

WHAT DRIVES THE TAX COMPLIANCE ATTITUDE OF INDIVIDUALS? THE ROLE OF SOCIAL TIES, WELFARE STATE AND ENVIRONMENTAL CONCERN IN TAX MORALE

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To the Gimpak's soul

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Abstract

The present thesis aims to provide new empirical evidence on how the tax compliance attitude of individuals could be shaped by three factors: the social capital, the intergenerational labour mobility, and the individual's concern about climate change.

In the first part of the thesis, given the insights offered by the social capital literature regarding the role of voluntary organisations in shaping civic engagement, we investigate how membership of different types of associations could influence individual tax morale in Europe. With this in mind, we exploit the information available in the fifth wave of the European Values Study (2017) for citizens of 34 countries. Unlike previous studies on tax morale, we classify the types of voluntary associations depending on their potential to build out-group “bridging” or in-group “bonding” social ties. In our study, to carry out the classification, three alternative approaches are considered which are based on the socio-demographic heterogeneity within associations, the interconnections between them, and a combination of both. Our main findings show that, after controlling for different individual characteristics and country-specific unobserved heterogeneity, those survey respondents involved in bridging associations tend to exhibit higher levels of tax morale, while the opposite is found for bonding associations. These results are quite robust for the three classification approaches, different estimation strategies, including an instrumental-variables methodology, and the consideration of two different groups of countries with different levels of institutional quality. In view of our findings, policies aimed at incentivising volunteering activities in more connected associations and in those that include more heterogeneous members seem appropriate for promoting the public spiritedness of citizens.

Secondly, we aim to shed light on the relationship between intergenerational labour mobility and tax morale among European citizens, given the relatively limited evidence on the potential influence of inequalities across generations on the individual tax compliance attitude. Exploiting data from the European Values Study (2008), we show that the larger the intergenerational mobility, i.e. the better the economic situation of children with respect to their parents, the greater the willingness to pay taxes. In this vein, subjective tax payment

may be seen as an investment which could be rewarded with a more mobile society. This linkage is stronger and significant in countries where there is a commitment of the government to guarantee more opportunities for citizens regardless of their family context (more defamiliarized countries). Moreover, we show that intergenerational mobility significantly shapes the attitude towards tax payment only among individuals who look for independence from their family context (i.e., those showing less family ties). Again, we have checked the robustness of our results by considering different estimation strategies. This evidence stresses the importance of fostering intergenerational mobility to build a more tax-compliant society.

Finally, given the increasing relevance of sustainability debates, the last chapter of the thesis investigates the relationship between climate change concern and the willingness to pay an environmental tax, considering the interplay with the general level of individual tax morale. By conducting a survey among Italian economics students, we show that climate change concern affects the attitude towards paying an environmental tax, both directly and indirectly, via a change in the preferences between the general and the specific tax morale. We also find that tax immoral subjects are particularly willing to pay an environmental tax as their awareness of climate change increases. Given that the goal is to increase the public acceptance of an environmental tax, we provide three main policy implications: i) carry out campaigns to increase the general level of tax morale, following the guidelines given by the OECD (2019); ii) raise climate change awareness among people, for instance, through investments in sensibilization campaigns on environmental-related topics; iii) increase awareness about climate change, in particular among individuals who show a lesser inclination to pay taxes. Evidence related to an inconsistent tax preference among subjects strengthens the usefulness of behavioural and experimental studies in the context of social sciences and environmental-related attitudes.

General introduction

“All the things which cause complaint or dread are like the taxes of life, things from which, my dear Lucilius, you should never hope for exemption or seek escape.” Lucius Annaeus Seneca - Moral letters to Lucilius.

Taxes are essentially what citizens and businesses pay to finance government public expenditure who in turn provide public goods and welfare systems. During a television interview, the Italian former minister of the Economy, Prof. Tommaso Padoa-Schioppa, defined them as a *“beautiful thing, a very civilised way of contributing together to essential goods such as education, safety, the environment and health”* (2007). Hence, tax payment should be seen as a civic duty from which taxpayers should not seek to escape, at least in Seneca’s ideal stoic world. Unfortunately, the reality is quite different.

If taxes were such a beautiful thing, then tax fraud would be rare, especially in economies where governments offer a comprehensive and accessible welfare system. However, this is not the case in most developed economies, such as European countries, where tax fraud and evasion are becoming a huge problem, since they reduce the available resources for national and European budgets that are essential to fund public expenses.

In general, when it comes to tax cheating behaviour, a fundamental distinction should be made between “tax evasion” and “tax avoidance”. The first refers to the illegal activity of individuals and/or businesses who act against the law in order to lower their fiscal obligations. The second refers to activities which exploit legal ways to lower the burden of a taxpayer (though aggressive or abusive avoidance), hence without acting against the law. Despite the distinction, tax evasion and tax avoidance are immoral, and both contribute to the same problem: the economic and social cost of lower tax revenue. In line with Elffers et al. (1987) and Morris (2012), we use the term “tax cheating” as an umbrella that covers the immoral attitudes of taxpayers towards lowering their fiscal duties, either legally or illegally.

Tax cheating behaviour is becoming more relevant at business and individual levels, while tax rules often fail to keep up with rapid changes in the economy.¹ In fact, thanks to globalization and digitalization, the multinational companies can shift profits to tax havens through aggressive taxation plans. Recent estimates of the International Monetary Fund show that the worldwide tax gap due to the tax base erosion and the transfer of profits to tax havens is around 600 billion USD per year (400 billion USD for OECD countries; 200 billion USD for developing countries). Moreover, almost 40% of the profits of multinational companies are transferred each year to tax havens around the world, and the largest share of these profits, around 35%, are transferred from EU countries (Crivelli et al., 2016).

Tax evasion is not only sought by companies, but also by the tax cheating behaviour of individuals. By under-reporting their income, hiding wealth in tax havens and, more generally, cheating on taxes, in 2016, individuals contributed to a global offshore wealth that amounted to 7.5 trillion EUR. European citizens hold around 25% of this amount, which translates into a loss of revenue of about 46 billion EUR at EU-28 level over the period 2004-2016 (Bousquet et al., 2019).

To limit tax cheating behaviour, standard economic models suggest increasing deterrence factors (such as the penalty rate and the amount of the fine), although recent behavioural studies suggest also stimulating the intrinsic motivation of people towards paying taxes, also defined as “tax morale”. In fact, being compliant with fiscal duties can be seen as a mix of enforcement and quasi-voluntary willingness to pay taxes (Mascagni, 2018). While several theories on optimal taxation have been proposed, these do not sufficiently take into account the role of tax morale (Lisi, 2015), which is, in fact, key in explaining the behaviour of taxpayers.

In view of the above, the general objective of this thesis is to provide new evidence on scarcely explored determinants of the attitude of people towards paying taxes, searching for empirical facts that can help to design innovative tax policies which could stimulate tax

¹ European Parliament resolution of 26 March, 2019, on financial crimes, tax evasion and tax avoidance (2018/2121(INI)).

compliance behaviour. In particular, we focus on the sociality behind taxes, namely how the willingness to pay fiscal duties is affected by certain social ties, the welfare state, and by the perceptions of social problems, such as climate change. Below, we outline the specific aims of our research.

The first chapter provides a review of selected empirical studies on tax evasion and tax compliance attitude, analysing the experimental and the survey-data evidence. More concretely, this first chapter aims to summarize the most important explanatory factors behind tax morale that have been identified to date in the relevant literature. This will help us to describe the state of the art of the tax compliance behaviour of individuals as a starting point on which to base our research questions.

Our contribution starts in the second chapter in which we empirically analyse the impact of social capital on the individual willingness to pay taxes, measured by the individual involvement in voluntary associations. While related literature from economic research has argued that social capital can influence economic outcomes, other studies in sociology tells us that the way people interact and volunteer in society can also affect personal attitudes, potentially influencing civic engagement of citizens. However, the current research lacks a comprehensive exploration of how different types of social ties within volunteering associations can influence the willingness of citizens to pay taxes. We aim to fill this research gap by studying this relationship among European citizens. A preliminary version of the results of this second chapter was presented at the 7th Meeting of the Behavioural and Experimental Economics Network BEEN, at the IMT School for Advanced Studies of Lucca (February 2022), and the PhD Workshop in Economics and Business of the Jaume I University (March 2022).

In the third chapter we analyse the possible relationship between intergenerational labour mobility and individual tax morale, disentangling how this linkage varies according to the role of welfare policies of European governments and the role of personal family ties. It is important to investigate this kind of relationship because it has been argued that actual social and economic inequalities may hamper tax compliance behaviour, increasing tax evasion.

However, the literature scarcely addresses the potential negative effect of persistent economic inequalities across generations on the tax compliance attitude and, hence, on future public expense budgets. This dynamic can be viewed as a way of taxpayers seeing their contribution to public expenditure as an investment that can be rewarded by the policies of the state offering better economic conditions for children with respect to their parents. The working paper version of this chapter has been presented in both national and international conferences, such as the XXXIII Annual Conference of the Italian Society of Public Economics, at the University of Bari (September 2021), and the 2022 Special Economic Science Association Meeting, organised by the Joint Initiative for Latin American Experimental Economics and the Universidad del Centro de Estudios Macroeconómicos de Argentina (February 2022).

The fourth and last chapter of this dissertation deals with the relationship between the concern about environmental degradation and the willingness to pay a carbon tax in Italy. Both tax evasion and environmental degradation are becoming key objectives across governments worldwide, in particular in more developed economies. Hence, we aim to point out how these two aspects could be linked to one another in order to obtain new tax policy insights. Preliminary results of this chapter have been presented at the BiT-RG Bioeconomy in Transition Research Group seminar of the Unitelma Sapienza - Università degli Studi di Roma (October 2022). Additionally, a version of this study has been recently accepted for publication by the Journal of Economic Studies, under the title “Does climate change concern alter individual tax preferences?” (Cascavilla, A., forthcoming in 2023).

Finally, general conclusions and policy implications are presented at the end of the thesis.

Chapter 1

Tax morale and its potential determinants

1.1 Introduction

According to recent estimates, approximately 860 billion euros in public money is lost every year in the European Union due to tax evasion (Murphy, 2019). Eastern Europe also faces a similar problem, since the transition process towards a market economy has weakened the position of new States in collecting taxes and building reliable institutions (Torgler, 2012). In general terms, tax revenue losses due to tax evasion is harmful for the whole collective, since it deprives society of the resources needed to provide public goods and welfare programmes, and may generate efficiency costs as well as harm the equality principle of the tax system (Bousquet et al., 2019). Reducing tax evasion has, therefore, become a key objective for policy makers of European countries concerned with raising tax revenues and allocating resources in a more efficient and fairer way (European Commission).² Indeed, several policies have been adopted at the European level with the purpose of intensifying the information exchange and expertise among national tax administrations to achieve effective taxations. Some examples in this regard are the European Union Savings Directive (EUSD), the Directive on Administrative Cooperation (DAC), the application of the Automatic Exchange of Information (AEOI) standards in 2016 to bring greater tax transparency, or the Fiscalis Programme.³ Nevertheless, despite the governments' efforts, a large proportion of European citizens call for more policy actions against deliberate tax deception (Eurobarometer Survey 89.2 conducted by the European Parliament, 2018).

A large body of academic literature has focused on finding an answer to the question “why do people avoid paying taxes?”. One of the pioneering works on this issue is Allingham and Sandmo (1972), who proposed a theoretical model, based on the Becker's (1968) economics approach to criminal behaviour in a tax evasion context. According to this framework,

² European Commission (https://ec.europa.eu/taxation_customs/huge-problem_en), accessed 20 December 2021.

³ For further information, see European Commission (https://ec.europa.eu/taxation_customs/system/files/2019-10/2019-taxation-papers-76.pdf), accessed 19 February, 2022.

taxpayers face a typical individual decision-making choice under risk, where they are supposed to maximize the expected utility knowing that, in case of evasion, they can be caught and punished with a penalty, according to a given probability of audit. Specifically, the proposed model suggested that increases in deterrence factors, such as a greater penalty or a larger perceived probability of audit, could lead to a reduction in tax evasion. However, despite providing reasonable predictions, the model has been broadly criticised for neglecting nonpecuniary factors in the taxpayer's behaviour.

Indeed, the subsequent empirical and experimental analyses highlight that, according to such a model, there should be higher rates of tax evasion than actually observed, taking into account the expected costs of being detected and punished in most countries (e.g., Alm et al., 1992; Baldry, 1986; Graetz et al., 1986). The literature then looked to evaluate the potential importance of non-financial motivations in explaining the degree of tax compliance of individuals. Nowadays, a large number of studies exist which highlight tax morale as one of the key factors that could shape tax compliance (e.g., Frey, 2003; Halla, 2012; Xin Li, 2010), since it plays a key role in explaining the aggregate compliance levels in the majority of countries (e.g., Dell'Anno, 2009).

According to Luttmer and Singhal (2014), there are at least five intrinsic motivations for tax compliance: (I) the individual feeling of pride that may be derived from honest behaviour; (II) reciprocity between the taxpayers and the State in exchange for public benefits; (III) peer effects in terms of sanctions or recognitions; (IV) culture; and (V) imperfect information on audit rates, penalties or tax enforcement. The importance of the different factors associated with these motivations has been tested both in experiments and empirical studies.

1.2 Experimental evidence on the taxpayers behaviour

Several experimental studies have been carried out to evaluate the intrinsic motivation of individuals toward tax payment. According to Torgler (2002), the literature of tax experiments can be divided into two categories of studies: i) “speaking to theorists” and ii) “searching for facts”.

On the one hand, the “speaking to theorists” studies aim to get experimental evidence in order to test the theoretical predictions of tax compliance and tax evasion models. As in standard theoretical models of optimal taxation, the focus is to evaluate the impact of deterrence factors on tax compliance behaviour (i.e., level of sanctions, probability of audit, expected returns from evasion or compliance, etc.). In this vein, a relevant field experiment conducted by Slemrod et al. (2001) in Minnesota showed that increasing the perception of a larger probability of audit led to an increase in tax compliance behaviour. In fact, by informing a group of 1724 taxpayers by a letter that, for the sake of a study, their returns would be closely examined by the Department of Revenue, the authors found that the tax compliance rate increased significantly respect to the previous year and compared to the control group of taxpayers who did not receive the letter. Other similar experimental studies confirming the effectiveness of manipulating deterrence factors to increase tax compliance are, for example, Kleven et al. (2011) and Castro and Scartascini (2013), in Denmark and Argentina, respectively.

On the other, the “searching for facts” researches attempt to grasp the effect of explanatory variables that are not usually included in the standard economic models of tax evasion, but that can still influence the individual attitude of tax compliance, such as the tax morale. Regarding this research line, Dwenger et al. (2016) studied the extrinsic and intrinsic motivations for tax compliance in a local church tax in Germany, where there is zero deterrence. Authors show that any level of compliance with zero deterrence (baseline model) is assumed to be intrinsic motivation and, with a field experiment, they manipulate deterrence and reward factors. In fact, intrinsic motivation can be stimulated also through extrinsic rewards. According to Alm (2012), these rewards should be immediate and salient in order

to get a significant increase in tax compliance. The author tested four different options of positive rewards as incentives for compliance, namely: a lottery that could be accessed by those who were tax compliant; a fixed reward for compliant subjects (with the same expected value of winning a lottery); an audit reduction; a public good provision. The lottery had the largest effect on compliance, while audit reductions and public goods improved compliance but at a lower level. Moreover, Dwenger et al. (2016) state that not only monetary reward matter, and this thesis is tested and supported in the experimental evidence of Koessler et al. (2016). Authors develop a field experiment in Switzerland, where subject who were tax compliant could win cash or a wellness weekend prize from a lottery. The experimental evidence shows that the promise of prize is more effective when it is associated with a non-monetary reward.

Other experiments tried to assess the reciprocity effect on tax compliance attitude, through social norms nudging, with “moral suasion” messages to taxpayers. In the randomized field experiment of Bott et al. (2020), researchers submitted four sort of letters to a subject pool composed by 18.000 taxpayers in Norway, who were likely to misreport their foreign income: a neutral message (control group); an equity message reminding taxpayers that most people are tax compliant; a public good message, underlining the importance of taxes to finance public goods and services; a deterrence message. The equity letter treatment shown a large and significant effect, implying around the double reported income respect to the control group. However, across experimental evidence, there is not a consistent conclusion on the effectiveness of the increasing tax compliance due to social norms. In a previous study, Torgler (2004a) ran a natural field experiment to evaluate the tax compliance given by the time to fill and time to pay taxes over 580 randomly selected Swiss taxpayers. A control group of them received a pink letter signed by the commune’s fiscal commissioner, with a text highlighting the positive effects of tax compliance for the entire society. The treatment group did not significantly change the tax compliance respect to the control one. Furthermore, Blumenthal et al. (2001) and Castro and Scartascini (2013) have also tested moral suasion with field experiments, in Minnesota and in Argentina respectively, but also in these cases there were insignificant effects.

Another strand of literature focused on the importance of social influences in tax compliance. It refers to the fact that individuals may be influenced by peer behaviour and by the possibility of social recognition or sanctions from peers. Alm et al. (2016) show, in a laboratory experimental setting, that providing information on peers' tax compliance has a statistically significant and economically large impact on individual filing and reporting decisions. The authors test this effect with four treatments, in which different information about peers' behaviour are given to subjects, such as the amount of peers who complied with tax and how much they reported on average. Del Carpio (2014) argue that disclosing information on peers' behaviour in tax compliance has a large positive impact on compliance. In particular, the author investigated, through a field experiment in Peru, both the social influence and norm nudging in paying the property tax. The author submitted an official letter from the municipality to several taxpayers, giving different information to them, such the average rate of compliance, the average probability of audit, both, or a simple reminder of the payment deadline. Results show that taxpayers have an intrinsic motivation to comply but disclosing information on peers raises the average compliance level by 20% respect to the control group, and also the payment reminder has a lower but positive and significant impact.

The quality and availability of information is thus key in determining tax compliance attitude. In fact, asymmetries between the actual taxation system and taxpayers' point of view could explain a significant part of it. Saad (2014) investigates through telephone interviews in New Zealand the taxpayers' view on their level of tax knowledge and perceived complexity of the tax systems. Subjects showed inadequate knowledge on the technical aspects of the income tax system and perceive tax system as complex. Furthermore, previous studies show that taxpayers could under or overestimate the actual audit probabilities. For instance, Scholz and Pinney (1995) support the evidence of overestimated probability of audit by US taxpayer in an IRS-survey. According to Feld and Frey (2007), an explanation for this gap could be that the subjective probability of being caught is higher than the objective probability of detection. From a policy perspective, this implies that giving more information of the actual enforcement system could enhance tax compliance.

Despite all these factors may explain part of the individual willingness to comply with fiscal duties, some systematic differences in this attitude arise comparing citizens from different countries. This may be due to several factors, such as cultural and diverse institutional settings, among others. For instance, Gërxhani and Schram (2006) studied the differences in tax evasive behaviour across different social groups between Albania and the Netherlands, showing that Dutch individuals are more prone to evade respect to Albanian, but authors indicate that this difference is due to different tax institutions, and it is not directly linked to cultural differences. Also, Cummings et al. (2009) tried to grasp cross-countries cultural differences in compliance behaviour, showing how subjects in Botswana are more compliant than those in South Africa, arguing that these differences could be related to tax regimes and government behaviour that in turn are affected by culture. However, when looking at international and cultural comparisons, experiments fail to provide enough observations to make representative and externally valid comparisons among countries. Therefore, most of the empirical papers investigating tax morale attitude employ survey data, either at national or international level.

1.3 Empirical evidence on tax morale from survey data

Most of the empirical studies related to tax morale exploit international individual surveys, such as the European Social Survey (ESS), European Values Study (EVS), International Social Survey Programme (ISSP), Latinobarómetro and World Values Survey (WVS). Table 1.1 reports the summary and findings of some of the main empirical researches on the determinants of tax morale. As it is visible, depending on the type of study, the determinants of tax morale have either been evaluated for individuals in specific countries (e.g., Martínez-Vázquez and Torgler, 2009; Torgler and Werner, 2005) or in a cross-country context (Horodnic, 2018; Lago-Peñas and Lago-Peñas, 2010). Most empirical studies agree that tax morale could depend on several individual and contextual socio-demographic factors. On the one hand, the literature reveals that tax morale is positively related to certain individual characteristics, such as age, religiosity, or income (Lago-Peñas and Lago-Peñas, 2010). On the other hand, it is negatively related to self-employment (Alm and Torgler, 2006; Lago-Peñas and Lago-Peñas, 2010; Prieto et al., 2006; Torgler, 2004b). In addition, individual

perceptions on the institutional framework have also been evidenced as influencing factors on tax morality: the latter increases when taxpayers are confident with the political system, with democracy and when they trust on formal institutions (Alm and Torgler, 2006; Horodnic, 2018; Lago-Peñas and Lago-Peñas, 2010; Torgler, 2006; Torgler, 2005a; Torgler, 2005b).

Furthermore, the socio-economic conditions of each country have also been revealed as influencing factors on individual tax morale. On the one hand, it is evidenced that cultural idiosyncrasies could play a relevant role in explaining the presence of systematic cross-country differences in the individual's intrinsic willingness to pay taxes (e.g., Alm and Torgler, 2006; Torgler, 2004b). On the other hand, the literature also supports the idea that citizens living in countries with higher economic development tend to show greater responsibility towards their civic duties, such as tax payments. This may be explained by the modernisation thesis, which states that the more economically developed the country, the greater the level of tax morality, since the informal economy is less prevalent in the face of economic development and modernisation of government (i.e., fewer institutional bureaucracies, strengthening of legal rights). This hypothesis has been empirically confirmed in several papers (e.g., Williams and Krasniqi, 2017; Williams and Martinez, 2014).

Additionally, the role of institutions, how they are organised and perceived by individuals, could also be essential in explaining the intrinsic willingness of citizens to pay taxes. In this vein, Feld and Frey (2007) defend the idea of a psychological tax contract between the taxpayers and the government, which involves a reciprocal obligation. While taxpayers pay taxes, the institutions provide governance qualities. In fact, the authors argue that individuals would be willing to pay the entire amount of tax due even if they do not receive a full public good equivalent to the amount paid so long as the political process is perceived as fair and legitimate. Thus, larger tax morale could be related to a better quality of institutions. In this sense, Barone and Mocetti (2011) show that for Italy the attitude towards paying taxes is greater when public resources are spent in a more efficient way. In addition to the aforementioned factors, the composition of the population could also influence tax compliance. Some researches provide evidence that a higher percentage of a regular influx

of immigrants is associated with higher rates of tax morale (Russo, 2013; Williams and Martinez, 2014), although it may depend on the level of perceived threat towards immigrants of natives (Nemore and Morone, 2019). The literature further highlights that tax morale is greater in decentralised fiscal systems. So, for instance, Torgler et al. (2010) show that there is a strong and positive correlation between local autonomy, direct democracy and tax morale in Switzerland, while Torgler and Werner (2005) provide evidence to support the same positive relationship between local autonomy and tax compliance in Germany. Finally, some research studies reveal a negative correlation between increasing national burdens and tax morale at national level (e.g., Lago-Peñas and Lago-Peñas, 2010).

