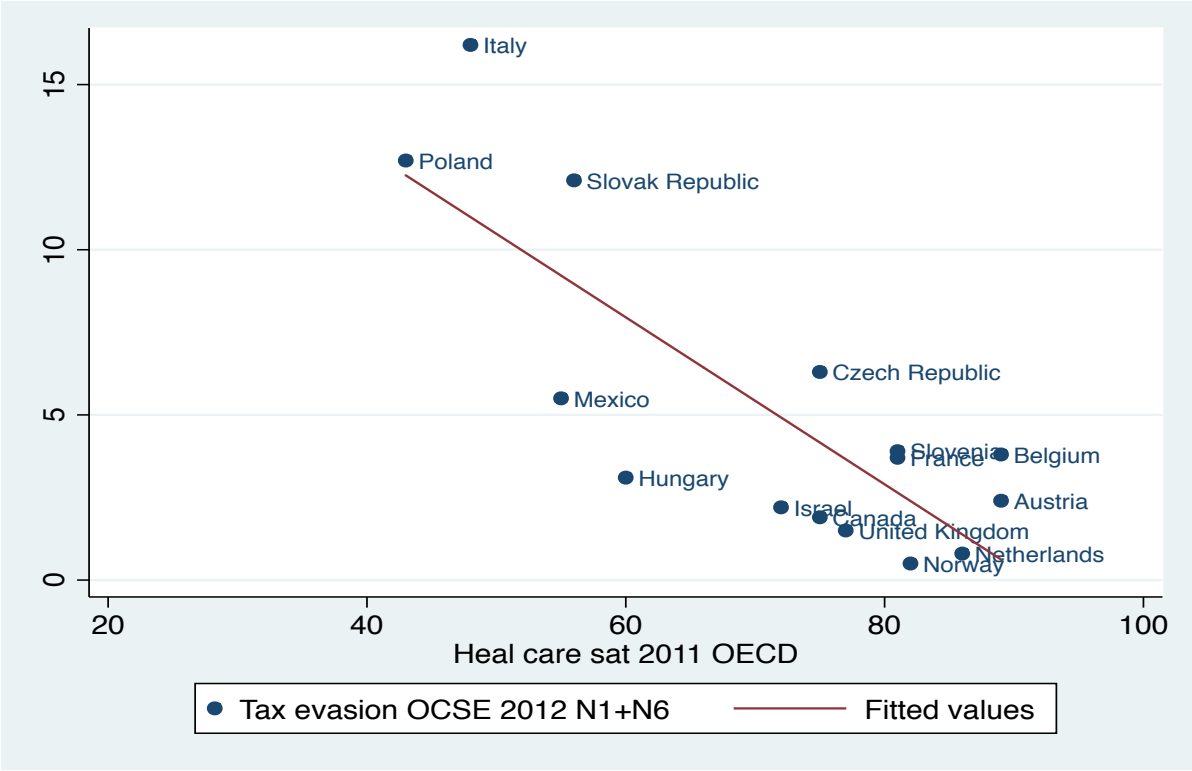
TRUST IN GOVERNMENT

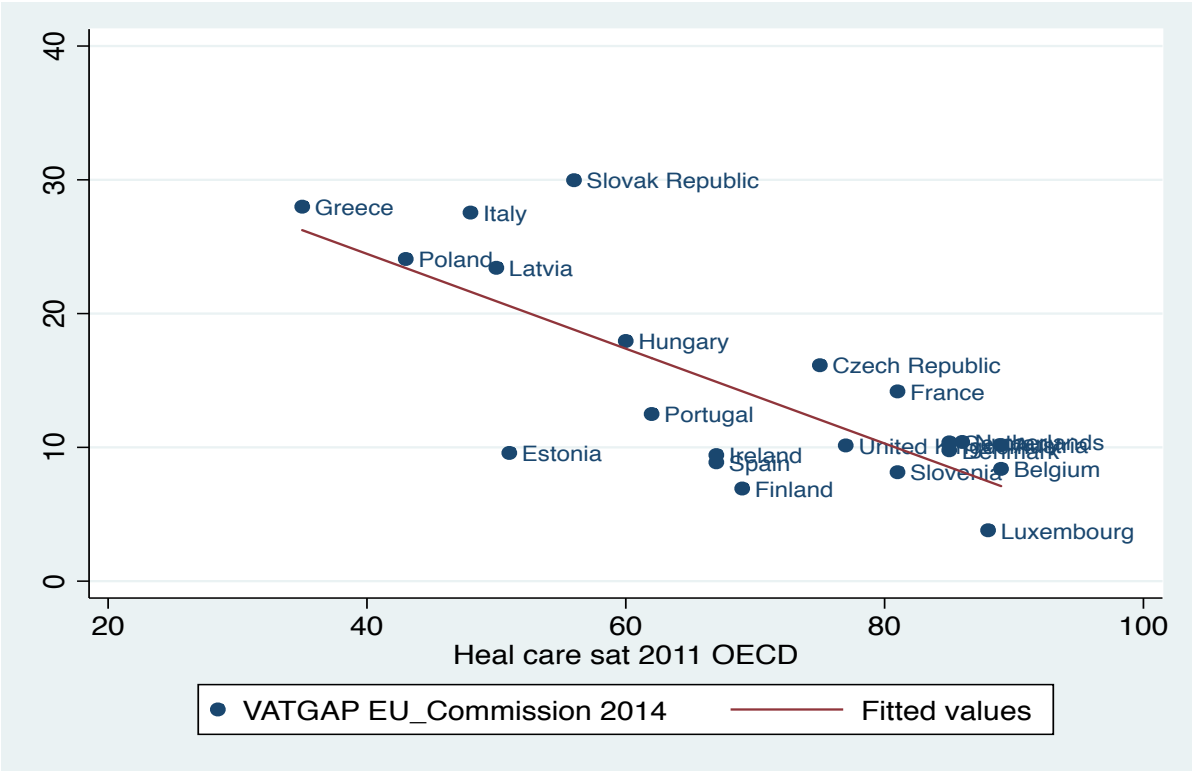






HEALTHCARE SATISFACTION

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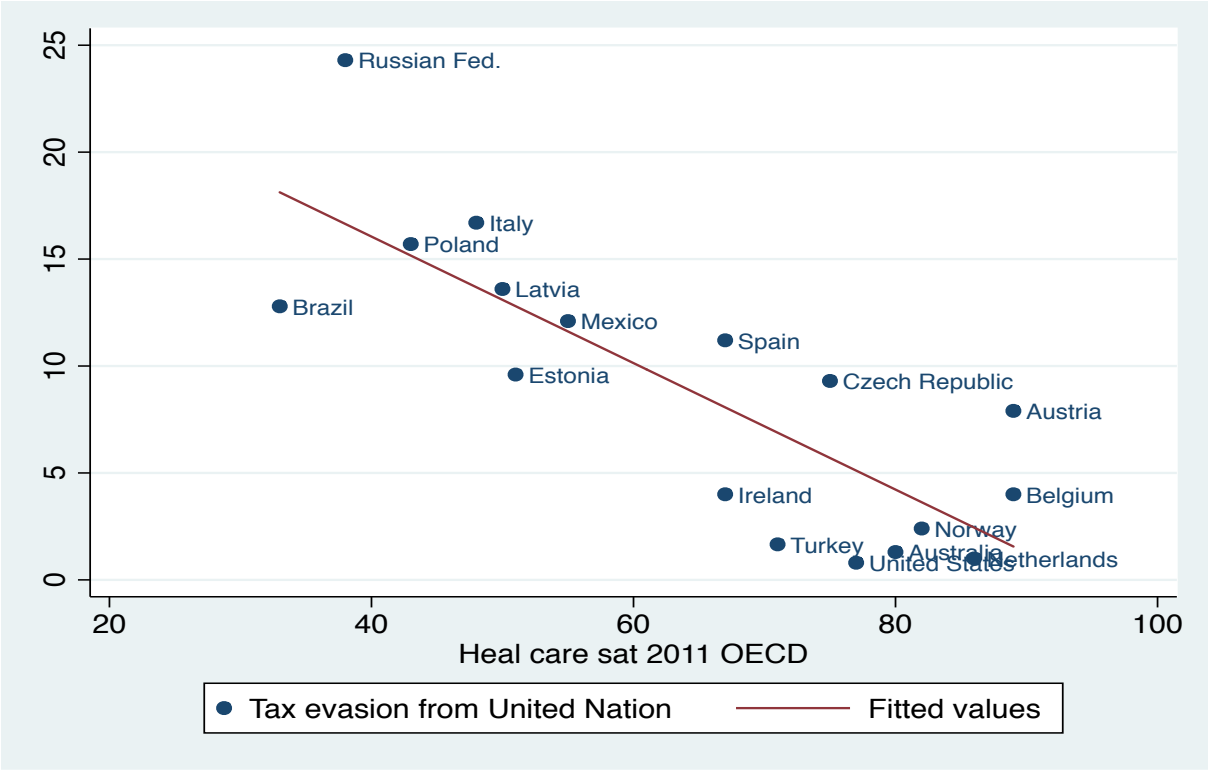