Table 1.1: Selected empirical studies on tax morale employing national or international surveys

Reference	Topic	Database and period	Cross-sectional units	Dependent variable	Methodology	Main explanatory variables	Findings
Torgler (2005a)	The effect of democracy on tax morale	ISSP (1998)	Individuals in Switzerland	Tax morale on a 4-point scale (1-4). Survey question: “Do you feel it is wrong if a taxpayer does not report all of this/her income to pay less income tax?”	Weighted ordered probit	<ul style="list-style-type: none"> • Deterrence factors (fine rate and audit probability). • Individual tax rate. • Direct democracy rights. • Trust in court and legal system. • Age. • Gender. • Education. • Marital status. • Employment status. • Religiosity. • Income. 	Tax morale increases with democratic spirit, with trust in court and legal system. Higher educated people show larger tax morale. Religiosity positively affects tax morale.
Torgler (2005b)	Determinants of tax morale in developing countries	WVS (1981-1997) and Latinobarómetro (1998)	Individuals living in 19 Latin-American countries	Tax morale on a 4-point scale (0-3). Survey question: “Do you believe it is justifiable “manage to avoid paying all his/her tax?”	Weighted ordered probit	<ul style="list-style-type: none"> • Age. • Gender. • Education. • Marital status. • Employment; • Macro-regional dummies. • Tax avoidance. • Trust people obey the law. • Perception of being caught. • Trust president. 	Tax morale increases with age, education and varies across employment categories. Significant correlation between tax morale and the size of shadow economy. People who said they knew/have heard about practiced tax avoidance show a lower tax morale. The lack of honesty and corruption are the main factors that explain perception of tax avoidance.
Torgler and Werner (2005)	The impact of degree of fiscal autonomy in Germany	EVS and WVS (1997-1999)	Individuals in Germany	Tax morale on a 4-point scale (0-3). Survey question: “Do you believe it is justifiable “manage to avoid paying all his/her tax?”	Weighted ordered probit	<ul style="list-style-type: none"> • Age. • Gender. • Economic class. • Marital status. • Employment status. • Fiscal autonomy. 	Tax morale increases with age, among women and retired workers, while it is lower among self-employed and unemployed. The fiscal autonomy is positively related to tax morale.
Prieto et al. (2006)	Fiscal fraud and tax morale determinants in Spain	ISSP (1998)	Individuals in Spain	Tax morale on a 4-point scale (0-3). Survey questions: “to what extent do you think it is wrong or not wrong that a taxpayer does not report all their income to pay less taxes?”	Weighted ordered probit	<ul style="list-style-type: none"> • Gender. • Age. • Education, marital status. • Employment. • Income class. • Political orientation. 	Ideological and political variables significantly affect tax morale. Tax morale increases with age. Tax morale significantly depends on personal political orientation.

Table 1.1. (continued)

Alm and Torgler (2006)	Differences between US and Europe regarding the determinants of tax morale	WVS (1990, 1995, 1999-2000)	Individuals in US and Europe	Tax morale: dummy variable. Survey question: "Cheating on tax payments if you get the chance" from never justified to always justified. The variable takes the value 1 if the respondent stated that cheating on tax is "never justified", and 0 otherwise.	Weighted probit	<ul style="list-style-type: none"> • Culture variable (country dummy). • Age. • Gender. • Marital status. • Employment. • Economic situation. • Religiosity. • Trust in legal system and parliament. 	Individuals in the United States have the highest tax morale respect to European countries. Higher religiosity is correlated with a higher tax morale. Women and older individuals tend to exhibit a higher tax morale. Married people have a higher tax morale. Negative correlation between the size of shadow economy and tax morale.
Torgler (2006)	Impact of religiosity on tax morale	WVS (1995-1997)	Individuals living in 30 countries	Tax morale rescaled on a 4-point scale (0-3). Survey question: "Cheating on tax payments if you get the chance" from never justified (1) to always justified (10).	Weighted ordered probit	<ul style="list-style-type: none"> • Age. • Gender. • Marital status. • Education. • Economic class. • Occupation status. • Financial satisfaction. • Risk aversion. 	Tax morale increases among religious people. Different kind of religion affect differently tax morale. Tax morale increases with age, among women, part time employed, retired, married, financial satisfied and risk averse subjects.
Frey and Torgler (2007)	Impact of perceived tax evasion on tax morale and determinants of tax morale in Europe	EVS (1999/2000)	Individuals in Eastern and Western Europe	Tax morale rescaled on a 4-point scale (0-3). Survey question: "Cheating on tax payments if you get the chance" from never justified (1) to always justified (10).	Weighted ordered probit Two-stage least squares (2SLS)	<ul style="list-style-type: none"> • Perceived tax evasion. • Age. • Gender. • Education. • Marital status. • Employment status. • Religiosity. • Culture (Western Europe dummy). 	Perceived tax evasion lowers tax morale. Tax morale increases with age, among women, unemployed, and religious people. Tax morale is larger in western Europe. Tax morale is lower among divorced, separated, never married, part time employed and self-employed people.

Table 1.1. (continued)

Martinez-Vazquez and Torgler (2009)	The determinants and the evolution of tax morale in the post-Franco era in Spain.	EVS and WVS (1981, 1990, 1995, 1999/2000)	Individuals in Spain	Tax morale: dummy variable. Survey question: <i>“Cheating on tax payments if you get the chance”</i> from never justified to always justified. The variable takes the value 1 if the respondent stated that cheating on tax is <i>“never justified”</i> , and 0 otherwise.	Weighted Probit	<ul style="list-style-type: none"> • Age. • Gender. • Economic class. • Marital status. • Employment status. • Religiosity. • Trust in the parliament. • Pride. • Survey waves dummy. 	Tax morale is positively associated with age and being women. Tax morale is lower among separated, singles, and among subjects living in the highest economic class. Tax morale is larger among religious subjects, among those declaring more trust in the parliament and among national pride individuals. The average tax morale has been increasing in the recent area in Spain.
Lago-Peñas and Lago-Peñas (2010)	Determinants of tax morale across European citizens	ESS (2004-2005)	Individuals living in 159 regions of 17 European countries	Tax morale: 3-point scale categorical variable. Survey question: <i>“Do you agree with the sentence: citizens should not cheat on their taxes?”</i>	Weighted ordered logit model	<ul style="list-style-type: none"> • Age. • Gender. • Religiosity. • Education. • Income level. • Employment status. • Satisfaction with democracy. • Trust in politicians. • Agree with redistribution. • Ethnic-linguistic fractionalization. • Regional level. • Regional GDP per capita. • Country level: • National tax burden. • Direct tax burden. • Rest of tax burden. • Change in direct, national and rest of tax burden. 	Tax morale is positively related to age, religion, income, satisfaction with democracy, trust in politicians, and agreement with redistribution. On the contrary, it is negatively correlated with self-employment and education. At regional level, individuals living in rich regions show a lower tax morale. At national level there is a negative correlation between increasing national tax burdens, as well as their changes in the short-term, and tax morale
Xin Li (2010)	The impact of social identities on tax morale.	EVS and WVS (1999-2002)	Individuals in Albania, Algeria, Bosnia and Herzegovina, Canada, Chile, Egypt, India, Indonesia, Iran, Jordan, Macedonia, Mexico, Moldova, Nigeria, Pakistan, Peru, Philippines, Puerto Rico, Singapore, South Africa, Spain, Tanzania, Uganda, USA, Venezuela, Vietnam, Zimbabwe.	Tax morale on a 10-point scale. Survey question: <i>“Cheating on tax payments if you get the chance”</i> from never justified (1) to always justified (10).	Ordered probit	<ul style="list-style-type: none"> • Ethnic majority. • National identity. • Trust government. • Gender. • Age. • Income. • Working class. • Marital status. • Education. 	Ethnic and national identities play important roles shaping tax morale. These effects depend on the country’s population heterogeneity. Tax morale increases with trust in government, while it is lower among males.

Table 1.1. (continued)

<p>Barone and Mocetti (2011)</p>	<p>The effect of efficient resources spending on tax morale.</p>	<p>SHIW (2004)</p>	<p>Italian citizens</p>	<p>Tax morale index constructed with a PCA (0-1), among: <i>-“Paying taxes is one of the basic duties of citizenship”</i> <i>-“Not paying taxes is one of the worst crimes a person can commit because it harms the whole community”</i> <i>-“It is right not to pay taxes if you think they are unfair”</i> <i>-“Even if someone thinks a tax is unfair, he/she should pay it first and then complain if necessary”</i></p>	<p>Ordinary least squares (OLS) Ordered probit</p>	<ul style="list-style-type: none"> • Public spending inefficiency. • Age. • Income. • Employment. • Gender. • Education. • Regional dummies. • Economic sector dummy. • Geographic area of birth dummy. • Participation in social activities. • Political orientation. 	<p>Tax morale decreases when resources are spent inefficiently. Tax morale increases with age, income, education, among subjects involved in social activities and among those politically left-oriented.</p>
<p>Williams and Krasniqi (2017)</p>	<p>Analyzing individual and national heterogeneity in tax morale.</p>	<p>LiTs II (2010)</p>	<p>Individuals living in 35 Eurasian countries</p>	<p>Tax morale: dummy variable. Survey question: <i>“how wrong if at all, do you consider the following behaviour: paying cash with no receipts to avoid paying VAT or other taxes: not wrong at all, a bit wrong, wrong, and seriously wrong”.</i> 1= “seriously wrong” and “wrong”; 0 otherwise.</p>	<p>Logit</p>	<ul style="list-style-type: none"> • Gender. • Age. • Marital status. • Number of children. • Employment status. • Household ownership. • Education. • GDP per capita. • Strength of legal rights. • Corruption index. • Tax revenue. • Health expenditure (%GDPpc). • Expenditure per student, tertiary (%GDPpc) • Gini index. 	<p>Tax morale is positively affected by age, number of children, mortgage, strength of legal rights, tax revenue, health and education expenditure. Tax morale is lower across employed without contract and low educated (secondary school) individuals. There is a U-shaped relationship between GDP and tax morale. Increase in corruption index leads to a lower willingness to pay taxes. Larger Gini index is negatively related to tax morale.</p>

Table 1.1. (continued)

Nemore and Morone (2019)	The impact of perceived immigration threat on tax morale	EVS (2008)	Individuals in Italy	Tax morale: dummy variable. Survey question: <i>“Cheating on tax payments if you get the chance”</i> from never justified (1) to always justified (10). The variable takes value 1 if individual responses were in the range 1–5 (high tax morale) and 0 if the answers were in the range 6–10 (lower tax morale).	Probit	<ul style="list-style-type: none"> • Immigrants perceived as a threat for the society. • Gender. • Age. • Marital status. • Education level. • Employment status. • Size of town. • Religiosity. • Political scale. • GDPpc. • Irregular rate of employment. • Annual inflow of non-EU citizens. 	A larger degree of perceived threat of immigrations among taxpayers reduces tax morale.
Kouamé (2021)	Investigating the relationship between trust and tax morale in Africa.	WVS (2010-2014)	Citizens of Algeria, Ghana, Morocco, and Nigeria	Tax morale on a 10-point scale. Survey question: <i>“Cheating on tax payments if you get the chance”</i> from never justified (1) to always justified (10).	Ordered probit Ordinary least squares (OLS) Two-stage least squares (2SLS)	<ul style="list-style-type: none"> • Trust in public institutions and in your neighborhood. • Employment status. • Age. • Religiosity. • Gender. • Education. • Marital status. • Economic class. • Respect of human rights. • Importance of freedom speech. • Financial satisfaction. • Attitude towards redistribution. • Political position. • Ethnolinguistic and religious fragmentation. 	Tax morale is larger among subjects who trust their neighborhood. Tax morale increases with age, while it is lower among: full-time and part-time employee, self-employed, unemployed, retired, students, housewife, single, divorced and separated. Ethnolinguistic and religious fragmentation positively affects tax morale.

Note: ESS: European Social Survey; ESV: European Values Study; ISSP: International Social Survey Program; LiTs: Life in Transition Survey; SHIW: Survey on Household Income and Wealth; WVS: World Values Survey.

Chapter 2

Tax morale and social capital: an empirical investigation among European citizens

2.1. Introduction

The academic literature widely recognizes that individual tax morality plays a key role in explaining the aggregate compliance levels in the majority of countries (e.g., Dell’Anno, 2009). This is the reason why, in the last years, many researches have explored what contextual and/or sociodemographic factors may explain the individual’s tax morality. As a result, we can now benefit from a relatively comprehensive understanding of the relationship between tax morale and some of its determinants, such as age, gender or religiosity (e.g., Alm and Torgler, 2006; Lago-Peñas and Lago-Peñas, 2010; Torgler, 2005b). However, despite the extensive literature devoted to the subject, the potential influence of voluntary associations on willingness to pay taxes has hardly been explored so far, and the few existing empirical findings are inconsistent. So, for instance, Filippin et al. (2013) find for Italy that membership of voluntary associations is positively associated with tax morale while, for Palestine, Andriani (2016) finds the opposite is true.

The relatively limited attention given to this last issue within the tax morale literature is rather surprising, considering the significant research stressing the interconnection between voluntary associations and civic engagement of individuals. Indeed, social capital research tells us that active participation in voluntary organisations facilitates face-to-face interactions across their adherents, which could contribute to intensifying the civic engagement of the members of the community, educating them in cooperation, tolerance and public-spiritedness (e.g., Audia and Teckchandani, 2010; Crescenzi et al., 2013; Putnam, 1993, 2000; Ruitter et al., 2009; Stolle and Rochon, 1998).^{4,5} In contrast, another stream of social capital research

⁴ See Hwang et al. (2005) for a review of the determinants of volunteering activity.

⁵ These types of arguments may have influenced public policies in Europe in recent decades. For instance, the EU promoted several initiatives to provide financial support to civil society to get European citizens socially involved through democratic engagement and civic participation. Some recent cases are represented by the *Europe For Citizens Programme (EFC)* and the *Civil Society Facility (CSF)*. Other initiatives aiming to support

recognises a potential “dark side” of voluntary social networks, arguing that these inevitably lead to excluding members outside the network on the basis of some discriminating criteria. This may, in turn, lead to inward-looking, rent-seeking or free-riding behaviours of group members (e.g., Baron et al., 2000; Field, 2003; Fine, 1999; Molyneux, 2002; Pervaiz and Chaudhary, 2015; Quibria, 2003; Van Staveren and Knorringa, 2007). To accommodate these two conflicting predictions, some scholars have questioned whether membership of diverse types of associations differs in its effect on society, distinguishing between “bridging” and “bonding” social networks. While the former group of networks refers to those connecting people who are unlike one another in important sociodemographic characteristics, the latter group is understood as those networks linking people who are like one another (Putnam and Gross, 2002, page 11).

In practice, the distinction between “bridging” and “bonding” social networks is not straightforward (Crescenzi et al., 2013; Geys and Murdoch, 2008; Geys and Murdoch, 2010). Fortunately, the empirical literature provides some different approaches in this regard. On the one hand, Coffé and Geys (2007) develop an internal approach, based on the sociodemographic composition of association membership. Within this framework, those associations whose members are more (less) representative of the population as a whole are designed as “bridging” (“bonding”), assuming that they are more (less) likely to bring heterogeneous members into contact within each given association. On the other hand, Paxton (2002) proposes an external approach, assuming that associations made up of members belonging to other types of associations tend to present more diverse interactions, promoting the “bridging” social capital, while more isolated associations could strengthen inward-focused behaviours, fostering the “bonding” social capital. These two approaches, despite being widely applied in different contexts, are not exempt from criticism. Indeed, Geys and Murdoch (2010) evidence that these two interpretations could lead to different outcomes and propose an integrating approach that takes into account both the

civil society organisations have also been addressed outside the European countries. The latest case refers to the *Global Europe Civil Society Organisations programme* of the European Commission, targeting applicants living in other European areas, such as Armenia, Azerbaijan, Belarus, Georgia.

interconnections *between* associations and the heterogeneity of membership *within* associations.⁶

Using these approaches, empirical papers have studied whether membership of different types of voluntary associations has a varying impact on political democracy (Paxton, 2002), economic activity (Audia and Teckchandani, 2010), perceived corruption (Griesshaber and Geys, 2012), or different civic and political attitudes, such as utilitarian individualism, intolerance, or the perceived political powerlessness (e.g., Coffé and Geys, 2007; Geys and Murdoch, 2008; Geys and Murdoch, 2010). However, to our knowledge, the potentially heterogeneous influence of different types of associations on tax morale has not yet been examined. Therefore, in this chapter we aim to fill this gap by empirically evaluating how the individual's willingness to pay taxes in Europe may depend on associational involvement, differentiating between “bridging” and “bonding” voluntary associations, in accordance with the internal, external and integrating approaches.

The chapter is structured as follows. Section 2.2 provides an overview of the related literature, followed by Section 2.3 which states our main research hypotheses. Section 2.4 presents the empirical analysis of the potential influence of voluntary associations on the individual's tax morale in 34 European countries, including a description of the dataset, the different measurements of bonding and bridging associations, the econometric specification and estimation strategies. The main results are presented and discussed in Section 2.5, followed by a sensibility analysis in section 2.6, in which we check whether the results hold

⁶ Alternatively, another set of research classifies voluntary associations according to their nature, based on the two perspectives provided by Putnam et al. (1993) and Olson (1965, 1982). The former perspective emphasises the tendency of certain altruistic associations to inculcate public spiritedness in their members, while the latter argues that rent-seeking associations could act as “distributional coalitions”, oriented at protecting the private interests of their members at the expense of the rest of society. For instance, some empirical papers evaluate whether distinct types of associations, classified as Putnamian or Olsonian, could have a different impact on economic well-being (Knack and Keefer, 1997; Knack, 2003; Hoyman, et al., 2016), happiness (Bartolini, et al., 2013), entrepreneurial activity (Kim and Kang, 2014) or industrial diversification (Cortinovis, et al., 2017). In such studies, charities, cultural and environment associations are commonly considered as Putnam-type organisations, while trade unions and professional organisations tend to be associated with Olson-type groups. However, the ambiguous nature of other types of associations has prevented the development of a unanimous classification criterion with this approach.

for different groups of countries. Finally, conclusions and policy implications are presented in Section 2.7.

2.2. The importance of voluntary associations as a source of social capital and its possible influence on economic outcomes

In recent decades, a growing body of literature in economics and social sciences has focused on the importance of social capital. This concept was introduced by Putnam et al. (1993), referring to the connections among individuals, social networks and the norms of reciprocity and trustworthiness that arise from them. Putnam's idea was that social networks, in addition to physical and human capital, contain value for individuals, and the way and the extent to which the interactions between economic subjects are applied within a system is also important. In fact, social capital enables participants to act together more effectively to pursue shared objectives, which in turn may lead citizens to achieve better collective goals (Putnam, 1995).

The fundamental intuition is that societies with higher social capital, hence with people more connected to each other, with high interpersonal trust and with more civic and voluntary activities may be more cohesive. The social capital has been defined as the missing link in economic analysis (Van Staveren and Knorringa, 2007), since its role has been largely ignored.

In fact, an extensive body of literature has since demonstrated the influence of social capital on several economic outcomes, such as GDP growth, investment rate, labour productivity and innovation (e.g., Akçomak and Ter Weel, 2009; Beugelsdijk and Smulders, 2009; Beugelsdijk and Van Schaik, 2005; Crescenzi and Gagliardi, 2015; Crescenzi et al., 2013; Knack and Keefer, 1997; Muringani et al., 2021; Pervaiz and Chaudhary, 2015; Putnam et al., 1993; Putnam et al., 2000; Van Staveren and Knorringa, 2007). Following Van Staveren and Knorringa (2007), this can be explained by three factors: (I) social capital may reduce transaction costs, given by the fact that higher trust society's people spend less to protect themselves in economic transactions, and written contracts are less likely to be needed. Moreover, trustworthiness reduces the likelihood of free-riding in public goods as well as

rent seeking and moral hazard; (II) social capital might strength the society cohesiveness through solidarity and cooperation, which in turn creates economies of scale and helps in the provision and consumption of public goods; (III) social capital could generate positive externalities thanks to the mechanism of social cohesion, which means that by working together, workers create externalities and learn from each other on the job. Furthermore, borrowing and investing can be easier in high trustworthy countries, since informal credit markets can be more efficient. On the opposite, societies with low level of trust can discourage innovation, since entrepreneurs must devote more time to monitoring possible undesired behaviours of stakeholders.

However, another strand of the literature defends that, depending on whether the kind of social interaction is potentially inclusive or exclusive, this might lead to different outcomes in society. Indeed, to account for this heterogeneity, Putnam (2000) distinguishes between “bridging” and “bonding” social capital. On the one hand, the bridging social capital arises from inter-group relationships, those represented by weak social ties (Granovetter, 1973, 1985) which link people who are unlike one another (Putnam and Gross, 2002). It tends to increase tolerance and acceptance of different people, values and beliefs through contact with diverse others (Paxton, 2002), hence it can improve economic outcomes through positive externalities such as reducing transaction costs, increasing solidarity and cooperation, and stimulating the borrowing and investing activity (Adler and Seok-Woo Kwon, 2002; Van Staveren and Knorringa, 2007). On the other hand, the bonding social capital is the outcome of strong social ties, those that link people who are like one another (Putnam and Gross, 2002) according to their social identity, which leads to strong social cohesion within a homogeneous group of people who trust the other members of the same group just because they are part of it. This refers to relatively closed groups, which tend to show very high intra-group trust, but exclude the others who do not share the same social identity and values. In contrast to bridging social capital, the latter is likely to be associated with negative externalities arising from its exclusive nature, able to create barriers to trusting people outside the group who do not share the same social identity and values of the (Beugelsdijk and Smulders, 2009; Claridge, 2020; Muringani et al., 2021; Pervaiz and Chaudhary, 2015).

Broadly speaking, an economy, to work at best, needs to balance both, since a minimum level of bonding social capital is necessary for bridging social capital to arise.

Even though the social capital refers to a broad and multi-dimensional concept, several empirical works have proxied it through the level of civic engagement, such as by the number of memberships in social networks and voluntary associations (see, for instance, Knack and Keefer, 1997; Olson, 1982; Putnam, 2000; Helliwell and Putnam, 1995; Putnam et al., 1993). In order to empirically measure the bridging and the bonding potential of social networks, as described in the introduction of the present chapter, the literature points to at least three different approaches, based on the socio-demographic heterogeneity within associations (Coffé and Geys, 2007), the interconnections between them (Paxton, 2002), and a combination of both (Geys and Murdoch, 2010). However, despite the interesting insights from this strand of literature concerned with exploring the influence of different types of association networks on economic outcomes, their corresponding impact on individual willingness to pay taxes has, to date, remained little explored. Filippin et al. (2013) represent one exception, evidencing that those individuals actively involved in associations in their community present higher levels of morale in Italy, arguing that this effect derives from the higher sense of civicness of subjects who volunteer. This result is consistent with the idea that volunteering could promote the prosocial attitude, intended as a behaviour through which people help others (Eisenberg, 1982), and may influence an individual's belief in the importance of contributing towards public expenditures, leading to an increase in tax morale, resulting in a potentially greater tax compliance attitude among people involved in bridging social networks. However, contrasting evidence is also reported by Andriani (2016) who finds that tax morale is lower among individuals involved in voluntary associations in Palestine, arguing that they could more clearly perceive the malfunctioning of formal institutions and, hence, by having a lower tax morale attitude, they show less willingness to contribute to the public financing of inefficient institutions. The lack of consensus in this regard may derive from the possible idiosyncrasy of each country and/or the need to account for a specific distinction between bridging and bonding associations, which has so far been neglected in the tax morale literature. In this chapter we aim to fill this research gap by

providing the first evidence of the potential heterogeneous influence of bridging/bonding types of associations on the intrinsic motivation in European citizens for paying taxes.

2.3. Research hypotheses

According to the arguments provided by the literature on bridging and bonding social capital (Coffé and Geys, 2007; Geys and Murdoch, 2008; Geys and Murdoch, 2010; Marshall and Stolle, 2004; Putnam, 2000), we formulate the following research hypotheses:

Hypothesis 1: Being involved in bridging social networks is positively related to the individual's willingness to pay taxes.

Hypothesis 2: Being involved in bonding social networks is negatively related to the individual's willingness to pay taxes.

On the one hand, we expect that the bridging potential of social networks stimulates the positive civic values of members (i.e. more prosocial attitude), hence it increases tax morale. On the other hand, the associational involvement in bonding social networks may hamper the positive civic values of members (i.e. less prosocial attitude), hence we expect that this decreases tax morale.

2.4. Empirical analysis

2.4.1. Data and descriptive analysis

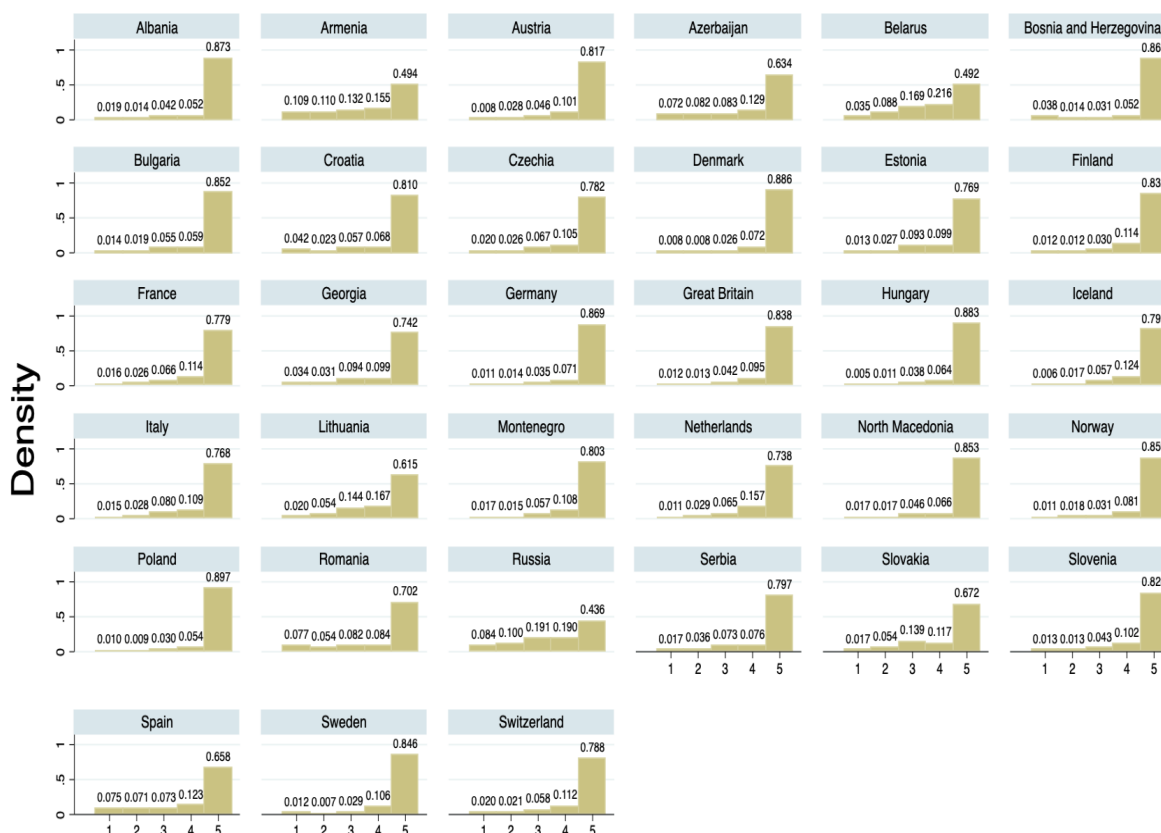
The dataset of our research comes from the fifth wave of the European Values Study (EVS 2017), which is a cross-country survey that accounts for a representative sample of adult respondents (18 years old and older) in Europe. The dataset includes information about a wide range of aspects of European citizens, such as their socio-demographic status, their view about society, politics and general perceptions about their life. The sample covers the following 34 countries: Albania (AL); Armenia (AM); Austria (AT); Azerbaijan (AZ); Bosnia and Herzegovina (BA); Bulgaria (BG); Belarus (BY); Switzerland (CH); Czech

Republic (CZ); Germany (DE); Denmark (DK); Estonia (EE); Spain (ES); Finland (FI); France (FR); Great Britain (GB); Georgia (GE); Croatia (HR); Hungary (HU); Iceland (IS); Italy (IT); Lithuania (LT); Montenegro (ME); Netherlands (NL); North Macedonia (MK); Norway (NO); Poland (PL); Portugal (PT); Romania (RO); Serbia (RS); Russia (RU); Sweden (SE); Slovenia (SI); Slovakia (SK). Below we describe the variables used in the empirical analysis, and Table 2.1 presents some descriptive statistics.

2.4.1.1. Dependent variable

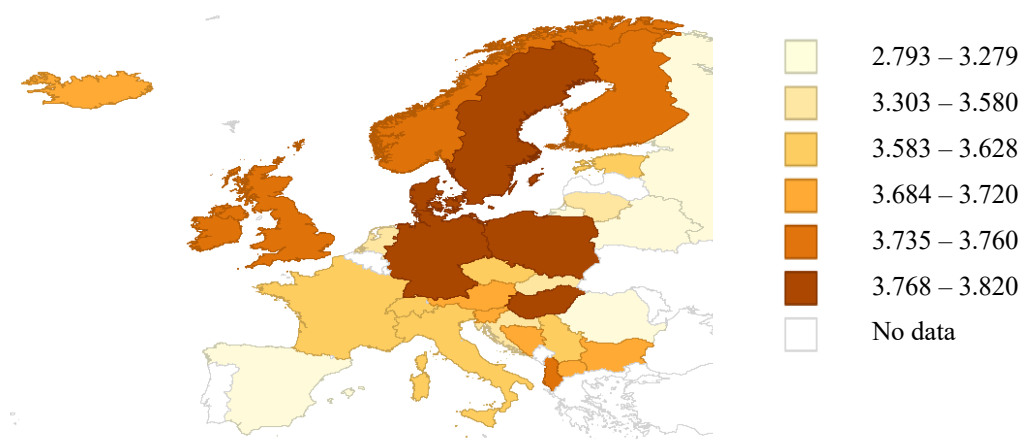
Our dependent variable is tax morale, measuring the individual willingness to pay taxes. The variable is constructed with the information given by the EVS2017 responses to the question *“Please tell me whether you think it can always be justified, never be justified, or something in between: cheating on taxes if you have the chance”*. In the survey, the individual responses are classified from 1 (never justified) to 10 (always justified). However, to make easier the interpretation, in our analysis we have decided to recode the variable to a 5-point scale from low to high levels of tax morality (TM_{ic}), considering the following structure: value 1 = “low tax morale” (responses 9 and 10); value 2 = “middle lower tax morale” (responses 7 and 8); value 3 = “middle tax morale” (responses 5 and 6); value 4 = “middle upper tax morale” (responses 3 and 4); and value 5 = “high tax morale” (responses 1 and 2). Figure 2.1 displays the distribution of TM_{ic} by country. As can be seen, in general terms the majority of respondents state high levels of tax morality. However, the share of respondents included in this category varies widely across countries. It is close to 90 percent in countries like Poland (89.7%), Denmark (88.6%), Hungary (88.5%), Albania (87.3%) or Germany (86.9%), while the same share is between around 80 and 60 percent in most of the sampled countries, and finally it drops to less than 50 percent in Armenia (49.4%), Belarus (49.2%) and Russia (43.6%). This evidence underlines the systematic heterogeneity in the attitude to pay taxes between European countries. This pattern is also graphically visible in the Figure 2.2, which shows the map of the average tax morale level by European citizens, computed at country level.

Figure 2.1. Tax morality by country



Source: Own elaboration, based on data from the EVS 2017.

Figure 2.2. The averaged values for the 5-point scale measure of tax morality (TM_{ic}) by European citizens



Source: Own elaboration, based on data from the EVS 2017.

2.4.1.2. Main independent variables

Our main independent variables are measures of social capital. They are constructed through the information given by the EVS2017 responses to the question "*Please look carefully at the following list of voluntary organisations and activities and say...which, if any, do you belong to?*" across all the associations included in the survey.⁷ Specifically, we consider the number of memberships an individual states in different type of associations, distinguishing between bridging and bonding social networks according to following three alternative approaches.⁸

- First, we use the *internal approach* of Coffé and Geys (2007), which distinguishes different type of voluntary associations based on the diversity of their members on certain sociodemographic features. More precisely, it assumes that associational memberships that are more representative of the overall population have greater potential to generate heterogeneous interactions, which contributes to build bridging social capital. In contrast, associations composed by over or under-represented sociodemographic groups present greater difficulties to generate bridges between different groups within each association, contributing then to the intensification of the bonding social capital (Stolle and Rochon, 1998). Under this conceptual framework, we implement the approach in the following steps. Exploiting the information available in the EVS2017, we begin computing a diversity score for each country as the average absolute difference of the national population composition and that from the association's membership over five socio-demographic features (religion, language, age, gender and education). We then normalize the diversity score between 0 and 1 across the socio-demographic features for each association and country. Later, these normalized diversity scores are summed up across the socio-demographic features for each association and country, resulting in a composite score that ranges from zero to five (the

⁷ Religious organisation; Cultural activities; Trade unions; Political parties; Environment, ecology, animal rights; Professional associations; Sport/recreation; Charitable/humanitarian organisation; Consumer organisation; Self-help, mutual aid group; Other groups.

⁸ In line with other cross-country empirical studies (e.g., Griesshaber and Geys, 2012), we apply the three approaches at country level, so the exact classification of the different associations may differ across nations.

number of socio-demographic features considered). Lower (higher) values on the composite score indicate that the characteristics of the association's members deviate little (more) from those of the overall population, likely implying more (less) bridges across different sociodemographic groups within the association, intensifying the bridging (bonding) social capital. For each country we thus rank associations from the most bridging (1) to the most bonding (11) in each country. Finally, based on these ranking results at country level (see Table A1 in Appendix A), we distinguish across bridging associations (ranked from 1 to 4), bonding associations (ranked from 8 to 11) and the remaining associations in an intermediate position (ranked from 5 to 7). Therefore, the respondent's involvement in each of these three categories of voluntary associations represents our first set of independent variables in the internal approach: $BridgingSC_{ic}^{Int}$, $BondingSC_{ic}^{Int}$ and $MiddleSC_{ic}^{Int}$.

- Second, the *external approach* of Paxton (2002) is alternatively applied, which classifies each association in accordance with the interconnections between them. In this case, considering again the EVS2017 information, we begin counting the mean number of further associations in which each association's member is additionally involved in each country. However, following Geys and Murdoch (2010) and Griesshaber and Geys (2012), we correct the outcome for the relative size of each association in the respective country.⁹ We thus rank each association from the most connected (1) to the most isolated (11). Table A2 (in Appendix A) reports the size-corrected measure of interconnections in each specific association type by country, as well as the resulting ranking. Using the country's ranking, we also conduct a three-fold categorisation of associations as bridging social networks (ranked from 1 to 4), bonding social networks (ranked from 8 to 11), and the remaining intermediate associations (ranked from 5 to 7). The individual involvements in each of these categories of associations represent our second set of

⁹ The size-correction prevents an excessive (scarce) attribution of bridging (bonding) potential to small (large) associations, since all participants involved in a small association can also be involved in a large one, but not vice versa (Blau, 1977; Geys and Murdoch, 2008). To do so, following Geys and Murdoch (2008) and Griesshaber and Geys (2012), we regress by OLS the observed number of interconnections in each association on its membership level in each country. The size of the resulting residuals can be subsequently employed to rank associations from connected (bridging) to isolated (bonding) in each country.

independent variables in the external approach: $BridgingSC_{ic}^{Ext}$, $BondingSC_{ic}^{Ext}$, and $MiddleSC_{ic}^{Ext}$.

- Lastly, we follow the *integrating approach* of Geys and Murdoch (2010), which combines the information embodied in previously described internal and external perspectives to build a more general measure of bridging and bonding associations. Specifically, we consider together the internal and external classifications in each country to differentiate the following type of voluntary associations: bridging in both perspectives ($SC1_{ic}$), bridging in one perspective and intermediate in the other ($SC2_{ic}$), intermediate in both internal and external perspectives ($SC3_{ic}$), bridging in one perspective and bonding in the other ($SC4_{ic}$), bonding in one perspective and intermediate in the other ($SC5_{ic}$), and bonding in both perspectives ($SC6_{ic}$).¹⁰ The individual membership in these six type of associations constitute our third set of independent variables in our analysis.

2.4.1.3. Control variables

According to the literature, to guarantee an adequate model specification, we also consider the following control variables to capture different individual characteristics:

- Horizontal trust (HT_{ic}): it is a measure of the individual generalized trust. It is given by the averaged individual's response to the following three questions, on a scale from 1 = "do not trust at all" to 4 = "trust completely": (I) "*Trust on people you meet for the first time*"; (II) "*Trust on people of another religion*"; (III) "*Trust on people from another nationality*". The sample average level of the resulting measure of horizontal trust is 2.612, with a standard deviation of 0.657. It has been evidenced that the beliefs about peer behaviour affect the tax compliance attitude (Alm and Yunus, 2009; Alm et al.,

¹⁰ Interestingly, Figure A1 in Appendix A shows that internal and external rankings in each country are weakly correlated. This outcome supports the arguments of Geys and Murdoch (2010, pag. 442), who defend that both internal and external approaches are not necessarily related to each other.

2016; Del Carpio, 2014), hence we expect generalized (horizontal) trust to be positively related with tax morale.

- Vertical trust (VT_{ic}): it measures the individuals' confidence in formal institutions. It is computed as the average level of reported confidence across the following formal institutions (on a scale from 1 = "none at all" to 4 = "a great deal"): (I) *Parliament*, (II) *Government*, (III) *Political parties*, (IV) *Police*, and (V) *Judicial system*. The overall average of the resulting measure of vertical trust is 2.324, with a standard deviation of 0.654. Feld and Frey (2007) argue that being tax compliant can be seen as an implicit psychological contract between taxpayers and tax authorities, hence the confidence in the latter, as well as in the other formal institutions, can determine the individual tax morale. Additionally, this is also related to the so-called "slippery slope" framework (Kirchler, 2007; Kirchler et al., 2008; Lisi, 2019), which emphasizes that individuals' behaviour toward tax payment may depend on both their trust in tax authorities (voluntary compliance) and on the relative enforcing power of authorities (enforced compliance). Indeed, there is a non-negligible number of empirical researches that support a positive linkage between vertical trust and willingness to pay taxes (e.g., Scholz and Lubell, 1998; Alm, et al., 2006; Frey and Torgler, 2007; Andriani, 2016; Kouamé, 2021).
- Democratic spirit (DS_{ic}): it measures the individual attitude towards democracy. It is given by the respondent's answer to the question: "*Having a democratic political system is?...*" from 1 (very bad) to 4 (very good). The sample average level of democratic spirit variable is 3.524, with a standard deviation of 0.656. We expect a positive DS_{ic} coefficient since a democratic system helps incorporate citizen preferences into public spending (Alm and Torgler, 2006; Lago-Peñas and Lago-Peñas, 2010; Torgler, 2005a).
- Religiosity (R_{ic}): dummy variable equal to 1 if the respondent declared that religion is very or quite important to the EVS question: "*How important is religion in your life?*". It allows us to measure the religious attitude of people, which might be an important determinant of tax morale (Alm and Torgler, 2006; Torgler, 2006).

- Other socio-demographic individual characteristics, such as gender, age, marital status, employment, income, and educational level, have been operationalized by using the categorical information collected in the EVS2017 survey. Several previous studies show that tax morale tends to increase with age, among women and those individuals with higher educational attainments (Alm and Torgler, 2006; Lago-Peñas and Lago-Peñas, 2010; Martinez-Vazquez and Torgler, 2009; Torgler and Valev, 2010; Torgler et al., 2008). In contrast, it is empirically recognised lower level of tax morale among self-employed, as well as never married or separated individuals (Alm and Torgler, 2006; Torgler, 2004c). Regarding the potential effect of income on tax morality, there is not general consensus in the empirical literature. On the one hand, richer people could present more tax morale, since they have more money to spend, hence showing more willingness to pay taxes. However, in progressive tax-systems, a larger level of income may be negatively related to tax morale, since richer people are supposed to pay a relatively larger marginal tax rate (as showed in Alm and Torgler, 2006; Lago-Peñas and Lago-Peñas, 2010; Torgler, 2006). Additionally, some other studies found the effect of income is not statistically significant (Torgler, 2005b).

Table 2.1. Variables description and summary statistics

Variable	Description	Obs.	Mean	Std. Dev.	Min	Max
Dependent variable						
TM_{ic}	Individual level of tax morale. Index ranging from 1 (low tax morale) to 5 (high tax morale)	54,480	4.554	0.946	1	5
Main independent variables: number of associations in which respondents participate, considering different classifications approaches						
Internal approach						
$BridgingSC_{ic}^{Int}$	Individual involvement in bridging associations	55,276	0.592	0.879	0	4
$MiddleSC_{ic}^{Int}$	Individual involvement in middle-of-the-road associations	55,276	0.265	0.553	0	3
$BondingSC_{ic}^{Int}$	Individual involvement in bonding associations	55,276	0.240	0.556	0	4
External approach						
$BridgingSC_{ic}^{Ext}$	Individual involvement in connected associations	55,276	0.414	0.658	0	4
$MiddleSC_{ic}^{Ext}$	Individual involvement in intermediately connected associations	55,276	0.213	0.494	0	3
$BondingSC_{ic}^{Ext}$	Individual involvement in isolated associations	55,276	0.471	0.825	0	4
Integrating approach						
$SC1_{ic}$	Individual involvement in bridging-bridging associations	55,276	0.274	0.496	0	3
$SC2_{ic}$	Individual involvement in bridging-middle associations	55,276	0.152	0.405	0	4
$SC3_{ic}$	Individual involvement in middle-middle associations	55,276	0.075	0.281	0	3
$SC4_{ic}$	Individual involvement in bridging-bonding associations	55,276	0.305	0.604	0	6
$SC5_{ic}$	Individual involvement in middle-bonding associations	55,276	0.175	0.467	0	4
$SC6_{ic}$	Individual involvement in bonding- bonding associations	55,276	0.115	0.343	0	2
Control variables						
HT_{ic}	Horizontal trust	55,029	2.612	0.667	1	4
VT_{ic}	Vertical trust	55,013	2.324	0.654	1	4
DS_{ic}	Democratic spirit	52,521	3.524	0.656	1	4
R_{ic}	Religiosity, measured with a dummy variable equal to 1 if individual states that religion is important.	55,276	0.507	0.499	0	1
$Female_{ic}$	Dummy variable equal to 1 for female respondents and 0 otherwise.	55,276	0.552	0.497	0	1
Age_{ic}	Age level, coded in a set of dummy variables, according to the following seven age categories:					
	18-24	55,276	0.093	0.290	0	1
	25-34	55,276	0.148	0.355	0	1
	35-44	55,276	0.165	0.371	0	1
	45-54	55,276	0.173	0.378	0	1
	55-64	55,276	0.177	0.382	0	1
	65-74	55,276	0.167	0.373	0	1
	75+	55,276	0.077	0.267	0	1
Income	Income level, coded in a set of dummy variables indicating the deciles for each country.					
	1st decile	47,994	0.104	0.305	0	1
	2nd decile	47,994	0.119	0.324	0	1
	3rd decile	47,994	0.121	0.326	0	1
	4th decile	47,994	0.120	0.325	0	1
	5th decile	47,994	0.113	0.316	0	1
	6th decile	47,994	0.106	0.308	0	1
	7th decile	47,994	0.097	0.296	0	1
	8th decile	47,994	0.086	0.281	0	1
	9th decile	47,994	0.064	0.245	0	1
	10th decile	47,994	0.070	0.255	0	1
Employment	Employment status, coded in a set of dummy variables, according to the following categories:					
	Self-employ	55,276	0.062	0.241	0	1
	Military employ	55,276	0.001	0.025	0	1
	Retired	55,276	0.255	0.436	0	1
	Homemaker	55,276	0.053	0.224	0	1
	Student	55,276	0.050	0.219	0	1
	Unemployed	55,276	0.086	0.280	0	1
	Disabled	55,276	0.017	0.128	0	1

Table 2.1. (continued)

Education	Highest level of educational attainment, coded in a set of dummy variables comprising the ES-ISCED categories.					
	No formal or less	54,908	0.008	0.091	0	1
	Primary	54,908	0.044	0.205	0	1
	Lower	54,908	0.148	0.355	0	1
	Upper secondary	54,908	0.097	0.296	0	1
	Upper secondary	54,908	0.356	0.479	0	1
	Post-secondary	54,908	0.085	0.278	0	1
	Bachelor's	54,908	0.112	0.316	0	1
	Master's	54,908	0.148	0.355	0	1
Other	54,908	0.002	0.039	0	1	
Marital Status	Marital status, coded in a set of dummy variables, according to the following categories:					
	Married	54,874	0.526	0.499	0	1
	Registered partnership	54,874	0.027	0.161	0	1
	Widowed	54,874	0.099	0.299	0	1
	Divorced	54,874	0.089	0.285	0	1
	Separated	54,874	0.014	0.118	0	1
	Never married	54,874	0.246	0.430	0	1

2.4.2. Econometric specification and methodology

To evaluate the relationship between social capital and tax morale, we use the following econometric specification:

$$TM_{ic}^* = SC_{ic}' \alpha + X_{ic}' \beta + \gamma_c + u_{ic} \quad \text{Equation (2.1)}$$

where TM_{ic}^* represents an unobservable latent variable underlying the ordered and categorical measure of tax morality TM_{ic} of each individual i living in country c , and SC_{ic}' represents a vector of social capital variables, measuring the number of voluntary associations to which each individual belongs, distinguishing different types of associations according to the three alternative approaches previously described (i.e., internal, external and integrating). Additionally, the specification also includes a vector of the previously defined control variables for individual characteristics, X_{ic}' , and a set of country dummies, γ_c , to take into account the unobserved heterogeneity at national level (e.g., cultural differences, discrepancies in the national fiscal system and other contextual features at country level) that could affect tax morality. Finally, u_{ic} represents the error term.