Heal care sat 2011 OECD
VATGAP EU_Commission 2014
Fitted values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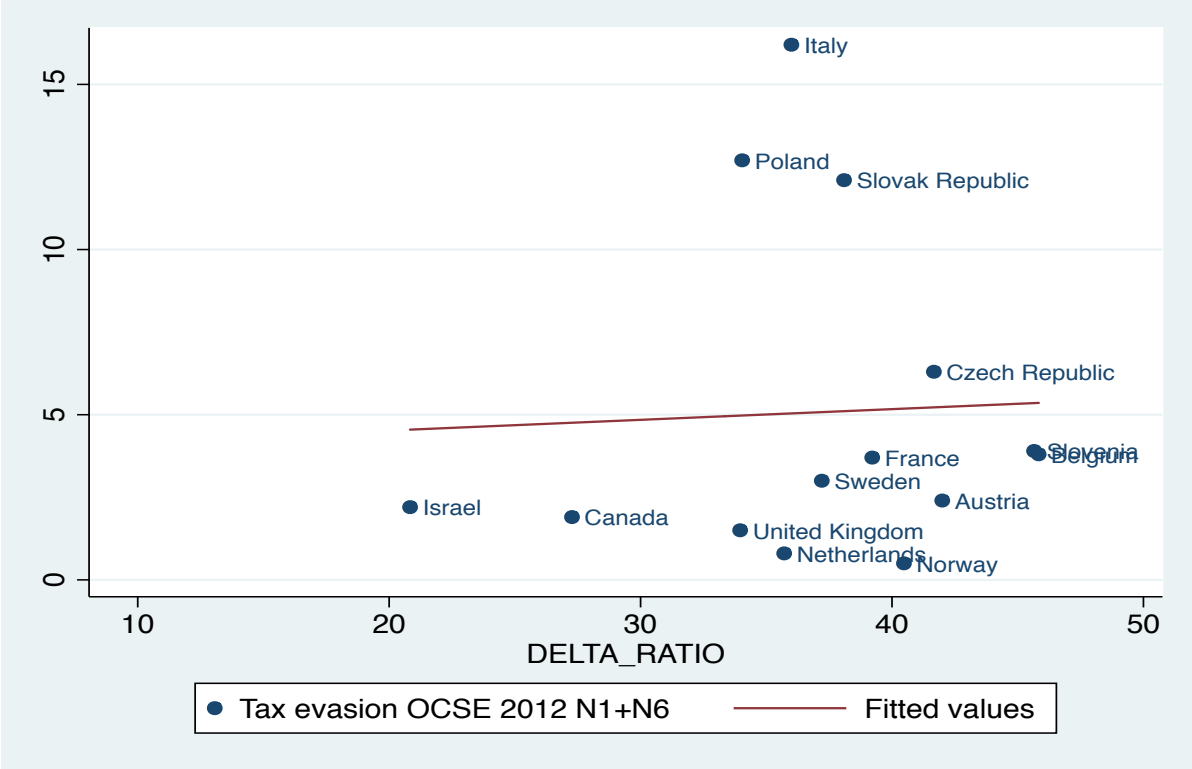
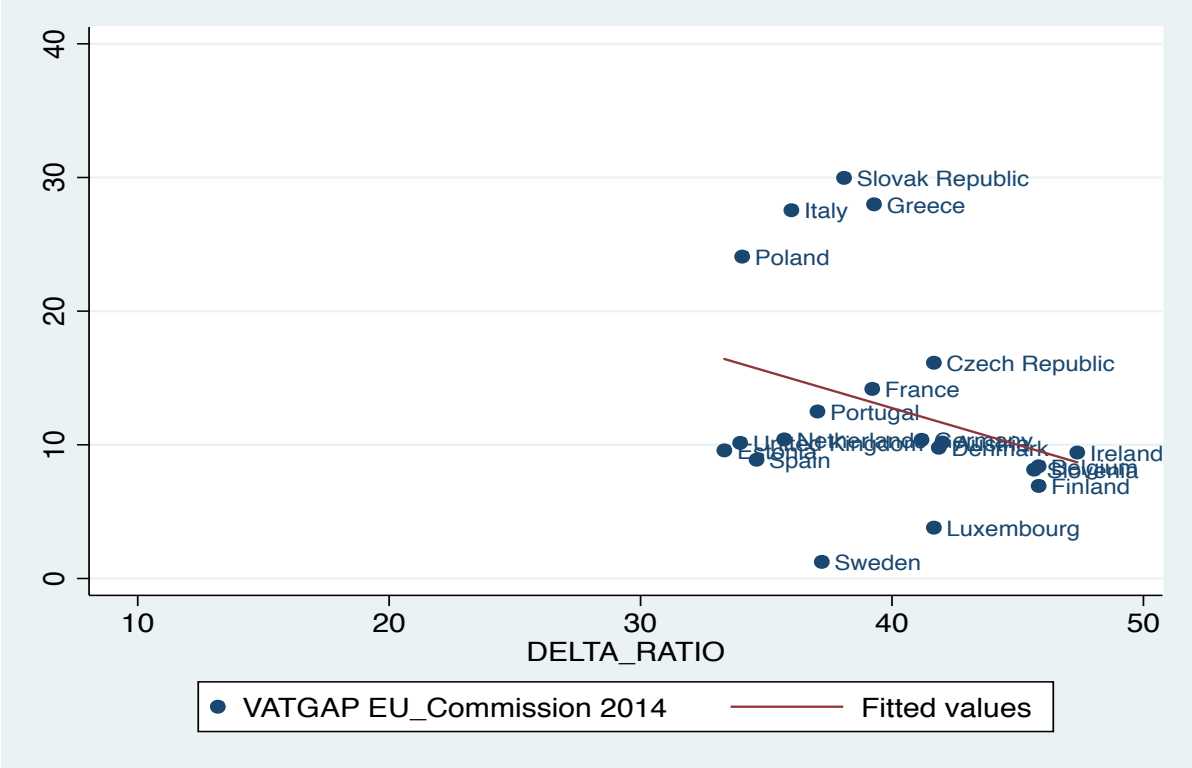