Under this framework, the relationship between the unobservable latent variable TM_{ic}^* and the observed variable TM_{ic} is given by:

$$\begin{aligned} TM_{ic} = 1 & \text{ if } TM_{ic}^* \leq \theta_1 && (\text{low tax morale}) \\ TM_{ic} = 2 & \text{ if } \theta_1 < TM_{ic}^* \leq \theta_2 && (\text{middle lower tax morale}) \\ TM_{ic} = 3 & \text{ if } \theta_2 < TM_{ic}^* \leq \theta_3 && (\text{middle tax morale}) \\ TM_{ic} = 4 & \text{ if } \theta_3 < TM_{ic}^* \leq \theta_4 && (\text{middle upper tax morale}) \\ TM_{ic} = 5 & \text{ if } TM_{ic}^* > \theta_4 && (\text{high tax morale}) \end{aligned}$$

where θ represents unknown thresholds to be estimated, along with the remaining parameters in Equation (2.1), using the maximum likelihood (ML) procedure within an ordered probit framework, subject to the constraints that $\theta_1 < \theta_2 < \theta_3 < \theta_4$. Additionally, to check the robustness of the results, Equation (2.1) is also estimated as a linear regression model by

employing the ordinary least squares (OLS) method, assuming that the dependent variable is a cardinal measure ranging from 1 to 5.

One concern in our analysis is the endogeneity problems that could arise from simultaneity and/or measurement errors. On the one hand, tax morality and volunteering could be reasonably joint determined by unobservable factors, since subjects who are intrinsically more prosocial may be more willing either to join voluntary activities or to contribute to public goods (Andriani, 2016). On the other hand, it is well recognised that some survey respondents might be reluctant to reveal their real attitude towards tax cheating since it may seem socially irresponsible, and/or they may involuntarily misreport their actual participation in some activities (e.g., Kinsey, 1992; Kouamé, 2021; Torgler, 2012; Tripp, 1997). If so, the estimated coefficients would not be useful to evaluate the true effect of social capital on tax morale. Therefore, to minimize possible endogeneity problems, we subsequently extend the analysis by using two alternative instrumental-variables methodologies. Specifically, the ordered probit specification from Equation (2.1) is estimated by using the control function approach (CFA) proposed by Wooldridge (2015), while the linear regression version of the model is estimated by using the two-stages least squares (2SLS) procedure. In both cases, we instrument the different variables of social capital included in vector SC'_{ic} by their respective average values, considering linguistic and religion clusters at regional level (NUTS2) within the same country, excluding the individual's responses. The reasoning behind this approach is that individual participation in associations could be reasonably affected by the average association membership of neighbouring individuals living in each region, sharing a cultural heritage and a local institutional context (for a similar approach, see for instance, Kouamé, 2021). Moreover, as an additional instrument for variables included in SC'_{ic} we also employ the number of children of each respondent living in their corresponding household. According to literature, the parenthood may influence the individual's time use and the willingness to participate in volunteering organisations (e.g., Rotolo, 2000; Smith, 1994), but it is not necessarily related with tax morale.¹¹

¹¹ The information on NUTS2 regions, language, religion and number of children have been also extracted from the EVS2017.

The CFA and 2SLS approaches are implemented in two stages. In both cases, the first stage involves regressing by OLS each potentially endogenous explanatory variable (i.e., SC'_{ic} in our case) on all excluded instruments, the control variables, and country dummies. However, the second stage varies depending on the approach chosen. In the CFA procedure, the second stage involves estimating the ordered probit specification from Equation (2.1) using the maximum likelihood estimator, including as additional regressors the vector of predicted residuals from the first stage. In contrast, the second stage in the 2SLS procedure consists in estimating by OLS the linear regression version of the main model, replacing the potentially endogenous variables by their predictions from the first stage.

2.5. Results

2.5.1. Internal approach

Following the internal approach for defining bridging and bonding social networks, Table 2.2 shows the estimated coefficients and standard errors (in parenthesis) from Equation (2.1) using the above-mentioned estimation strategies. Columns I and II present, respectively, the ML estimates of the ordered probit and the OLS linear regression estimates, while columns III and IV report the corresponding estimates from the ordered probit model with CFA and the 2SLS linear regression estimates.¹² For the ordered probit specifications (columns I and III), we further present the estimated average marginal effects (ME) for the highest score of tax morale ($TM_{ic} = 5$). Additionally, at the bottom of Table 2.2 we report a set of diagnostic tests, whose results support the reliability of the chosen instrumental variables and the CFA and 2SLS methods.¹³

¹² To preserve space, we do not show here the detailed results of the first-stage regressions, although they are available upon request from authors.

¹³ On the one hand, the excluded instrumental variables are jointly significant in the first-stage regression for each of the potentially endogenous variables, providing evidence that the instruments are not weak. Additionally, the predicted residuals from the first stage are jointly significant in the estimated ordered probit with CFA, suggesting the potential presence of endogeneity. On the other hand, according to the 2SLS estimates, the Hansen J statistic on overidentification fails to reject the exogeneity of instruments, while the Kleibergen-Paap rk LM test statistic rejects the null of the model's under-identification. The Kleibergen-Paap Wald F test statistic is larger than the rule-of-thumb value of 10 proposed by Staiger and Stock (1997), suggesting a strong correlation between our chosen instruments and the potentially endogenous variables (Kleibergen and Paap, 2006). Lastly, the Durbin-Wu-Hausman test statistic of endogeneity rejects the null hypothesis of equality between 2SLS and OLS, suggesting the at least one suspected explanatory variable (i.e., SC'_{ic}) is endogenous.

In general terms, the estimated results are relatively consistent across the four estimation strategies. However, in view of diagnostic test results, the following comments will be focused on the outcomes obtained from the instrumental-variables methodologies (columns III and IV from Table 2.2). As can be seen, the first aspect that calls our attention is that involvement in voluntary associations classified in the bridging and intermediate categories according to the internal approach is significantly related with a positive individual's attitude towards paying taxes. Indeed, according to the average marginal effects from the ordered probit model in column III, the probability of stating the highest level of tax morality significantly increases by 3.2% and 6.5% for being involved in each association categorised as internally bridging and intermediate, respectively. Similarly, the 2SLS estimates in column IV show that one-point increase in the membership of these two types of associations raises tax morale by 0.065 and 0.199, respectively, on a five-point scale. In contrast, our estimates show that increasing membership in internally bonding associations are significantly linked with lower tax morality. According to the ordered probit estimates in column III, the average marginal effect on the probability of stating the highest level of tax morality for one unit change in the number of these associations in which individuals belong is -17.4%. Furthermore, the 2SLS estimates in column IV indicate that a one-point increase in the membership of internally bonding associations yields a reduction of tax morale by 0.443 points on a five-point scale.

Regarding the estimated coefficients associated with control variables, we can observe that they are reasonable and in line with the already existing evidence on the determining factors of tax morality. Specifically, our findings suggest that personal beliefs, such as trust in others as well as confidence in the democratic political system and religiosity, significantly increase individuals' willingness to pay their taxes without cheating. Moreover, the results also show a significant impact of taxpayers' trust in formal authorities on positively shaping the voluntary tax compliance attitude, which is consistent with the "slippery slope" effect of trust in authorities and the perceived power of institutions.

The obtained results also reveal that tax morality is influenced by certain individual socio-demographic characteristics. First, as can be seen, women are significantly more likely to report a positive attitude towards taxes than men. Second, the individual's age and educational level are significantly positively associated with tax morality. Third, we also find that self-employees and homemakers are significantly less likely to state the highest level of tax morale than full-time employees. Fourth, individuals located within the 2nd, 6th and 7th deciles of the income distribution present a higher level of tax morality than those located in the 1st decile. Finally, regarding the marital status, the results suggest that divorced and single individuals present significantly fewer positive attitudes towards taxes than married people.¹⁴

¹⁴ To further evaluate the robustness of our findings, following Kouamé (2021) we have also considered horizontal and vertical trust as potentially endogenous variables. In this case, we have instrumented the social capital variables and horizontal and vertical trust by their respective average values, considering linguistic and religion clusters at NUTS2 level within the same country, excluding the individual's responses, as well as by the number of children of each respondent. The new results, summarized in Appendix B, are highly consistent with our main findings.

Table 2.2. Results from Equation (2.1), considering the internal approach

Variables	Endogeneity unaddressed						Endogeneity addressed				
	(I)			(II)			(III)			(IV)	
	Ordered probit			OLS			Ordered probit with CFA			2SLS	
	Coeff	SE	Average ME †	Coeff	SE	Coeff.	SE	Average ME †	Coeff	SE	
<i>BridgingSC_{ic}^{Int}</i>	0.013	(0.007)	0.004	0.004	(0.005)	0.118***	(0.038)	0.032	0.065***	(0.02)	
<i>MiddleSC_{ic}^{Int}</i>	-0.011	(0.013)	-0.003	-0.010	(0.008)	0.238**	(0.103)	0.065	0.199***	(0.064)	
<i>BondingSC_{ic}^{Int}</i>	-0.042***	(0.013)	-0.011	-0.030***	(0.008)	-0.637***	(0.152)	-0.174	-0.443***	(0.092)	
<i>HT_{ic}</i>	0.082***	(0.012)	0.022	0.059***	(0.008)	0.081***	(0.013)	0.022	0.057***	(0.009)	
<i>VT_{ic}</i>	0.123***	(0.012)	0.034	0.085***	(0.009)	0.122***	(0.013)	0.033	0.085***	(0.009)	
<i>DS_{ic}</i>	0.206***	(0.010)	0.056	0.139***	(0.008)	0.206***	(0.010)	0.056	0.140***	(0.008)	
<i>Religiosity_{ic}</i>	0.065***	(0.015)	0.018	0.026***	(0.010)	0.063***	(0.018)	0.017	0.024**	(0.013)	
women	0.150***	(0.014)	0.041	0.089***	(0.009)	0.147***	(0.014)	0.040	0.087***	(0.009)	
Age (ref: 18-24)											
25-34	0.055*	(0.031)	0.016	0.05**	(0.024)	0.05	(0.032)	0.014	0.048*	(0.025)	
35-44	0.139***	(0.033)	0.041	0.115***	(0.025)	0.136***	(0.034)	0.037	0.113***	(0.026)	
45-54	0.186***	(0.033)	0.054	0.146***	(0.025)	0.202***	(0.035)	0.055	0.156***	(0.026)	
55-64	0.231***	(0.035)	0.066	0.172***	(0.026)	0.256***	(0.035)	0.070	0.188***	(0.027)	
65-74	0.262***	(0.042)	0.074	0.181***	(0.029)	0.292***	(0.044)	0.080	0.199***	(0.03)	
75+	0.297***	(0.049)	0.083	0.198***	(0.032)	0.321***	(0.051)	0.087	0.214***	(0.034)	
Income (ref: 1st decile)											
2nd decile	0.086***	(0.029)	0.023	0.053***	(0.019)	0.092***	(0.03)	0.025	0.058***	(0.02)	
3rd decile	-0.014	(0.029)	-0.004	-0.011	(0.02)	-0.014	(0.03)	-0.004	-0.010	(0.021)	
4th decile	0.001	(0.029)	0.001	-0.005	(0.02)	0.003	(0.031)	0.001	-0.003	(0.021)	
5th decile	0.023	(0.03)	0.006	0.014	(0.02)	0.033	(0.032)	0.009	0.020	(0.021)	
6th decile	0.048	(0.031)	0.013	0.028	(0.02)	0.063*	(0.033)	0.017	0.038*	(0.022)	
7th decile	0.062**	(0.031)	0.017	0.038*	(0.02)	0.066*	(0.034)	0.018	0.039*	(0.022)	
8th decile	0.011	(0.033)	0.003	0.001	(0.021)	0.026	(0.036)	0.007	0.010	(0.023)	
9th decile	0.036	(0.036)	0.010	0.024	(0.022)	0.065	(0.04)	0.018	0.043*	(0.034)	
10th decile	-0.068*	(0.035)	-0.019	-0.04*	(0.023)	-0.031	(0.04)	-0.008	-0.016	(0.025)	
Education (ref: No education)											
Primary education	0.062	(0.085)	0.019	0.042	(0.064)	0.069	(0.089)	0.019	0.048	(0.066)	
Lower secondary	0.179**	(0.081)	0.052	0.118*	(0.062)	0.181**	(0.084)	0.049	0.120*	(0.063)	
Upper secondary without access to higher education	0.171**	(0.082)	0.050	0.115*	(0.062)	0.167*	(0.087)	0.046	0.115*	(0.064)	
Upper secondary with access to higher education	0.186**	(0.08)	0.054	0.121**	(0.061)	0.184**	(0.084)	0.050	0.121*	(0.063)	
Post-secondary	0.205**	(0.082)	0.059	0.140**	(0.063)	0.243***	(0.089)	0.066	0.166**	(0.065)	
Bachelor's level	0.214***	(0.082)	0.062	0.140**	(0.062)	0.247***	(0.088)	0.067	0.158**	(0.065)	
Master's and higher level	0.243***	(0.081)	0.069	0.166***	(0.062)	0.280***	(0.088)	0.076	0.19***	(0.065)	
Other	0.614**	(0.27)	0.153	0.233**	(0.091)	0.639	(0.576)	0.174	0.253**	(0.102)	

Table 2.2. (continued)

Laboral situation (ref: employed)										
selfemploy	-0.116***	(0.028)	-0.032	-0.087***	(0.021)	-0.079***	(0.03)	-0.021	-0.062***	(0.022)
militaremploy	-0.259	(0.18)	-0.071	-0.221	(0.187)	-0.299	(0.189)	-0.082	-0.241	(0.183)
retired_pens	0.073***	(0.028)	0.02	0.034**	(0.016)	0.049	(0.03)	0.013	0.017	(0.018)
homemaker	-0.083**	(0.032)	-0.023	-0.053**	(0.024)	-0.085***	(0.032)	-0.023	-0.055**	(0.024)
student	-0.026	(0.036)	-0.007	0.006	(0.027)	-0.034	(0.038)	-0.009	-0.001	(0.028)
unemployed	-0.048*	(0.026)	-0.013	-0.028	(0.019)	-0.051	(0.037)	-0.014	-0.030	(0.02)
disabled	0.001	(0.055)	0.001	-0.015	(0.036)	0.045	(0.056)	0.012	0.014	(0.038)
Marital status (ref: married)										
registered partnership	-0.09**	(0.041)	-0.025	-0.042	(0.028)	-0.096	(0.072)	-0.026	-0.045	(0.029)
widowed	-0.008	(0.027)	-0.002	0.006	(0.016)	-0.008	(0.028)	-0.002	0.006	(0.016)
divorced	-0.089***	(0.024)	-0.025	-0.052***	(0.016)	-0.079***	(0.025)	-0.022	-0.045***	(0.016)
separated	-0.035	(0.058)	-0.009	-0.038	(0.039)	-0.016	(0.061)	-0.004	-0.029	(0.041)
never married and never registered partnership	-0.06***	(0.02)	-0.016	-0.028**	(0.014)	-0.06***	(0.021)	-0.016	-0.03**	(0.014)
Country dummies	YES			YES		YES			YES	
Observations	45,087			45,087		44,281			44,281	
Log-likelihood	-34380.532					-33730.835				
Joint significance of excluded instruments in the first-stage regressions for each potentially endogenous variable:										
$BridgingSC_{ic}^{Int}$						839.82	[0.000]			
$MiddleSC_{ic}^{Int}$						230.90	[0.000]			
$BondingSC_{ic}^{Int}$						118.03	[0.000]			
Coeff. of residuals from the first-stage regressions (control-function approach):										
r1						-0.110***	(0.038)			
r2						-0.251**	(0.104)			
r3						0.600***	(0.153)			
Joint significance of first-stage residuals in the main equation:										
						20.74	[0.000]			
Kleibergen-Paap rk LM statistic									213.558	[0.000]
Kleibergen-Paap rk Wald F statistic									63.309	
Hansen J statistic									0.072	[0.789]
Durbin-Wu-Hausman test									9.08	[0.000]

The standard errors in parentheses are heteroskedasticity-consistent for the ordered probit (I), OLS (II) and 2SLS (IV) approaches, while they are bootstrapped with 1000 replications for the ordered probit with CFA (III). We employ *, **, and *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively. P-values are presented in brackets. In columns (III) and (IV), the three variables $BridgingSC_{ic}^{Int}$, $MiddleSC_{ic}^{Int}$ and $BondingSC_{ic}^{Int}$ have been instrumented by their corresponding averaged levels among individuals of the same linguistic and religious origin in the community (NUTS2 level) and the number of children. † We report the average marginal effects for the highest score of tax morality.

2.5.2. External approach

In Table 2.3 we present the corresponding results from using the external measure of bridging/bonding social networks based on connected and isolated voluntary associations. We employ again the estimation strategies described in the previous section, and the estimates are presented in an analogous way. Additionally, as we have proceeded in the internal approach, here we also focus our attention on the estimates results from the ordered probit model with the CFA (column III) and the 2SLS regression (column IV) in Table 2.3, given that diagnostic test results suggest that instrumental-variables methodologies are appropriate.

According to the estimated coefficients in Table 2.3, membership in bridging voluntary associations in the external approach significantly increases the individual's willingness to pay taxes. Indeed, as can be seen in the ordered probit estimates of column III, being involved in each association categorised as externally bridging leads to a significant increase in the probability of stating the highest level of tax morale, with an average marginal effect of 4.1%. This result is also confirmed by the 2SLS estimates in column IV, showing that one-point increase in the membership of this type of associations leads to a significant increase in tax morale of 0.095 on a five-point scale. Conversely, involvement in externally bonding voluntary associations is significantly related with lower tax morale. Indeed, according to the ordered probit estimates in column III, a unit change in the number of this kind of associations in which individuals belong significantly reduces the probability of stating the highest level of tax morality, resulting in a negative average marginal effect of -3.2%. The 2SLS estimates in column IV exhibit a reasonable result, indicating that a marginal increase in the membership of externally bonding associations results in a reduction of tax morale by 0.088 points on a five-point scale. Additionally, the involvement in voluntary associations classified in the intermediate categories with the external approach is not significantly related to tax morale. Lastly, as can be noticed, the estimated coefficients related to control variables are overall coherent with those previously discussed in the internal approach.

Table 2.3. Results from Equation (2.1), considering the external approach

Variables	Endogeneity not corrected						Endogeneity corrected				
	(I)			(II)			(III)			(IV)	
	Ordered probit			OLS			Ordered probit with CFA			2SLS	
	Coeff	SE	Average ME †	Coeff	SE	Coeff.	SE	Average ME †	Coeff	SE	
<i>BridgingSC_{ic}^{Ext}</i>	-0.003	(0.012)	-0.001	-0.002	(0.007)	0.152***	(0.050)	0.041	0.095***	(0.029)	
<i>MiddleSC_{ic}^{Ext}</i>	-0.016	(0.015)	-0.004	-0.011	(0.009)	-0.125	(0.082)	-0.034	0.014	(0.091)	
<i>BondingSC_{ic}^{Ext}</i>	-0.009	(0.010)	-0.002	-0.012**	(0.005)	-0.117*	(0.068)	-0.032	-0.088**	(0.040)	
<i>HT_{ic}</i>	0.083***	(0.012)	0.023	0.059***	(0.008)	0.087***	(0.013)	0.024	0.061***	(0.009)	
<i>VT_{ic}</i>	0.123***	(0.012)	0.034	0.086***	(0.009)	0.124***	(0.013)	0.034	0.086***	(0.009)	
<i>DS_{ic}</i>	0.206***	(0.010)	0.056	0.139***	(0.008)	0.207***	(0.010)	0.056	0.141***	(0.008)	
<i>Religiosity_{ic}</i>	0.066***	(0.015)	0.018	0.026***	(0.010)	0.056***	(0.017)	0.015	0.018	(0.011)	
women	0.150***	(0.014)	0.041	0.089***	(0.009)	0.152***	(0.014)	0.041	0.091***	(0.009)	
Age (ref: 18-24)											
25-34	0.055*	(0.031)	0.017	0.050**	(0.024)	0.051	(0.032)	0.014	0.049**	(0.025)	
35-44	0.139***	(0.033)	0.041	0.115***	(0.025)	0.136***	(0.034)	0.037	0.114***	(0.026)	
45-54	0.185***	(0.033)	0.053	0.145***	(0.025)	0.187***	(0.034)	0.051	0.147***	(0.026)	
55-64	0.230***	(0.035)	0.066	0.171***	(0.026)	0.236***	(0.036)	0.064	0.173***	(0.026)	
65-74	0.260***	(0.042)	0.073	0.179***	(0.029)	0.264***	(0.044)	0.072	0.179***	(0.030)	
75+	0.294***	(0.048)	0.082	0.197***	(0.032)	0.296***	(0.052)	0.081	0.196***	(0.033)	
Income (ref: 1st decile)											
2nd decile	0.085***	(0.029)	0.023	0.053***	(0.019)	0.080***	(0.029)	0.022	0.050**	(0.019)	
3rd decile	-0.015	(0.029)	-0.004	-0.012	(0.020)	-0.022	(0.030)	-0.006	-0.017	(0.020)	
4th decile	0.001	(0.029)	0.001	-0.004	(0.020)	0.001	(0.030)	0.001	0.0004	(0.020)	
5th decile	0.023	(0.03)	0.006	0.014	(0.020)	0.018	(0.030)	0.005	0.009	(0.021)	
6th decile	0.047	(0.031)	0.013	0.028	(0.020)	0.047	(0.031)	0.013	0.026	(0.021)	
7th decile	0.063**	(0.031)	0.017	0.038*	(0.020)	0.056*	(0.033)	0.015	0.033	(0.021)	
8th decile	0.011	(0.033)	0.003	0.001	(0.021)	0.017	(0.035)	0.005	0.003	(0.022)	
9th decile	0.035	(0.036)	0.010	0.024	(0.022)	0.038	(0.037)	0.010	0.023	(0.023)	
10th decile	-0.069**	(0.035)	-0.020	-0.041*	(0.023)	-0.065*	(0.036)	-0.018	-0.040*	(0.024)	
Education (ref: No education)											
Primary education	0.062	(0.085)	0.019	0.042	(0.064)	0.063	(0.087)	0.017	0.049	(0.066)	
Lower secondary	0.179**	(0.081)	0.052	0.119*	(0.062)	0.188**	(0.084)	0.051	0.130**	(0.063)	
Upper secondary without access to higher education	0.173**	(0.082)	0.051	0.117*	(0.062)	0.184**	(0.086)	0.05	0.130**	(0.064)	
Upper secondary with access to higher education	0.187**	(0.080)	0.054	0.122**	(0.061)	0.199**	(0.084)	0.054	0.136**	(0.063)	
Post-secondary	0.204**	(0.082)	0.059	0.140**	(0.063)	0.224**	(0.09)	0.061	0.155**	(0.065)	
Bachelor's level	0.214***	(0.082)	0.062	0.140**	(0.062)	0.244***	(0.089)	0.067	0.159**	(0.065)	
Master's and higher level	0.242***	(0.081)	0.069	0.166***	(0.062)	0.271***	(0.089)	0.074	0.186***	(0.065)	
Other	0.611**	(0.270)	0.153	0.231**	(0.091)	0.648	(0.71)	0.177	0.266***	(0.095)	

Table 2.3. (continued)

Laboral situation (ref: employed)										
selfemploy	-0.118***	(0.028)	-0.032	-0.088***	(0.021)	-0.096***	(0.03)	-0.026	-0.073***	(0.021)
militaremploy	-0.256	(0.181)	-0.070	-0.218	(0.187)	-0.245	(0.194)	-0.067	-0.208	(0.187)
retired_pens	0.073***	(0.028)	0.020	0.034**	(0.016)	0.069**	(0.029)	0.019	0.034**	(0.017)
homemaker	-0.084***	(0.032)	-0.023	-0.054**	(0.024)	-0.082**	(0.034)	-0.022	-0.050**	(0.024)
student	-0.025	(0.036)	-0.007	0.007	(0.027)	-0.015	(0.038)	-0.004	0.013	(0.028)
unemployed	-0.049*	(0.026)	-0.013	-0.028	(0.019)	-0.045	(0.028)	-0.012	-0.025	(0.019)
disabled	-0.001	(0.055)	-0.001	-0.018	(0.036)	-0.002	(0.055)	-0.0003	-0.018	(0.037)
Marital status (ref: married)										
registered partnership	-0.090**	(0.041)	-0.025	-0.042	(0.028)	-0.092**	(0.044)	-0.025	-0.042	(0.029)
widowed	-0.008	(0.027)	-0.002	0.006	(0.016)	0.001	(0.028)	0.0001	0.008	(0.016)
divorced	-0.090***	(0.024)	-0.025	-0.052***	(0.016)	-0.086***	(0.024)	-0.024	-0.05***	(0.016)
separated	-0.037	(0.058)	-0.01	-0.039	(0.039)	-0.027	(0.062)	-0.007	-0.034	(0.04)
never married and never registered partnership	-0.060***	(0.02)	-0.016	-0.028**	(0.014)	-0.052***	(0.02)	-0.014	-0.023*	(0.014)
Country dummies	YES			YES		YES			YES	
Observations	45,087			45,087		44,281			44,281	
Log-likelihood	-34385.248					-33733.318				
Joint significance of excluded instruments in the first-stage regressions for each potentially endogenous variable:										
$BridgingSC_{ic}^{Ext}$						819.39	[0.000]			
$MiddleSC_{ic}^{Ext}$						115.86	[0.000]			
$BondingSC_{ic}^{Ext}$						297.87	[0.000]			
Coeff. Of residuals from the first-stage regressions (control-function approach):										
r1						-0.164***	(0.052)			
r2						0.042	(0.154)			
r3						0.110	(0.068)			
Joint significance of first-stage residuals in the main equation:										
						10.22	[0.017]			
Kleibergen-Paap rk LM statistic									254.352	[0.000]
Kleibergen-Paap rk Wald F statistic									74.048	
Hansen J statistic									0.286	[0.592]
Durbin-Wu-Hausman test									3.41	[0.016]

The standard errors in parentheses are heteroskedasticity-consistent for the ordered probit (I), OLS (II) and 2SLS (IV) approaches, while they are bootstrapped with 1000 replications for the ordered probit with CFA (III). We employ *, **, and *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively. P-values are presented in brackets. In columns (III) and (IV), the three variables $BridgingSC_{ic}^{Ext}$, $MiddleSC_{ic}^{Ext}$ and $BondingSC_{ic}^{Ext}$ have been instrumented by their corresponding averaged levels among individuals of the same linguistic and religious origin in the community (NUTS2 level) and the number of children. † We report the average marginal effects for the highest score of tax morality.

2.5.3. Integrating approach

Finally, Table 2.4 displays the results from employing the integrating approach to classify voluntary associations into six different groups. As before, the diagnostic test results support the potential presence of endogeneity as well as the instrumental-variables methodologies. Therefore, we again focus our attention on the outcomes obtained when instrumenting the membership in the different type of voluntary associations (columns III and IV from Table 2.4).

As can be seen, being involved in bridging-bridging voluntary associations according to the integrating approach is significantly related with a positive individual's willingness to pay taxes. According to the marginal effects from the estimated ordered probit in column III, the probability of stating the highest level of tax morale raises by 7% for one unit change in the number of bridging-bridging associations in which individuals belong. This result is relatively consistent with that obtained by the 2SLS estimates in column IV, showing that a unitary increase in the membership of these kinds of associations leads to an increase in tax morale by 0.148 points on a five-point scale. On the contrary, the results suggest that being involved in bonding-bonding voluntary associations in the integrating approach significantly reduces tax morale.

According to the marginal effects of the ordered probit estimates reported in column III, a unit increase in the number of bonding-bonding associations in which individuals belong decreases by -25.3% the probability of stating the highest level of tax morality. Similarly, the 2SLS estimates in column IV indicate that a one-point increase in the membership of these sorts of associations results in a reduction of tax morale by 0.688 points on a five-point scale. Regarding the other hybrid combinations of bridging/middle/bonding associations in the integrating approach, their estimated coefficients show mixed signs, although most of them are statistically insignificant at standard levels. This is not surprising given their diverse

nature. Finally, the estimated effects of control variables are overall consistent with the previously obtained findings with the internal and external approaches.¹⁵

¹⁵ To check the robustness of our results to alternative instruments, we have repeated the analysis with the integrating approach by using the Lewbel (1997) procedure, employing as instrumental variables the second and third moments of the endogenous regressors. In fact, the author demonstrates that in case of linear regressions with measurement errors, the second, third and higher moments of the potentially endogenous variable(s) could represent good instruments with a 2SLS estimator. This approach has been widely used in empirical works (see, for instance, Gamso and Yuldashev, 2018; Sullivan et al., 2011). We have thus constructed the second and third moments of the social capital variables. Since the Lewbel (1997) procedure can be only used in linear models, we have estimated two versions of Equation (2.1) by using the 2SLS estimator, considering as dependent variable the tax morale both on a 5-point and 10-point scale, to exploit all its variability. The estimates are reported in the Appendix C. The post estimation tests suggest that instruments are relevant and exogenous, and the estimated coefficients are consistent with those obtained in the baseline analysis.

Table 2.4. Results from Equation (2.1), considering the “integrating” approach

Variables	Endogeneity not corrected						Endogeneity corrected				
	(I) Ordered probit			(II) OLS			(III) Ordered probit with CFA			(IV) 2SLS	
	Coeff	SE	Average ME †	Coeff	SE	Coeff.	SE	Average ME †	Coeff	SE	
<i>SC1_{ic}</i> (bridging-bridging)	0.039**	(0.012)	0.011	0.023***	(0.008)	0.256***	(0.056)	0.070	0.148***	(0.046)	
<i>SC2_{ic}</i> (bridging-middle)	-0.027	(0.015)	-0.007	-0.013	(0.012)	0.105	(0.108)	0.029	0.158	(0.103)	
<i>SC3_{ic}</i> (middle-middle)	-0.032	(0.01)	-0.009	-0.020	(0.015)	0.148	(0.266)	0.040	0.178	(0.289)	
<i>SC4_{ic}</i> (bridging-bonding)	-0.020	(0.012)	-0.005	-0.021***	(0.008)	-0.259***	(0.078)	-0.071	-0.157	(0.126)	
<i>SC5_{ic}</i> (middle-bonding)	0.017	(0.012)	0.005	0.002	(0.008)	0.563**	(0.221)	0.153	0.283	(0.179)	
<i>SC6_{ic}</i> (bonding-bonding)	-0.050**	(0.010)	-0.014	-0.031***	(0.012)	-0.930***	(0.311)	-0.253	-0.688**	(0.307)	
trust	0.082***	(0.015)	0.022	0.059***	(0.008)	0.076***	(0.015)	0.021	0.060***	(0.016)	
trustinstitutions	0.123***	(0.014)	0.034	0.085***	(0.009)	0.123***	(0.013)	0.034	0.086***	(0.018)	
religiosity	0.205***	(0.001)	0.056	0.139***	(0.008)	0.201***	(0.011)	0.055	0.141***	(0.013)	
prodemocratic	0.064***	(0.031)	0.018	0.025***	(0.010)	0.057***	(0.018)	0.016	0.017	(0.017)	
women	0.150***	(0.033)	0.041	0.089***	(0.009)	0.146***	(0.015)	0.04	0.089***	(0.014)	
Age (ref: 18-24)											
25-34	0.054*	(0.035)	0.016	0.05**	(0.024)	0.047	(0.034)	0.013	0.042	(0.031)	
35-44	0.138***	(0.042)	0.04	0.114***	(0.025)	0.119***	(0.037)	0.032	0.102***	(0.032)	
45-54	0.185***	(0.048)	0.053	0.145***	(0.025)	0.180***	(0.036)	0.049	0.143***	(0.034)	
55-64	0.230***	(0.001)	0.065	0.171***	(0.026)	0.214***	(0.038)	0.058	0.165***	(0.035)	
65-74	0.259***	(0.029)	0.073	0.179***	(0.029)	0.231***	(0.047)	0.063	0.167***	(0.035)	
75+	0.294***	(0.029)	0.082	0.197***	(0.032)	0.263***	(0.056)	0.072	0.188***	(0.042)	
Income (ref: 1st decile)											
2nd decile	0.086***	(0.03)	0.023	0.053***	(0.019)	0.104***	(0.03)	0.028	0.066**	(0.028)	
3rd decile	-0.014	(0.031)	-0.004	-0.011	(0.020)	-0.010	(0.031)	-0.003	-0.007	(0.032)	
4th decile	0.001	(0.031)	0.001	-0.005	(0.020)	0.011	(0.032)	0.003	0.001	(0.030)	
5th decile	0.023	(0.033)	0.006	0.014	(0.020)	0.031	(0.032)	0.008	0.020	(0.031)	
6th decile	0.048	(0.036)	0.013	0.028	(0.020)	0.062*	(0.033)	0.017	0.043	(0.034)	
7th decile	0.062**	(0.035)	0.017	0.037*	(0.020)	0.056	(0.034)	0.015	0.034	(0.032)	
8th decile	0.011	(0.001)	0.003	0.001	(0.021)	0.026	(0.037)	0.007	0.013	(0.036)	
9th decile	0.034	(0.085)	0.009	0.023	(0.022)	0.040	(0.041)	0.011	0.037	(0.036)	
10th decile	-0.069**	(0.081)	-0.02	-0.041*	(0.023)	-0.049	(0.041)	-0.013	-0.018	(0.040)	
Education (Ref: No education)											
Primary education	0.062	(0.080)	0.019	0.042	(0.064)	0.080	(0.089)	0.022	0.062	(0.071)	
Lower secondary	0.178**	(0.082)	0.052	0.118*	(0.062)	0.171**	(0.087)	0.047	0.128*	(0.069)	
Upper secondary without access to higher education	0.171**	(0.082)	0.050	0.116*	(0.062)	0.166*	(0.088)	0.045	0.129*	(0.069)	
Upper secondary with access to higher education	0.185**	(0.081)	0.054	0.121**	(0.061)	0.174**	(0.087)	0.047	0.130*	(0.070)	
Post-secondary	0.204**	(0.270)	0.059	0.140**	(0.063)	0.220**	(0.096)	0.060	0.176**	(0.076)	
Bachelor's level	0.213***	(0.001)	0.061	0.140**	(0.062)	0.215**	(0.096)	0.059	0.169**	(0.078)	
Master's and higher level	0.242***	(0.028)	0.069	0.166***	(0.062)	0.240**	(0.098)	0.065	0.200**	(0.082)	
Other	0.616**	(0.181)	0.154	0.233**	(0.091)	0.660	(0.719)	0.180	0.302**	(0.120)	

Table 2.4. (continued)

Laboral situation (ref: employed)										
selfemploy	-0.118***	(0.032)	-0.032	-0.088***	(0.021)	-0.106***	(0.037)	-0.029	-0.055*	(0.032)
militaremploy	-0.259	(0.036)	-0.071	-0.221	(0.187)	-0.277	(0.193)	-0.076	-0.292	(0.233)
retired_pens	0.073***	(0.026)	0.020	0.034**	(0.016)	0.070**	(0.030)	0.019	0.035*	(0.020)
homemaker	-0.083**	(0.055)	-0.023	-0.053**	(0.024)	-0.078**	(0.035)	-0.021	-0.044	(0.030)
student	-0.024	(0.001)	-0.007	0.007	(0.027)	-0.004	(0.04)	-0.001	0.028	(0.034)
unemployed	-0.048*	(0.041)	-0.013	-0.028	(0.019)	-0.047	(0.028)	-0.013	-0.024	(0.026)
disabled	0.001	(0.027)	0.001	-0.016	(0.036)	0.019	(0.058)	0.005	0.001	(0.039)
Marital status (ref: married)										
registered partnership	-0.089**	(0.058)	-0.025	-0.041	(0.028)	-0.079*	(0.046)	-0.022	-0.037	(0.033)
widowed	-0.008	(0.02)	-0.002	0.006	(0.016)	0.007	(0.029)	0.002	0.011	(0.019)
divorced	-0.089***	(0.001)	-0.024	-0.051***	(0.016)	-0.075***	(0.025)	-0.021	-0.041**	(0.020)
separated	-0.033	(0.060)	-0.009	-0.037	(0.039)	-0.007	(0.065)	-0.002	-0.024	(0.044)
never married and never registered partnership	-0.059***	(0.063)	-0.016	-0.027**	(0.014)	-0.043**	(0.021)	-0.012	-0.018	(0.018)
Country dummies	YES			YES		YES			YES	
Observations	45,087			45,087		44,281			44,281	
Log-likelihood	34376.526									
Joint significance of excluded instruments in the first-stage regressions for each potentially endogenous variable:										
$SC1_{ic}$						7741.23	[0.000]			
$SC2_{ic}$						220.61	[0.000]			
$SC3_{ic}$						86.86	[0.000]			
$SC4_{ic}$						241.93	[0.000]			
$SC5_{ic}$						50.86	[0.000]			
$SC6_{ic}$						53.00	[0.000]			
Coeff. of residuals from the first-stage regressions (control-function approach):										
r1						-0.236***	(0.059)			
r2						-0.135	(0.11)			
r3						-0.18	(0.268)			
r4						0.247***	(0.079)			
r5						-0.546**	(0.222)			
r6						0.88***	(0.311)			
Joint significance of first-stage residuals in the main equation:										
						34.34	[0.000]			
Kleibergen-Paap rk LM statistic									136.837	[0.000]
Kleibergen-Paap rk Wald F statistic									22.149	
Hansen J statistic									0.21	[0.647]
Durbin-Wu-Hausman test									5.77	[0.000]

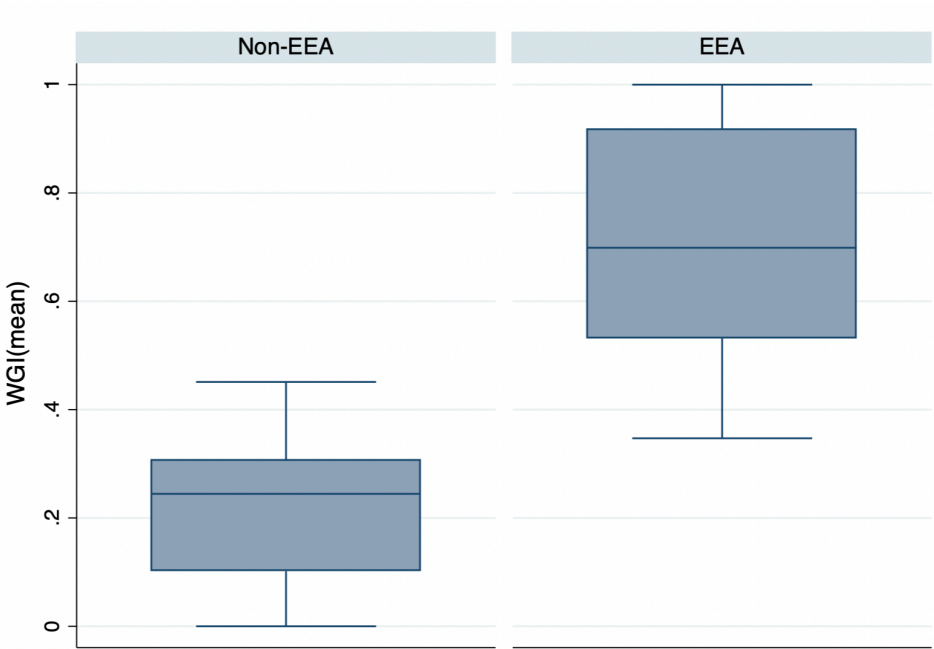
The standard errors in parentheses are heteroskedasticity-consistent for the ordered probit (I), OLS (II) and 2SLS (IV) approaches, while they are bootstrapped with 1000 replications for the ordered probit with CFA (III). We employ *, **, and *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively. P-values are presented in brackets. In columns (III) and (IV), the six variables $SC1_{ic}$, $SC2_{ic}$, $SC3_{ic}$, $SC4_{ic}$, $SC5_{ic}$ and $SC6_{ic}$ have been instrumented by their corresponding averaged levels among individuals of the same linguistic and religious origin in the community (NUTS2 level) and the number of children. † We report the average marginal effects for the highest score of tax morality.

2.6. Sensibility analysis

In this section, we evaluate whether the previous results hold for two different groups of countries based on their quality of governance. It could be important to make this distinction because the literature showed that social capital could substitute or complement the role that formal institutions play in the economy, depending on the level of institutional quality. In fact, Ahlerup et al. (2009) have demonstrated theoretically and empirically that social capital, measured by the level of interpersonal trust, tends to show its greatest effect on the economy at lower levels of institutional strength, while its externalities tend to vanish when institutions are well developed. The authors draw this conclusion by analyzing this relationship across two countries with different quality of institutions, namely Canada (strong institutions) and Nigeria (weak institutions). Similar evidence is provided in Guiso et al. (2004), who showed that the social capital, proxied by electoral turnout and blood donations, tends to show a larger effect on financial developments within Italian provinces where legal enforcement is weaker, namely where formal institutions may be intended as weak. Additionally, as previously discussed in the literature review section, also Andriani (2016) highlighted that in countries where formal institutions are generally inefficient, as in the case of Palestine, the voluntary associations may tend to substitute the role of institutions, and this could, in turn, be related to the members' tax morality.

To conduct our sensibility analysis, we thus propose a classification between countries belonging to the European Economic Area and Non-European Economic Area. In this way, we obtain two clusters of economies that are characterized by a large difference in the organization and quality of their institutions. This can be observed in Figure 2.3, which displays the normalized 0-1 averaged values of the Worldwide Governance Indicators (WGI) for the period 2017-2019, which constitute comparable country statistics for the following dimensions of governance: Voice and accountability; Political Stability and Absence of Violence/Terrorism; Government Effectiveness; Regulatory Quality; Rule of Law; Control of Corruption. As expected, the Mann-Whitney U test suggests that the average institutional quality in EEA and non-EEA countries is statistically different ($z = -7.114$; $p\text{-value} < 0.000$).

Fig. 2.3. Average Worldwide Governance Indicators in EEA and Non-EEA countries for the period 2017-2019



Source: Own elaboration, based on information from the Worldwide Governance Indicators of the World Bank. Note: To facilitate the visualization, the box plot does not display outliers.

Table 2.5 presents the estimates of Equation (2.1) with Ordered Probit (CFA) and Two Stages Least Squares (2SLS) methods for citizens belonging to countries of the EEA and Non-EEA, considering the integrating approach. For the sake of brevity, in this occasion, we only display the estimated coefficients and marginal effects of our variables of interest. As one can see, our main conclusions hold for the two groups of countries. That is, the membership in bridging social networks according to external and internal approaches ($SC1_{ic}$) is significantly associated with higher levels of tax morale, while the opposite is revealed for those social networks categorized as bonding in both approaches ($SC6_{ic}$). The estimated coefficients of other hybrid combinations of bridging/middle/bonding associations in the integrating approach show mixed signs, although most of them are statistically insignificant. However, interestingly, the influence of involvement in social networks on tax morale is quantitatively more intense for non-EEA countries.