Heal care sat 2011 OECD
Tax evasion from United Nation
Fitted values

REDISTRIBUTION OF INCOME

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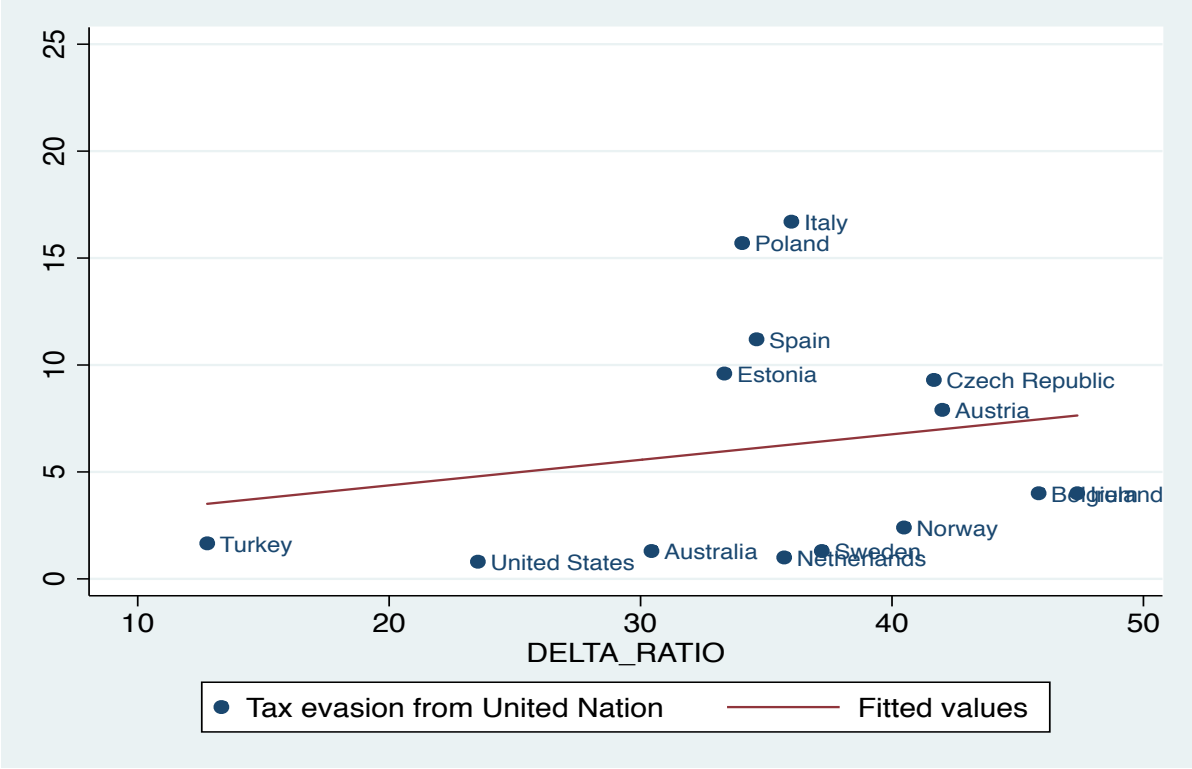
DELTA_RATIO
VATGAP EU_Commission 2014
Fitted values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DELTA_RATIO
Tax evasion from United Nation
Fitted values

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