Table 2.5. Results from Equation (2.1) for two different groups of countries, considering the “integrating” approach

Variables	Endogeneity corrected									
	EEA countries					Non-EEA countries				
	(I) Ordered probit with CFA			(II) 2SLS		(III) Ordered probit with CFA			(IV) 2SLS	
	Coeff	SE	Average ME †	Coeff	SE	Coeff.	SE	Average ME †	Coeff	SE
<i>SC1_{ic}</i> (bridging-bridging)	0.175***	(0.047)	0.045	0.091***	(0.024)	1.077**	(0.537)	0.333	1.118*	(0.614)
<i>SC2_{ic}</i> (bridging-middle)	0.084	(0.095)	0.021	0.137**	(0.054)	-0.586	(0.415)	-0.102	-0.087	(0.486)
<i>SC3_{ic}</i> (middle-middle)	-0.120	(0.154)	-0.031	-0.059	(0.116)	8.260**	(3.188)	2.558	4.893	(3.702)
<i>SC4_{ic}</i> (bridging-bonding)	-0.143**	(0.062)	-0.037	-0.076*	(0.040)	-1.305**	(0.628)	-0.404	-0.757	(0.597)
<i>SC5_{ic}</i> (middle-bonding)	0.479	(0.317)	0.123	0.239	(0.150)	0.159	(1.933)	0.049	-0.583	(1.801)
<i>SC6_{ic}</i> (bonding-bonding)	-0.404***	(0.081)	-0.104	-0.310*	(0.173)	-9.963***	(3.535)	-3.086	-6.625**	(3.119)
Country variables	YES			YES		YES			YES	
Control variables	YES			YES		YES			YES	
Observations	31,635			31,635		12,646			12,646	
Joint significance of excluded instruments in the first-stage regressions for each potentially endogenous variable:										
<i>SC1_{ic}</i>	669.78	[0.000]				31.30	[0.000]			
<i>SC2_{ic}</i>	201.85	[0.000]				36.41	[0.000]			
<i>SC3_{ic}</i>	80.02	[0.000]				7.04	[0.000]			
<i>SC4_{ic}</i>	229.82	[0.000]				18.44	[0.000]			
<i>SC5_{ic}</i>	40.28	[0.000]				8.14	[0.000]			
<i>SC6_{ic}</i>	44.28	[0.000]				6.69	[0.000]			
Coeff. of residuals from the first-stage regressions (control-function approach):										
r1	-0.159***	(0.014)				-1.050*	(0.567)			
r2	-0.115	(0.081)				0.571	(0.401)			
r3	0.092	(0.185)				-8.262***	(3.165)			
r4	0.148**	(0.061)				1.245**	(0.615)			
r5	-0.451	(0.295)				-0.259	(1.824)			
r6	0.360***	(0.069)				9.861***	(3.514)			
Joint significance of first-stage residuals in the main equation:										
	0.900	[0.343]				21.17	[0.002]			
Kleibergen-Paap rk LM statistic				128.481	[0.000]				7.801	[0.020]
Kleibergen-Paap rk Wald F statistic				20.615					1.109	
Hansen J statistic				0.663	[0.415]				3.477	[0.062]
Durbin-Wu-Hausman test				3.00	[0.006]				15.73	[0.000]

The standard errors in parentheses are bootstrapped for the ordered probit with CFA (I and III) and heteroskedasticity-consistent for the 2SLS approach (II and IV). We employ *, **, and *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively. P-values are presented in brackets. In all cases, the six variables *SC1_{ic}*, *SC2_{ic}*, *SC3_{ic}*, *SC4_{ic}*, *SC5_{ic}* and *SC6_{ic}* have been instrumented by their corresponding averaged levels among individuals of the same linguistic and religious origin in the community (NUTS2 level) and the number of children. † We report the average marginal effects for the highest score of tax morality.

In line with the arguments provided by the literature, our evidence seems to support the idea that social capital generates externalities more (less) intensively in countries with weaker (stronger) institutions. This result reinforces the importance of a potential interaction between quality of institutions and the size of the externalities created by the social capital. In fact, where formal institutions are weak (Guiso et al., 2004), or perceived to be weak (Andriani, 2016), the role of social capital might become prominent through the development of informal institutions. Following the definition of North (1991), institutions may be seen as the rule of the game in the society, namely constraints created by citizens to shape their interactions. Therefore, these are essential to shape the behaviour at individual and aggregate level. In fact, the institutional context could be very important in explaining the true magnitude of volunteering in social activities not only on economic outcomes, but also on individual attitudes such as the tax morale.

Any government should thus take into account this potential substitutive effect between formal and informal institutions, in particular in less developed countries and/or regions, where the institutional quality tends to be relatively low (Huang and Wei, 2006). On the one hand, to increase tax compliance, governments should invest on improving the institutional transparency and the overall formal institutions efficiency, since it has been argued that larger institutional quality is associated with a larger tax morale, that is in turn negatively related to perceived and actual tax evasion (Frey and Torgler, 2007). On the other, in particular when the public sector is lacking institutional quality, the role of informal institutions cannot be neglected, and policies should focus on stimulate the development of bridging-type networks in the society.

2.7. Concluding remarks

The standard economic approach to tax evasion, based on the subjective cost-benefits model, has been broadly criticised for neglecting nonpecuniary factors in the taxpayer's behaviour. In fact, non-financial motivations may largely explain the degree of tax compliance of individuals. Among these, the tax morale, understood as the intrinsic willingness of people to pay taxes, has been demonstrated to be one of the key factors. Despite the extensive literature on its determinants, there has been little research on the effect of being involved in volunteering associations on the individual's attitude towards paying taxes.

This paper provides evidence on the relationship between associational involvement and the individual's willingness to pay taxes, reviewing citizens of 34 European countries. In contrast to previous studies in this strand of research, we differentiate between involvement in "bridging" and "bonding" social networks. To do so we apply three approaches, namely the "internal", "external" and "integrating" approach. These approaches consider the socio-demographic heterogeneity within associations, the interconnections between them, and a combination of both. Our estimated results show that individuals involved in bridging (bonding) voluntary associations tend to exhibit greater (less) levels of tax morale. This evidence remains robust for the three approaches and different estimation strategies. Further, we showed that the effect of associational involvement on tax morality is much larger (smaller) in countries where institutions are strong (weak).

According to this evidence, we formulate some policy implications which aim to generate positive externalities on the society resulting from an individual's improved attitude towards paying taxes. First, we suggest incentivising volunteering in more connected associations and in those that tend to include more heterogeneous members. Second, interconnections between diverse voluntary associations should be promoted, such as those favouring cross-network activities, which would increase the bridging potential of each group and, hence, could positively stimulate the members' willingness to contribute to public expenditures. Third, fostering member heterogeneity and integration within associations would be desirable to increase the bridging potential of the social networks in a country.

In conclusion, our research shows that the role of associational involvement may be crucial in shaping tax morality. Given its potentially heterogeneous impact, we argue that to correctly assess the effect of volunteering on civic values and personal attitudes, such as an individual's willingness to pay taxes, a precise distinction should be made between bridging and bonding associations. Additionally, as already discussed in the literature (i.e., Geys and Murdoch, 2010), we provide further evidence that supports the view that internal and external approaches should be considered as complementary. Indeed, we have found that the bridging-bonding rankings of associations classified according to these two approaches turn out to be weakly correlated. Hence, we emphasise the importance of applying an integrating approach in order to combine information from both aspects.

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Appendix A. Classification of voluntary organizations, according to the “internal” and “external” approaches

Table A1. Sum of normalized diversity scores, and their ranking on a scale from most bridging (1) to most bonding (11), according to the "internal" approach

Organization	Albania	Armenia	Austria	Azerbaijan	Belarus	Bosnia and Herzegovina	Bulgaria	Croatia	Czechia	Denmark	Estonia
Religion or church	1.209 (4)	1.619 (7)	0.142 (1)	1.466 (6)	1.264 (3)	0.572 (3)	1.470 (5)	0.895 (2)	2.265 (10)	0.218 (1)	0.866 (1)
Education, arts, music, or culture	1.182 (3)	1.070 (2)	0.356 (2)	1.589 (7)	0.601 (2)	0.735 (7)	2.152 (8)	2.334 (8)	1.863 (7)	2.130 (8)	2.171 (8)
Trade unions	2.644 (10)	1.534 (6)	1.328 (7)	1.312 (4)	0.191 (1)	1.261 (10)	2.402 (10)	2.239 (7)	1.098 (5)	1.466 (4)	1.225 (3)
Political groups	1.798 (7)	0.774 (1)	2.003 (10)	1.317 (5)	1.540 (5)	0.697 (6)	1.091 (3)	1.372 (4)	2.082 (9)	1.937 (6)	1.629 (7)
Environment and animal rights	1.067 (1)	2.612 (10)	1.496 (8)	0.903 (3)	1.755 (6)	0.503 (1)	1.318 (4)	0.880 (1)	0.571 (2)	1.677 (5)	1.342 (4)
Professional	1.508 (6)	1.385 (4)	1.762 (9)	0.744 (2)	1.487 (4)	0.848 (8)	1.787 (7)	1.921 (5)	1.899 (8)	2.069 (7)	2.331 (9)
Sports and recreation	1.965 (9)	1.113 (3)	0.835 (5)	3.553 (11)	1.975 (9)	1.106 (9)	2.227 (9)	2.464 (10)	1.005 (4)	0.960 (3)	1.344 (5)
Humanitarian or charitable	1.103 (2)	1.425 (5)	0.808 (4)	1.631 (8)	1.985 (10)	0.653 (5)	1.516 (6)	1.218 (3)	1.286 (6)	2.973 (11)	0.962 (2)
Consumers	3.351 (11)	1.814 (8)	3.075 (11)	1.794 (10)	3.292 (11)	5.000 (11)	2.926 (11)	2.344 (9)	2.317 (11)	2.351 (10)	4.000 (11)
Self-help and mutual aid groups	1.959 (8)	1.994 (9)	1.084 (6)	0.168 (1)	1.878 (8)	0.645 (4)	0.816 (2)	2.842 (11)	0.490 (1)	2.249 (9)	2.563 (10)
Others	1.490 (5)	3.073 (11)	0.781 (3)	1.700 (9)	1.790 (7)	0.531 (2)	0.726 (1)	2.043 (6)	0.686 (3)	0.839 (2)	1.555 (6)

	Finland	France	Georgia	Germany	Great Britain	Hungary	Iceland	Italy	Lithuania	Montenegro	Netherlands
Religion or church	1.746 (6)	2.311 (9)	1.264 (2)	0.234 (1)	0.636 (1)	0.868 (1)	1.274 (4)	0.676 (4)	2.182 (8)	0.922 (2)	1.238 (4)
Education, arts, music, or culture	1.593 (5)	1.542 (5)	1.443 (3)	0.742 (3)	1.170 (4)	2.119 (8)	0.971 (2)	0.641 (3)	0.904 (1)	2.846 (11)	0.997 (3)
Trade unions	1.172 (3)	2.602 (10)	1.864 (6)	1.905 (8)	1.920 (8)	0.917 (2)	0.588 (1)	0.916 (7)	1.621 (5)	2.253 (9)	1.555 (6)
Political groups	0.477 (2)	1.659 (7)	1.246 (1)	2.288 (9)	1.489 (5)	2.658 (10)	2.635 (10)	2.094 (10)	1.154 (2)	0.694 (1)	3.086 (11)
Environment and animal rights	2.054 (8)	1.128 (3)	2.948 (10)	1.611 (7)	2.084 (10)	0.927 (3)	1.410 (6)	0.910 (6)	2.240 (9)	2.699 (10)	1.546 (5)
Professional	2.007 (7)	1.884 (8)	1.778 (5)	2.615 (10)	1.695 (7)	1.837 (7)	1.619 (7)	1.580 (8)	2.635 (10)	1.821 (6)	1.964 (8)
Sports and recreation	0.473 (1)	0.616 (1)	3.639 (11)	0.378 (2)	0.662 (2)	2.529 (9)	1.196 (3)	0.893 (5)	1.620 (4)	1.736 (5)	0.282 (1)
Humanitarian or charitable	2.188 (9)	1.391 (4)	2.294 (8)	1.141 (6)	1.683 (6)	1.008 (4)	1.365 (5)	0.517 (2)	1.784 (7)	1.929 (7)	1.681 (7)
Consumers	3.476 (11)	3.301 (11)	2.458 (9)	2.940 (11)	3.551 (11)	2.788 (11)	2.706 (11)	1.902 (9)	3.761 (11)	0.983 (3)	2.571 (10)
Self-help and mutual aid groups	3.320 (10)	1.598 (6)	2.284 (7)	1.088 (5)	2.082 (9)	1.449 (5)	2.272 (8)	3.273 (11)	1.627 (6)	1.989 (8)	2.274 (9)
Others	1.252 (4)	1.011 (2)	1.459 (4)	1.024 (4)	0.893 (3)	1.682 (6)	2.347 (9)	0.104 (1)	1.440 (3)	1.174 (4)	0.959 (2)

Table A1. (continued)

	North Macedonia	Norway	Poland	Romania	Russia	Serbia	Slovakia	Slovenia	Spain	Sweden	Switzerland
Religion or church	2.449 (11)	1.798 (2)	1.351 (5)	2.470 (10)	1.154 (4)	0.417 (1)	0.692 (2)	0.406 (1)	2.256 (6)	0.553 (2)	1.350 (4)
Education, arts, music, or culture	1.173 (2)	3.075 (8)	1.465 (6)	1.998 (7)	1.190 (5)	2.063 (8)	0.956 (4)	1.615 (6)	2.366 (7)	1.275 (4)	0.617 (1)
Trade unions	1.739 (8)	2.120 (6)	0.904 (3)	1.753 (4)	0.442 (1)	1.502 (6)	0.533 (1)	2.153 (9)	2.660 (9)	1.673 (9)	2.284 (8)
Political groups	1.545 (5)	2.467 (7)	2.646 (10)	1.936 (6)	1.260 (6)	1.168 (4)	0.953 (3)	1.874 (8)	1.339 (1)	1.541 (6)	2.678 (10)
Environment and animal rights	1.256 (3)	3.524 (10)	0.799 (1)	0.874 (2)	3.100 (10)	1.136 (3)	1.859 (9)	0.527 (2)	1.803 (4)	1.511 (5)	1.991 (7)
Professional	1.717 (7)	2.120 (5)	1.814 (9)	3.243 (11)	0.820 (2)	2.114 (9)	1.816 (8)	2.443 (11)	3.164 (11)	1.959 (10)	2.400 (9)
Sports and recreation	1.282 (4)	1.264 (1)	1.712 (8)	2.353 (9)	1.463 (7)	2.410 (11)	1.572 (7)	1.872 (7)	1.750 (3)	0.287 (1)	0.670 (2)
Humanitarian or charitable	0.718 (1)	1.871 (4)	1.177 (4)	1.331 (3)	2.216 (9)	0.890 (2)	1.030 (5)	0.816 (4)	1.959 (5)	1.611 (8)	1.617 (5)
Consumers	1.924 (10)	3.827 (11)	3.210 (11)	2.270 (8)	3.138 (11)	1.937 (7)	2.518 (11)	2.204 (10)	2.592 (8)	1.543 (7)	1.920 (6)
Self-help and mutual aid groups	1.617 (6)	3.136 (9)	1.571 (7)	0.750 (1)	2.084 (8)	2.335 (10)	2.487 (10)	0.669 (3)	2.886 (10)	2.171 (11)	3.157 (11)
Others	1.757 (9)	1.816 (3)	0.832 (2)	1.796 (5)	1.130 (3)	1.472 (5)	1.033 (6)	1.428 (5)	1.717 (2)	0.790 (3)	1.284 (3)

The diversity score in each country have been constructed considering the following socio-demographic characteristics: religion, language, age, gender and education.

Table A2. The size-corrected measure of interconnections in each specific association type, and their ranking on a scale from most connected (1) to most isolated (11), according to the "external" approach

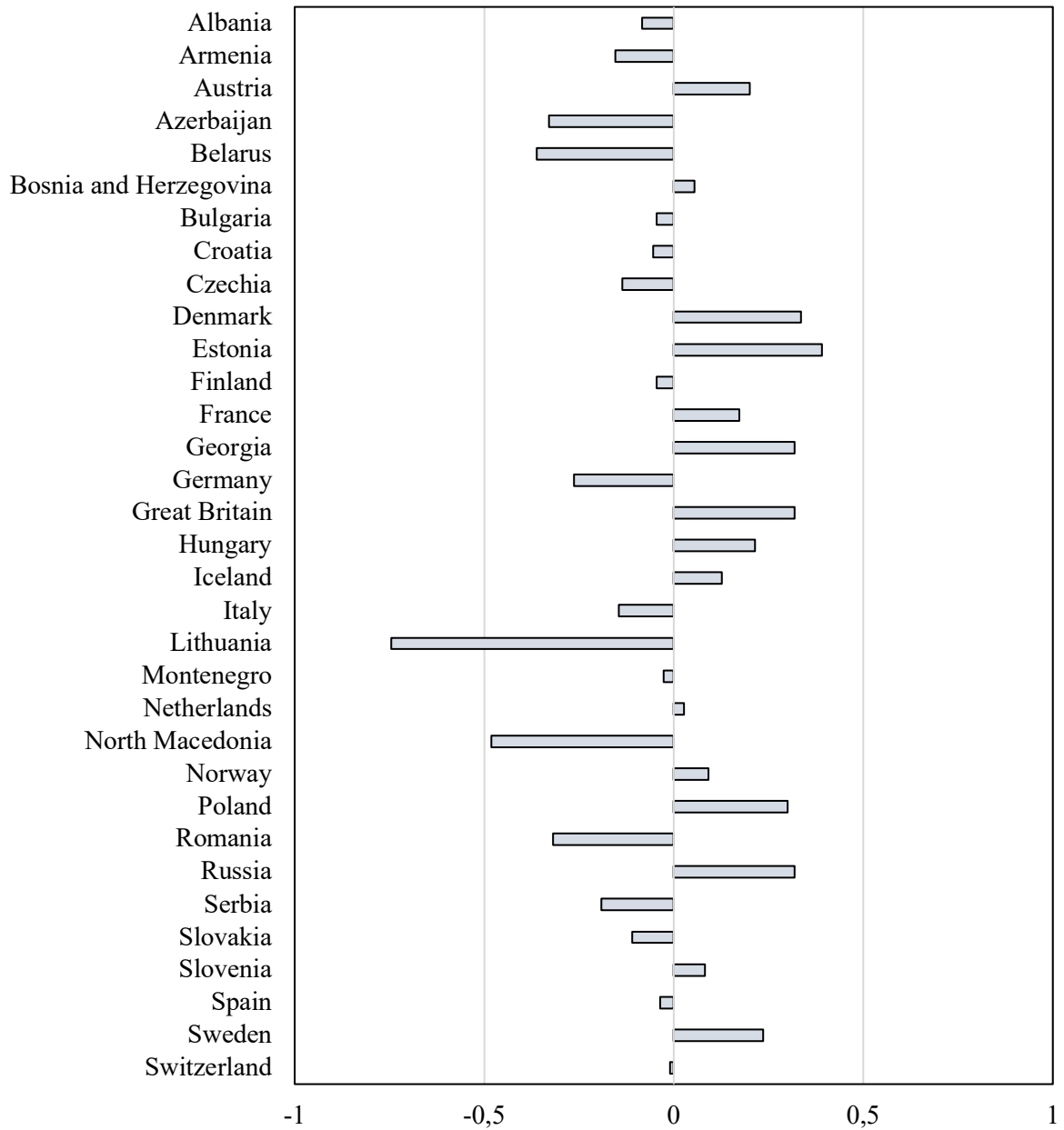
	Albania	Armenia	Austria	Azerbaijan	Belarus	Bosnia and Herzegovina	Bulgaria	Croatia	Czechia	Denmark	Estonia
Religion or church	0.139 (1)	0.079 (1)	0.038 (1)	0.006 (3)	-0.025 (11)	-0.003 (6)	0.045 (2)	0.021 (2)	0.068 (1)	0.045 (1)	0.021 (3)
Education, arts, music, or culture	-0.005 (6)	-0.023 (8)	-0.053 (11)	0.003 (5)	-0.017 (9)	-0.040 (11)	-0.054 (10)	-0.037 (10)	-0.088 (11)	-0.018 (9)	-0.076 (11)
Trade unions	0.011 (4)	-0.022 (7)	-0.038 (10)	0.011 (2)	0.008 (5)	0.000 (3)	0.050 (1)	0.002 (6)	0.027 (4)	-0.032 (11)	0.012 (4)
Political groups	0.047 (3)	0.045 (2)	-0.017 (9)	-0.013 (11)	0.017 (4)	-0.008 (9)	0.037 (3)	-0.008 (7)	0.014 (5)	0.008 (4)	-0.007 (8)
Environment and animal rights	-0.046 (8)	-0.033 (10)	0.011 (5)	-0.005 (7)	0.017 (2)	0.000 (5)	-0.037 (9)	-0.022 (9)	-0.047 (10)	-0.008 (7)	0.006 (5)
Professional	-0.041 (7)	-0.024 (9)	-0.004 (7)	-0.011 (10)	-0.017 (8)	-0.006 (7)	-0.007 (7)	0.020 (3)	-0.015 (8)	-0.002 (6)	-0.032 (10)
Sports and recreation	-0.069 (11)	-0.035 (11)	-0.013 (8)	0.015 (1)	-0.023 (10)	-0.007 (8)	0.011 (5)	0.013 (4)	0.040 (3)	-0.014 (8)	0.041 (2)
Humanitarian or charitable	-0.052 (10)	-0.009 (6)	-0.002 (6)	-0.008 (9)	-0.003 (7)	-0.016 (10)	-0.055 (11)	-0.064 (11)	-0.039 (9)	-0.019 (10)	-0.015 (9)
Consumers	0.005 (5)	0.014 (3)	0.024 (4)	-0.006 (8)	0.024 (1)	0.008 (2)	-0.004 (6)	0.005 (5)	-0.003 (6)	0.001 (5)	0.006 (6)
Self-help and mutual aid groups	-0.046 (8)	0.003 (5)	0.026 (3)	0.003 (6)	0.017 (2)	0.000 (4)	-0.022 (8)	-0.009 (8)	-0.009 (7)	0.016 (3)	0.001 (7)
Others	0.057 (2)	0.006 (4)	0.027 (2)	0.006 (3)	0.000 (6)	0.072 (1)	0.035 (4)	0.079 (1)	0.052 (2)	0.021 (2)	0.043 (1)

	Finland	France	Georgia	Germany	Great Britain	Hungary	Iceland	Italy	Lithuania	Montenegro	Netherlands
Religion or church	0.004 (6)	0.006 (7)	0.047 (1)	-0.001 (8)	0.028 (4)	0.089 (1)	-0.006 (8)	-0.002 (7)	0.093 (1)	0.007 (5)	0.036 (3)
Education, arts, music, or culture	-0.046 (11)	-0.058 (11)	-0.097 (11)	-0.064 (11)	-0.056 (11)	-0.108 (11)	-0.003 (7)	-0.034 (11)	-0.096 (11)	-0.053 (11)	-0.053 (10)
Trade unions	0.034 (1)	-0.004 (8)	-0.001 (9)	-0.001 (9)	0.029 (3)	0.028 (3)	0.008 (3)	-0.001 (5)	-0.009 (7)	0.016 (3)	-0.002 (7)
Political groups	0.017 (3)	0.008 (5)	0.022 (4)	0.012 (3)	0.004 (6)	0.024 (4)	-0.010 (9)	-0.010 (8)	-0.025 (9)	0.001 (6)	0.020 (4)
Environment and animal rights	0.005 (5)	-0.009 (9)	0.000 (8)	0.007 (4)	-0.022 (8)	-0.015 (8)	0.001 (6)	-0.013 (10)	0.006 (5)	0.019 (2)	-0.062 (11)
Professional	-0.015 (9)	0.007 (6)	0.006 (7)	0.005 (6)	-0.038 (9)	-0.012 (7)	-0.015 (11)	-0.002 (6)	0.039 (2)	-0.003 (7)	-0.003 (8)
Sports and recreation	-0.002 (8)	0.036 (1)	-0.048 (10)	0.032 (1)	0.044 (1)	-0.027 (10)	0.013 (1)	0.031 (1)	-0.038 (10)	0.047 (1)	0.043 (1)
Humanitarian or charitable	-0.033 (10)	-0.040 (10)	0.006 (6)	-0.030 (10)	-0.044 (10)	-0.015 (8)	-0.010 (10)	-0.013 (9)	-0.019 (8)	-0.037 (10)	-0.039 (9)
Consumers	0.027 (2)	0.010 (4)	0.032 (2)	0.029 (2)	0.014 (5)	0.035 (2)	0.005 (5)	0.008 (3)	0.035 (3)	-0.003 (8)	0.006 (6)
Self-help and mutual aid groups	0.010 (4)	0.017 (3)	0.011 (5)	0.003 (7)	0.003 (7)	0.002 (5)	0.008 (4)	0.005 (4)	0.004 (6)	0.012 (4)	0.037 (2)
Others	0.000 (7)	0.028 (2)	0.022 (3)	0.007 (5)	0.037 (2)	0.000 (6)	0.010 (2)	0.030 (2)	0.011 (4)	-0.007 (9)	0.018 (5)

Table A2. (continued)

	North Macedonia	Norway	Poland	Romania	Russia	Serbia	Slovakia	Slovenia	Spain	Sweden	Switzerland
Religion or church	0.058 (2)	0.019 (1)	0.029 (3)	0.054 (2)	0.011 (3)	0.023 (2)	0.013 (2)	0.119 (1)	0.100 (1)	-0.025 (10)	0.034 (1)
Education, arts, music, or culture	0.003 (5)	-0.012 (10)	-0.076 (11)	-0.087 (11)	-0.064 (11)	-0.015 (9)	-0.033 (11)	-0.077 (11)	-0.060 (11)	-0.006 (5)	-0.048 (11)
Trade unions	0.009 (4)	0.008 (4)	0.041 (2)	0.005 (6)	0.042 (1)	-0.023 (10)	0.005 (5)	0.022 (4)	0.040 (2)	-0.006 (6)	0.017 (4)
Political groups	0.059 (1)	-0.001 (7)	0.005 (6)	0.034 (3)	-0.001 (6)	0.002 (6)	0.000 (7)	0.031 (3)	-0.002 (5)	0.006 (4)	0.005 (7)
Environment and animal rights	-0.047 (11)	-0.006 (8)	0.006 (5)	-0.006 (7)	-0.003 (7)	-0.013 (8)	0.005 (4)	-0.024 (8)	-0.027 (10)	-0.007 (7)	-0.026 (9)
Professional	-0.015 (8)	0.000 (6)	0.001 (7)	0.014 (5)	-0.005 (8)	-0.007 (7)	-0.006 (9)	-0.034 (9)	-0.025 (9)	-0.008 (8)	-0.031 (10)
Sports and recreation	-0.001 (6)	-0.010 (9)	-0.025 (9)	-0.065 (10)	-0.015 (10)	0.003 (5)	-0.003 (8)	-0.003 (6)	-0.016 (8)	0.033 (2)	0.026 (2)
Humanitarian or charitable	-0.047 (10)	-0.027 (11)	-0.053 (10)	-0.037 (9)	-0.013 (9)	-0.040 (11)	0.009 (3)	-0.063 (10)	0.010 (3)	-0.035 (11)	-0.020 (8)
Consumers	-0.011 (7)	0.000 (5)	0.024 (4)	0.070 (1)	0.011 (4)	0.021 (4)	0.019 (1)	0.009 (5)	-0.013 (7)	-0.013 (9)	0.013 (5)
Self-help and mutual aid groups	-0.028 (9)	0.013 (3)	-0.006 (8)	-0.011 (8)	0.010 (5)	0.027 (1)	0.003 (6)	-0.024 (7)	0.006 (4)	0.008 (3)	0.020 (3)
Others	0.020 (3)	0.018 (2)	0.053 (1)	0.030 (4)	0.027 (2)	0.022 (3)	-0.013 (10)	0.045 (2)	-0.012 (6)	0.052 (1)	0.009 (6)

Figure A1. Correlation across “internal” and “external” rankings



Appendix B. Robustness check

Table B1. Results from Equation (2.1) with the “internal” approach, considering SC'_{ic} , HT_{ic} and VT_{ic} as potential endogenous variables

Variables	(I) Ordered probit with CFA			(II) 2SLS	
	Coeff.	SE	Average ME †	Coeff.	SE
$BridgingSC_{ic}^{Int}$	0.098**	(0.040)	0.027	0.040*	(0.023)
$MiddleSC_{ic}^{Int}$	0.176*	(0.104)	0.048	0.143**	(0.066)
$BondingSC_{ic}^{Int}$	-0.586***	(0.155)	-0.160	-0.400***	(0.095)
Control variables	YES			YES	
Country dummies	YES			YES	
Observations	44,195			44,195	
Log-likelihood	-33661.36				
Joint significance of excluded instruments in the first-stage regressions for each potentially endogenous variable:					
$BridgingSC_{ic}^{Int}$	612.59	[0.000]			
$MiddleSC_{ic}^{Int}$	160.72	[0.000]			
$BondingSC_{ic}^{Int}$	82.02	[0.000]			
HT_{ic}	147.52	[0.000]			
VT_{ic}	277.11	[0.000]			
Coeff. of residuals from first stages:					
r1	-0.091**	(0.041)			
r2	-0.189*	(0.105)			
r3	0.55***	(0.155)			
r4	-0.431***	(0.102)			
r5	0.379***	(0.077)			
Joint significance of first-stage residuals in the main equation:					
	55.63	[0.000]			
Kleibergen-Paap rk LM statistic				213.798	[0.000]
Kleibergen-Paap rk Wald F statistic				41.955	
Hansen J statistic				1.065	[0.302]
Durbin-Wu-Hausman test				19.25	[0.000]

The standard errors in parentheses are bootstrapped with 1000 replications for the ordered probit with CFA (I) and heteroskedasticity-consistent for the 2SLS approach (II). We employ *, **, and *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively. P-values are presented in brackets. The variables SC'_{ic} , HT_{ic} and VT_{ic} have been instrumented by their corresponding averaged levels among individuals of the same linguistic and religious origin in the community (NUTS2 level) and the number of children. † We report the average marginal effects for the highest score of tax morality.

Table B2. Results from Equation (2.1) with the “external” approach, considering SC'_{ic} , HT_{ic} and VT_{ic} as potential endogenous variables

Variables	(I) Ordered probit with CFA			(II) 2SLS	
	Coeff.	SE	Average ME †	Coeff.	SE
$BridgingSC'_{ic}^{Ext}$	0.130**	(0.056)	0.035	0.071***	-0.031
$MiddleSC'_{ic}^{Ext}$	-0.101	(0.158)	-0.028	-0.028	-0.097
$BondingSC'_{ic}^{Ext}$	-0.121*	(0.071)	-0.033	-0.097***	(0.042)
Control variables	YES			YES	
Country dummies	YES			YES	
Observations	44,195			44,195	
Log-likelihood	-33671.406				
Joint significance of excluded instruments in the first-stage regressions for each potentially endogenous variable:					
$BridgingSC'_{ic}^{Ext}$	612.59	[0.000]			
$MiddleSC'_{ic}^{Ext}$	160.72	[0.000]			
$BondingSC'_{ic}^{Ext}$	82.02	[0.000]			
HT_{ic}	147.52	[0.000]			
VT_{ic}	277.11	[0.000]			
Coeff. of residuals from first stages:					
r1	-0.141**	(0.057)			
r2	0.085	(0.159)			
r3	0.115	(0.072)			
r4	-0.463***	(0.096)			
r5	0.391***	(0.076)			
Joint significance of first-stage residuals in the main equation:					
	47.96	[0.000]			
Kleibergen-Paap rk LM statistic				243.354	[0.000]
Kleibergen-Paap rk Wald F statistic				47.45	
Hansen J statistic				1.636	[0.201]
Durbin-Wu-Hausman test				16.46	[0.000]

The standard errors in parentheses are bootstrapped with 1000 replications for the ordered probit with CFA (I) and heteroskedasticity-consistent for the 2SLS approach (II). We employ *, **, and *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively. P-values are presented in brackets. The variables SC'_{ic} , HT_{ic} and VT_{ic} have been instrumented by their corresponding averaged levels among individuals of the same linguistic and religious origin in the community (NUTS2 level) and the number of children. † We report the average marginal effects for the highest score of tax morality.

Table B3. Results from Equation (2.1) with the “integrating” approach, considering SC'_{ic} , HT_{ic} and VT_{ic} as potential endogenous variables

Variables	(I) Ordered probit with CFA			(II) 2SLS	
	Coeff.	SE	Average ME †	Coeff.	SE
$SC1_{ic}$	0.235***	(0.061)	0.064	0.117***	(0.038)
$SC2_{ic}$	0.009	(0.108)	0.003	0.067	(0.100)
$SC3_{ic}$	0.106	(0.275)	0.029	0.133	(0.117)
$SC4_{ic}$	-0.264***	(0.078)	-0.072	-0.158***	(0.048)
$SC5_{ic}$	0.575**	(0.231)	0.157	0.300	(0.183)
$SC6_{ic}$	-0.891***	(0.317)	-0.243	-0.653***	(0.131)
Control variables	YES			YES	
Country dummies	YES			YES	
Observations	44,195			44,195	
Log-likelihood	-33648.33				
Joint significance of excluded instruments in the first-stage regressions for each potentially endogenous variable:					
$SC1_{ic}$	576.16	[0.000]			
$SC2_{ic}$	170.23	[0.000]			
$SC3_{ic}$	64.09	[0.000]			
$SC4_{ic}$	188.83	[0.000]			
$SC5_{ic}$	39.17	[0.000]			
$SC6_{ic}$	40.62	[0.000]			
HT_{ic}	90.56	[0.000]			
VT_{ic}	165.71	[0.000]			
Coeff. of residuals from first stages:					
r1	-0.214***	(0.063)			
r2	-0.04	(0.11)			
r3	-0.137	(0.276)			
r4	0.252***	(0.08)			
r5	-0.558**	(0.231)			
r6	0.842***	(0.316)			
r7	-0.453***	(0.1)			
r8	0.401***	(0.079)			
Joint significance of first-stage residuals in the main equation:					
	67.44	[0.000]			
Kleibergen-Paap rk LM statistic				134.471	[0.000]
Kleibergen-Paap rk Wald F statistic				16.968	
Hansen J statistic				1.549	[0.213]
Durbin-Wu-Hausman test				13.16	[0.000]

The standard errors in parentheses are bootstrapped with 1000 replications for the ordered probit with CFA (I) and heteroskedasticity-consistent for the 2SLS approach (II). We employ *, **, and *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively. P-values are presented in brackets. The variables SC'_{ic} , HT_{ic} and VT_{ic} have been instrumented by their corresponding averaged levels among individuals of the same linguistic and religious origin in the community (NUTS2 level) and the number of children. † We report the average marginal effects for the highest score of tax morality.

Appendix C. Estimates for Equation (2.1) using alternative instrumental variables

Table C1. Results from Equation (2.1) with the “integrating” approach, instrumenting Social Capital variables with their second and third moments

Variables	(I) 2SLS		(II) 2SLS	
	Coeff	SE	Coeff	SE
$SC1_{ic}$	0.030***	(0.010)	0.060**	(0.023)
$SC2_{ic}$	-0.026*	(0.015)	-0.050	(0.032)
$SC3_{ic}$	-0.045**	(0.018)	-0.095**	(0.040)
$SC4_{ic}$	-0.023*	(0.014)	-0.051*	(0.029)
$SC5_{ic}$	0.010	(0.010)	0.006	(0.021)
$SC6_{ic}$	-0.037***	(0.013)	-0.080***	(0.028)
Control variables	YES		YES	
Country dummies	YES		YES	
Observations	45,087		45,087	
R ²	0.113		0.120	
Kleibergen-Paap rk LM statistic	1760.80	[0.000]	1760.80	[0.000]
Kleibergen-Paap rk Wald F statistic	729.04		729.04	
Hansen J statistic	8.79	[0.186]	10.54	[0.104]
Durbin-Wu-Hausman test	26.94	[0.000]	27.10	[0.000]

We employ *, **, and *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively. P-values are presented in brackets. Dependent variable is tax morale, measured on a 5-point scale in column (I) and 10-point scale in column (II). The variables SC'_{ic} have been instrumented by their corresponding second and third moments, following Lewbel (1997).

Chapter 3

Family affairs or Government's duty? The tax morality of a mobile society

3.1. Introduction

"No society can surely be flourishing and happy, of which the far greater part of the members are poor and miserable." A. Smith-Wealth of Nations (1776)

"Taxes are what we pay for civilized society." — Oliver Wendell Holmes, Jr., U.S. Supreme Court Justice

Taxes are what we pay for a flourishing future which, in turn, is undoubtedly based upon less inequality, where all the classes of population would have equal access to resources and opportunities (Alesina and Rodrik, 1994): this is the essential element for a civilized and progressive society. This mechanism is not only triggered by actual uneven income distribution, but it is also fostered by the transmission of such economic inequality (Chetty et al., 2014, 2016). In fact, several studies show that tax evasion and income inequality lead to the same, severe consequences: a downturn of the economic growth.¹⁶

The key of the "Fair Progress" (Narayan et al., 2018) stands in the possibility to endow each subject with the possibility to reach prosperity even if he/she is living in poverty: are people willing to pay taxes, financing Government resource distribution, if this does not happen? To this extent, we aim to revisit the linkage between attitude towards tax compliance and inequality, on the light of the intergenerational labour mobility, that may be seen as the dependence between sons' and parents' earnings (Nicoletti and Ermisch, 2008). Given the insights from the existing studies, this paper represents the first empirical work that aim to analyse the potential relationship between intergenerational mobility and personal attitude

¹⁶ See Bethencourt and Kunze (2019) for a discussion on tax morale and economic growth, while several studies outline the negative relationship between inequality and economic growth (see, for instance, Mo, 2000).

towards tax payment across European citizens. Employing survey data from the European Values Study (EVS, 2008) we disentangle this relationship according to the role of the welfare State and the role of family ties, as transmitter of wealth (Bourguignon, 1981) and ability (Jennings et al., 2009).

This chapter is structured as follows: Section 3.2 contains the literature review related to intergenerational mobility; Section 3.3 describes the link between mobility and tax morale and the research hypotheses; Section 3.4 deals with data and variables; Section 3.5 presents the empirical strategy; Section 3.6 points out the estimated results; and finally, in section 3.7 we give some concluding remarks.

3.2. Literature review on intergenerational mobility

The comparison between socio-economic position between individuals and their parents is defined as “intergenerational mobility” (see Piketty, 2000, for a review). Specifically, it is possible to gradually move downward on the social scale, where the sons’ situation is worsened with respect to the one of their parents (downward social mobility), to the situation in which the offspring’s economic status fully reflects the one of their family (social immobility), and, finally, to the best case where the economic position of the future generations outlines a substantial improvement compared with the one of their wellsprings (upward social mobility). Therefore, as in Erikson and Goldthorpe (2010), relative mobility refers intergenerational transmission of economic advantage and disadvantage.

Intergenerational mobility is a multidimensional concept that can be observed under different aspects, considering occupational status, social class, earnings, and income level. As argued by Beller and Hout (2006), these measures capture different aspects of personal socioeconomic advantage, despite these should be related to one another. In this vein, Torche (2015) analyzed all these measures of intergenerational mobility with an interdisciplinary view, discussing the possible discrepancies between occupational and economic mobility.

Literature about intergenerational mobility includes (i) theoretical models, (ii) empirical macro and micro founded research and (iii) empirical essays on related behavioural aspects. While the first two aspects have been largely investigated (for a review of the theoretical aspects see Piketty, 2000), the research on the behavioural attitudes related to intergenerational mobility has not been deeply addressed.

As regards the “inheritance channel”, there is not a unique version about the extent in which family shapes the hierarchical order. The Kaldorian class saving model points out that until poor save less than rich, wealth inequality would persist (Bourguignon, 1981), while Stiglitz (1969) focused on the compensation effect that the equalization of labour earning might have in deleting saving difference as steady state solution. Inheritance might regard not only the accumulation of wealth, but also the transmission of abilities: Lentz and Laband (1989) argued that the transfer of occupational-related human capital can be identified as one of the main causes that lead to the intergenerational transmission of employment. Therefore, the offspring may receive, directly or indirectly, some characteristics and preferences from their family (Jennings et al., 2009). In this sense, the economic status may be perpetuated across generations. In fact, there exists a relationship between economic inequality and intergenerational mobility, which takes the name of the “Great Gatsby Curve” from Corak (2013). The author analyzed empirically the linkage between income inequality and intergenerational mobility across OECD countries, showing that countries characterized by greater (lower) inequality of incomes tend to show lower (higher) intergenerational mobility. As a result, where inequality is higher, the economic advantages and disadvantages tend to persist between generations. This result has been subsequently confirmed in other empirical works considering different measures of mobility (see, for instance, Torche, 2015). The linkage between inequality and mobility has been also analyzed with a theoretical framework by Becker et al. (2018), who argued that economic status persists across generations even in a world with perfect capital markets and absent differences in innate ability.

The micro and macro structure aspects of the economy can be also crucial: the presence of some credit constraints could facilitate poverty and low mobility trap. For instance, Galor

and Zeira (1993) discussed that, in case of dynasties with little initial wealth, there is a high risk to remain poor forever, suffering from a threshold effect.

Some behavioural insights have been also included in theoretical models. For instance, the “Reference Group” theory of Merton and Kitt (1953) focuses on the importance of the identification scheme. This means that if low-income people follow a low-income reference group, they will never try to subvert their social position, and vice versa. Benabou (1993) considered the local segregation, the accumulation of future human capital disparity as factors amplifying racial, social discrimination and, more generally, social discrepancies.

A review of empirical essays estimating the size of the economic dependence between parents and sons across the different countries -with a specific focus on Europe- can be found in a recent contribution of Bukodi et al. (2020). Some studies, as Erikson and Goldthorpe (1992), Breen and Luijckx (2004) focused their cross-country mobility comparison on the different class structures, arguing that the stratification of the society shapes difficulties in relative mobility. Otherwise, Esping-Andersen and Wagner (2012) attributed such differences to the different levels of economic development achieved and to the different generosity or commitment level of the welfare state. The authors (Bukodi et al., 2020) updates previous studies showing how social-stratification and state intervention significantly affects the country’s rate of mobility.

Even if there is a plethora of papers measuring intergenerational mobility, few papers attempted to interpret the behavioural attitudes towards it.¹⁷ Some empirical evidence can be found in the work of Kluegel and Smith (2017), who discussed the sense of satisfaction and reward in individual abilities deriving from upward mobility, while Gugushvili (2016) focused on the perception of the surrounding economic prosperity on the basis of the individual of individual mobility. The same author (Gugushvili, 2019) contributed to the relationship between the perception of intergenerational mobility and the preferences for specific welfare programs, while Alesina et al. (2018) studied such linkage on the light of preferences for resource distribution. The conclusions of both papers are similar: less

¹⁷ Here, we focus on European cross-country comparisons, even if there is abundance of papers measuring mobility in the specific country context: Italy (Acciari et al., 2022), USA (Chetty et al., 2014), Germany (Bratberg et al., 2017), France (Lefranc and Trannoy, 2005) and so on.

optimism about future mobility leads to a higher claim for income-equalizing redistributive and welfare policies. These papers are the starting point to further studies, considering the citizen-state relationship in the light of future perspective of intergenerational mobility. This is the discussion we enrich with the present work.

3.3. Research hypotheses

The main intuition is that the higher is the intergenerational labour mobility, the higher will be the reward to the socio-political/welfare system. Existing studies show how subjects suffering from high social and economic inequalities are less prone to pay taxes (e.g. Williams and Krasniqi, 2017). However, these studies consider a static representation of within-generation inequalities, mostly employing income and/or wealth concentration measures such as the Gini index. Literature is lacking papers discussing how tax cheating might be perpetuated across generations given the plausible future persistence of social inequality. Indeed, as previously discussed, within and between generation inequalities are linked each other and they outline the level of well-being of a society (Corak, 2013; Torche, 2015; Becker et al., 2018). Inequalities across generations are usually defined by the intergenerational labour mobility, where high (low) mobility refers to an improvement (a worsening) of the job position of sons related to the one of their parents, leading to high (low) level of earnings and satisfaction. Narayan et al. (2018) argued that higher relative mobility in a society should be a goal for public policy, since it leads to fairness and economic efficiency, given that the economic success is not “transmitted” by inheritance, but it is obtained thanks to the individual effort. From here, the relative income mobility affects at least two social spheres: (i) the individual effort and success, and ii) the role of the State in crafting the right policies to promote and reward individual abilities.

In this paper, we extend this subject-formal institution relationship to the tax morale attitudes: a low (high) mobile society will be less (more) prone to pay taxes since they would be quite unsatisfied (satisfied) with the outcome of governments’ policies, seeing tax payments as an unsatisfactory non-rewarding investment. According to these arguments, we formulate the first research hypothesis:

Hypothesis 1: An increase in intergenerational labour mobility is positively related to an increase in tax morale.

This relationship might depend upon both (i) institutional and (ii) familiar interest in relative mobility. In fact, it could be crucial examining the relevance that Governments' welfare programmes have in influencing the intergenerational mobility. Different studies examined the prominent influence that the generosity of the welfare system has on the citizen-state relationship. For instance, Caferra et al. (2021) employ a category-based approach by diverse sorts of welfare states to show that trust in institutions has a larger effect on some personal attitudes (i.e., green decisions) in countries where government intervention is substantial (i.e., socio-democratic), while it vanishes in residual systems (liberal countries).

In a similar vein, we discuss as possible crucial point the different commitment of Government in defamiliarization policies (Esping-Andersen, 1999): as argued by García-Faroldi (2015), "Socio-democratic" (Denmark; Finland; Sweden) and "Liberal" (United Kingdom; Ireland) countries are those spending more in defamiliarization, which refers to policies aimed at reducing the dependence of the individual on the family. In a similar vein, this enriches the discussion proposed before considering the role of the State in dis-anchoring the sons' fate from the economic situation of their parents. We then formulate the respective second hypothesis:

Hypothesis 2: The relationship between intergenerational labour mobility and individual willingness to comply with taxes depends on the level of Governments' commitment towards the theme. In Countries where the Government is relatively low (high) committed in defamiliarization policies, the upward intergenerational mobility should not (should) be evaluated as a "Government's duty", hence this relationship would (would not) vanish among its citizens.

Additionally, the importance that each subject is attributing to intergenerational mobility, and, in certain sense, to the desire to be independent by his/her family financial situation, may depend on the actual strength of family ties. Marè et al. (2020) argued that when family

dependence is stronger, there might be less reliance on the role of state and more attention to the support of parents, leading to lower public taxes contributions. From a mobility perspective, we can argue that in the cases where family ties are stronger, the “dynastic persistence” or the “intergenerational inheritance” (Musick and Mare, 2004) of the economic status can be overweighted compared with individual ability. In our case, the presence (absence) of strong family linkages can be a predictor of the extent in which intergenerational mobility matters. Subjects with a stronger family dependence would not focus their attention to their own level of economic independence since they are anchored to their family support. Conversely, subjects claiming for economic independence would see the tax payment as an investment that could be or not rewarded by the welfare state. Thus, they may weigh more importance on the role of the State in guaranteeing intergenerational mobility. Thus, we formulate our third hypothesis:

Hypothesis 3: Subjects less anchored to their family (weak family ties) would give more importance of the intergenerational labour mobility in shaping tax morale. Otherwise, subjects more anchored to their familiar support (strong family ties) may not evaluate the importance of intergenerational mobility since their success can be seen as a “family affair”.

3.4. Data and variables

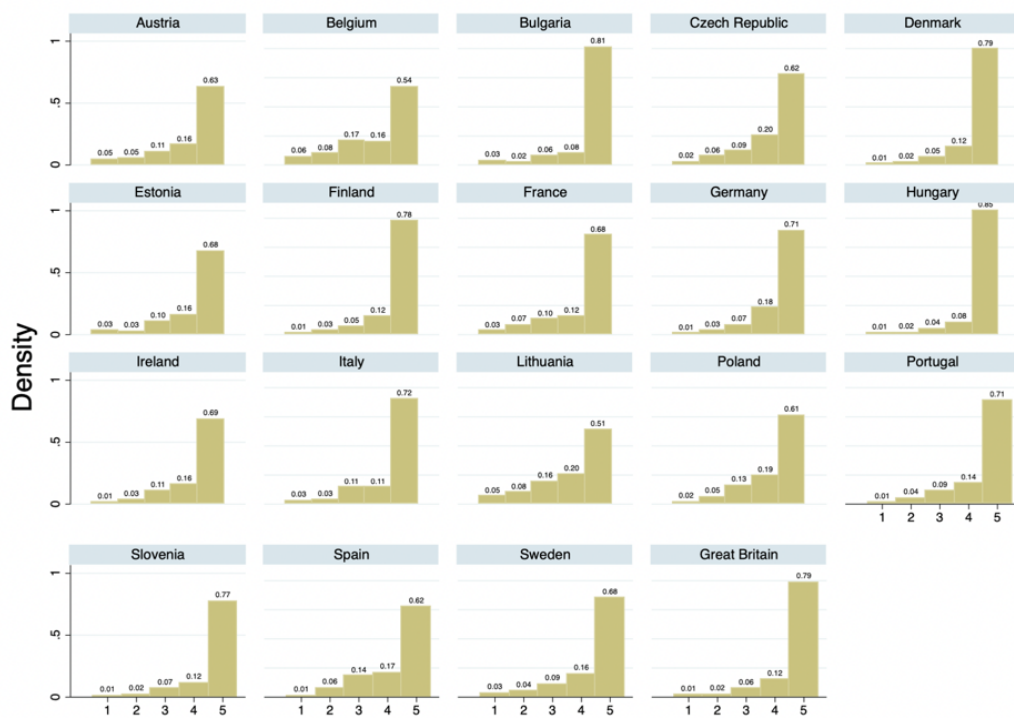
In order to test our research hypotheses, we exploit the survey data of the European Values Study (EVS 2008).¹⁸ The sample size is composed by 19096 observations, which represents the working age population of the following 19 European countries: Austria, Belgium, Bulgaria, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Lithuania, Poland, Portugal, Slovenia, Spain, Sweden, Great Britain. The variables employed can be shortly described as follows.

The dependent variable is tax morale. To construct the respective proxy, we consider the EVS question “*Please tell me for each of the following whether you think it can always be*

¹⁸ Differently from the first chapter, we use the previous wave of the EVS (2008) since the question used to construct the intergenerational mobility measure is not present in the latest survey (EVS 2017).

justified, never be justified, or something in between, using this card: Cheating on tax if you have the chance” on a Likert scale varying from 1 (never justifiable) to 10 (always justifiable).¹⁹ As common in the literature, and consistently with the first chapter of this thesis, we rescale the tax morale variable on a 5-point scale: value 1 = “low tax morale” (responses 9 and 10); value 2 = “middle lower tax morale” (responses 7 and 8); value 3 = “middle tax morale” (responses 5 and 6); value 4 = “middle upper tax morale” (responses 3 and 4); and value 5 = “high tax morale” (responses 1 and 2). The figure 3.1 shows the frequency of responses across all the countries. As one can see, the distribution of individual responses about tax cheating attitude varies a lot within and between countries.

Figure 3.1. Tax morality (1-5) by country



Source: Own elaboration, based on data from the EVS 2008.

Our main regressor is a measure of Intergenerational Labour Mobility at individual level (ILM_i). Drawing on Gugushvili (2016), we construct a normalized index of intergenerational

¹⁹ We also use the original 10-point scale variable to run the GLM-Poisson and the 2SLS estimates in the Appendix D.

mobility based on the comparison of respondents' and their parents' Standard International Socio-Economic Index of Occupational Status (ISEI). ISEI scores are generated from the International Standard Classification of Occupations (ISCO-88 codes), and they hierarchically rank occupations according to the average level of education and job earnings (Ganzeboom et al., 1992). The resulting ISEI code varies from 16 (lowest labour positions) to 90 (highest labour positions). Consequently, the maximum difference between the ISEI code of the respondent ($ISEI_r$) and the one of his/her parents ($ISEI_p$) ranges from -74 to +74. We construct as a measure of intergenerational labour mobility the simple difference between the labour position of the respondent respect to the father's one, namely: $ILM_i = ISEI_{r,i} - ISEI_{p,i}$. We then normalize the values from 0 to 1 with a min-max feature scaling procedure.²⁰ The higher (lower) the index value, the higher (lower) the intergenerational labour mobility, since subjects are moving upward (downward) on the intergenerational labour scale. The overall average level of ILM is 0,54 with a standard deviation of 0,12.

Table 3.1. Variables description and summary statistics

Variable	Description	Obs.	Mean	Std. Dev.	Min	Max
Dependent variable						
Tax Morale	" <i>Cheating on taxes if you have the chance</i> ": 1=always justified; 10=never justified	18,796	8.65	2.08	1	10
Main independent variable						
Intergenerational Mobility	Normalized difference: occupational status parents-occupational status respondent (ISEI)	15,370	0.54	0.12	.07	.99
Control variables						
Democratic spirit	" <i>Democracy is the best political system</i> ": 1 strongly disagree; 4= strongly agree	17,475	3.30	0.66	1	4
Government view	" <i>View government</i> ": 1=very bad; 10=very good	18,581	4.51	2.16	1	10
Agree with redistribution	" <i>Equality</i> ": 1=there should be greater incentives for individual effort; 10=incomes should be more equal	18,712	5.81	2.78	1	10
Religiosity	"Do you believe in God?" 1 yes, 0 no	17,275	0.68	0.47	0	1
Age	Age level, coded in a set of dummy variables, according to the following three categories:					
	15-29 years old	19,096	0.11	0.32	0	1
	30-49 years old	19,096	0.51	0.50	0	1
	50 and more years old	19,096	0.37	0.49	0	1
Gender	Dummy variable equal to 1 for female respondents and 0 otherwise.					
	Male	19,096	0.45	0.50	0	1
	Female	19,096	0.55	0.50	0	1

²⁰ $ILM_i^{norm} = \frac{ILM_i - \min(ILM)}{\max(ILM) - \min(ILM)}$

Table 3.1. (continued)

Marital status	Marital status, coded in a set of dummy variables, according to the following categories:					
	Married	18,920	0.58	0.49	0	1
	Registered	18,920	0.03	0.17	0	1
	Widowed	18,920	0.04	0.19	0	1
	Divorced	18,920	0.11	0.31	0	1
	Separated	18,920	0.02	0.15	0	1
	Never married	18,920	0.22	0.42	0	1
Income	Income level, coded in a set of dummy variables indicating the following three categories:					
	Low	15,204	0.26	0.44	0	1
	Medium	15,204	0.39	0.49	0	1
	High	15,204	0.35	0.48	0	1

As control variables, we include proxies of both personal values and preferences regarding the governments' actions, that, as shown in several studies, may be relevant in shaping tax morale (see Horodnic, 2018). In particular, we employ the *democratic spirit*, as proxy of both institutional and political preferences, the *view of Government*, as feedback of the overall political administration, and the *preferences towards the redistributive role of the State*. Additionally, we control for *age*, *gender*, *marital status* and *income classes* as classic socio-demographic control.²¹ The respective survey question and descriptive statistics of all the employed variables are visible in Table 3.1.

3.5. Empirical strategy

Considering the distribution of our dependent variable, we estimate an ordered probit and an ordinary least squares model, assuming as dependent variable the tax morale measure ranging from 1 to 5.²² Moreover, to account for the unobserved heterogeneity across countries at national level, we insert as regressor a dummy variable identifying each country of residence.

In order to test our three research hypotheses, we first analyse how the relationship between attitude towards tax paying and intergenerational mobility across all the sample. According

²¹ We do not include the level of education and occupational status as control variables, since they are considered for the construction of the ISEI index. Nevertheless, we have checked that our main results remain overall consistent including these variables among the regressors. For reasons of space, we do not include here this complementary analysis.

²² For the sake of robustness, in the Appendix D and E the reader can find GLM Poisson estimates employing the original distribution of the variable (1-10) and an Instrumental-Variables methodology (2SLS) employing tax morale on both 5 and 10-point scale.

to our first hypothesis, we expect the sign of the intergenerational mobility regressor to be positive and statistically significant.

Then, our objective is to disentangle how the relationship varies according to the (I) *type of welfare system*, as proxy of government effort in enhancing individual economic independence, and according to the (II) *strength of family ties*, as proxy of individual attitude towards independence. To do so, we employ a category-based approach exploiting the kind of welfare system and the strength of family ties as contextual variable.

- (I) As regards the role of government's commitment, we consider the different welfare systems as of the intensity of defamiliarization policies. Following the country aggregation of Esping-Andersen (1990) re-proposed in other studies (see, for instance, Caferra et al., 2021), we clustered citizens living in five kind of country groups: *Liberal* (UK, IE); *Socio-Democratic* (DK, FI, SE); *Mediterranean* (IT, ES, PT); *Central-Eastern* (BG, CZ, EE, HU, LT, PL, SI); *Conservative* (AT, FR, BE, DE). According to the second hypothesis, we expect to find a positive and statistically significant coefficient of intergenerational mobility only in Liberal and Socio-Democratic countries, namely the one in which the government is more committed in defamiliarization policies (García-Faroldi, 2015).
- (II) Regarding the role of family ties, inspired by Alesina and Giuliano (2010), Marè et al. (2020), exploiting the information from the EVS (2008) we construct a *family dependence index* the index taking the mean of the respondents' answer to three EVS question:
- Importance of family: "*how important is family in your life?*" 1=very important; 4=not at all important.
 - Importance of respecting parents: "*love and respect parents*" 1=*always love parents*; 2=*parents have to earn respect*.
 - Level parental duties toward sons: "*parents should sacrifice own wellbeing for their children*" 1=*agree*; 2=*disagree*.

We then split the sample accordingly into two clusters: “strong family ties” includes people who show a level of the family dependence index larger than the mean; “weak family ties” includes people who show a level of the family dependence index smaller than the mean. According to the third hypothesis, we expect to find a positive and statistically significant effect of the intergenerational mobility on tax morale among the cluster of subjects showing weak family ties only.

3.6. Results

3.6.1 Results by kind of welfare systems

Table 3.2 reports the ordered probit estimated coefficients and the average marginal effects (computed at the highest level of tax morale = 5) of each variable on the tax morale attitude, according to the type of welfare system as contextual variable. The first column shows the pooled estimation across all the observations available in the sample. The columns from two to six contain the results employing the category-based approach considering only respondents belonging to a State specific welfare regime.

As it is visible from the first column of Table 3.2, the coefficient identifying the effect of the intergenerational mobility supports our first hypothesis since, on aggregate, the intergenerational mobility is significantly related with a positive individual’s attitude towards paying taxes. Indeed, according to the average marginal effect, the probability of stating the highest level of tax morality significantly increases by 7.5% with a unit increase in intergenerational mobility. Focusing on the columns two to six, it is visible that our second hypothesis is also confirmed: an increase in intergenerational mobility significantly increases the willingness to pay taxes only for citizens belonging to Liberal and Socio-Democratic countries. A marginal increase in labour mobility increases the probability of stating the highest level of tax morale by 27,5% and 14,9% for citizens living in Liberal and Socio-Democratic, respectively. For citizens belonging to the other groups of countries, the impact of intergenerational mobility on tax morale is positive, although not statistically significant.

As regards the estimated coefficients of our control variables, we can see that they are overall in line with the existing evidence on the determinants of tax morale. As one can see, the estimates show that tax morale is significantly larger across subjects who show state that democracy is the best political system, across those who show larger political trust (i.e., those who positively evaluate the government), for individuals who claim for a more redistributive role of the State and across the religious ones. Moreover, the socio demographic characteristics of subjects significantly shape their tax morality. In line with the existing studies, we found that tax morale increases with age, across women, while it is lower across people who are divorced, separated, and not married. The impact of the income class of respondents on their attitude towards tax payment turned out to be overall statistically negligible. As we discussed in the first chapter, the potential effect of income on tax morality may be ambiguous and, in fact, some studies found the effect of income may be not statistically significant.

Table 3.2. Ordered probit estimates considering the different welfare states as category-based approach

Variables	(1)		(2)		(3)		(4)		(5)		(6)	
	Pooled		Liberal		Socio Democratic		Mediterranean		Conservative		CEE	
	Coeff.	Average ME †	Coeff.	Average ME †	Coeff.	Average ME †	Coeff.	Average ME †	Coeff.	Average ME †	Coeff.	Average ME †
Intergenerational mobility	0.225** (0.100)	0.075**	0.930*** (0.339)	0.275***	0.511** (0.256)	0.149**	0.028 (0.295)	0.009	0.129 (0.191)	0.047	0.122 (0.167)	0.039
Democratic spirit	0.093*** (0.020)	0.031***	0.057 (0.071)	0.017	0.180*** (0.067)	0.052***	0.227*** (0.061)	0.075***	0.018 (0.035)	0.007	0.117*** (0.032)	0.037***
View government	0.012* (0.006)	0.004*	0.027 (0.026)	0.008	0.011 (0.018)	0.003	-0.029 (0.019)	-0.010	0.016 (0.012)	0.006	0.024** (0.011)	0.007**
Agree with redistribution	0.026*** (0.005)	0.009***	0.058*** (0.020)	0.017***	0.061*** (0.016)	0.018***	0.003 (0.014)	0.001	0.026*** (0.009)	0.009***	0.019** (0.008)	0.006**
Religiosity	0.092*** (0.028)	0.031***	0.093 (0.107)	0.028	0.137* (0.072)	0.040*	-0.026 (0.098)	-0.009	0.087* (0.046)	0.032*	0.087* (0.050)	0.028*
Age	0.120*** (0.021)	0.040***	0.023 (0.083)	0.007	0.247*** (0.062)	0.072***	0.131** (0.059)	0.044**	0.089** (0.038)	0.033**	0.122*** (0.036)	0.039***
Gender	0.251*** (0.025)	0.083***	0.402*** (0.098)	0.119***	0.335*** (0.072)	0.098***	0.043 (0.073)	0.014	0.278*** (0.044)	0.102***	0.236*** (0.043)	0.075***
Marital status: Registered partnership	-0.044 (0.078)	-0.014	0.417 (0.458)	0.105	-0.138 (0.222)	-0.041	-0.029 (0.205)	-0.009	0.100 (0.124)	0.035	-0.290** (0.138)	-0.096**
Widowed	-0.072 (0.076)	-0.024	-0.254 (0.353)	-0.081	-0.089 (0.252)	-0.026	0.138 (0.314)	0.042	-0.144 (0.142)	-0.053	-0.034 (0.104)	-0.011
Divorced	-0.152*** (0.042)	-0.051***	0.104 (0.179)	0.030	-0.168 (0.129)	-0.050	-0.626*** (0.127)	-0.227***	-0.086 (0.074)	-0.031	-0.146** (0.065)	-0.047**
Separated	-0.266*** (0.081)	-0.091***	-0.123 (0.187)	-0.038	-0.153 (0.285)	-0.045	-0.042 (0.196)	-0.014	-0.435*** (0.142)	-0.165***	-0.213 (0.190)	-0.070
Never married	-0.134*** (0.034)	-0.045***	-0.016 (0.132)	-0.005	-0.129 (0.093)	-0.038	-0.284*** (0.090)	-0.097***	-0.100* (0.060)	-0.037*	-0.123** (0.060)	-0.039**
Income: Medium	-0.008 (0.035)	-0.003	0.205 (0.139)	0.062	-0.035 (0.100)	-0.010	0.015 (0.101)	0.005	0.025 (0.063)	0.009	-0.064 (0.057)	-0.020
High	-0.049 (0.037)	-0.016	0.163 (0.145)	0.050	0.013 (0.113)	0.004	0.003 (0.102)	0.001	0.070 (0.067)	0.026	-0.240*** (0.060)	-0.077***
Country dummies	YES		YES		YES		YES		YES		YES	
Observations	10,471		787		1,565		1,245		3,026		3,885	
Pseudo R ²	0.037		0.041		0.044		0.035		0.024		0.0445	

The standard errors in parentheses are heteroskedasticity-consistent. We employ *, **, and *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively. † We report the average marginal effects for the highest score of tax morality.

3.6.2 Results by strength of family ties

Table 3.3 reports the ordered probit estimates according to the group of citizens clustered by the strength of family ties. Also in this case, the column one shows the results of the pooled regression across all the sample, while columns two and three report the estimates for subjects showing family ties lower and higher than the aggregate average, respectively.

As one can see from the columns 2 and 3 of table 3.3, the intergenerational mobility is significantly and positively related to tax morale only across subjects less anchored to their family context (weak family ties). For those subjects who show a family dependence index lower than the aggregate average, an increase in one percentage point of intergenerational mobility leads to a significant increase in the probability of stating the highest level of tax morale, with an average marginal effect of 17%. The average marginal effect of intergenerational mobility on tax morale is still positive and equal to 3.9% for subjects showing strong family ties, although it is not statistically significant. This result provides evidence about our third hypothesis.

Also in this case, the magnitude of control variables remained overall reasonable and in line with previous estimates. For the sake of robustness, we show that the magnitude of coefficients and their statistical relevance support our research hypotheses also by running the estimation according to the OLS method. Table 3.4 reports the OLS estimates of the pooled model (column 1), the category-based approach according to the welfare system (columns 2 to 6) and family ties (columns 7 and 8).

Table 3.3. Ordered probit estimates considering the strength of family ties as category-based approach

Variables	(1)		(2)		(3)	
	Pooled		Weak family ties		Strong family ties	
	Coeff.	Average ME †	Coeff.	Average ME †	Coeff.	Average ME †
Intergenerational mobility	0.225** (0.100)	0.075**	0.478*** (0.181)	0.170***	0.124 (0.120)	0.039
Democratic spirit	0.093*** (0.020)	0.031***	0.151*** (0.036)	0.054***	0.061** (0.024)	0.019**
View government	0.012* (0.006)	0.004*	0.021* (0.012)	0.007*	0.009 (0.008)	0.003
Agree with redistribution	0.026*** (0.005)	0.009***	0.038*** (0.010)	0.013***	0.023*** (0.006)	0.007***
Religiosity	0.092*** (0.028)	0.031***	0.069 (0.050)	0.025	0.082** (0.034)	0.026**
Age	0.120*** (0.021)	0.040***	0.104*** (0.040)	0.037***	0.132*** (0.026)	0.042***
Gender	0.251*** (0.025)	0.083***	0.250*** (0.047)	0.089***	0.250*** (0.030)	0.080***
Marital status:						
Registered partnership	-0.044 (0.078)	-0.014	-0.034 (0.146)	-0.012	-0.026 (0.093)	-0.008
Widowed	-0.072 (0.076)	-0.024	-0.004 (0.136)	-0.001	-0.085 (0.091)	-0.027
Divorced	-0.152*** (0.042)	-0.051***	-0.042 (0.074)	-0.015	-0.177*** (0.051)	-0.058***
Separated	-0.266*** (0.081)	-0.091***	-0.038 (0.146)	-0.014	-0.314*** (0.098)	-0.106***
Never married	-0.134*** (0.034)	-0.045***	-0.126** (0.059)	-0.045**	-0.081* (0.042)	-0.026*
Income:						
Medium	-0.008 (0.035)	-0.003	-0.040 (0.063)	-0.014	0.002 (0.042)	0.001
High	-0.049 (0.037)	-0.016	-0.001 (0.067)	-0.000	-0.063 (0.044)	-0.020
Country dummies	YES		YES		YES	
Observations	10,471		2,773		7,698	
Pseudo R ²	0.078		0.039		0.036	

The standard errors in parentheses are heteroskedasticity-consistent. We employ *, **, and *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively. † We report the average marginal effects for the highest score of tax morality.

Table 3.4. Ordinary least squares estimates considering welfare states and strength of family ties as category-based approach

	(1) Pooled	(2) Liberal	(3) Socio democratic	(4) Mediterranean	(5) Conservative	(6) CEE	(7) Weak family	(8) Strong family
Intergenerational mobility	0.188** (0.075)	0.462** (0.187)	0.299* (0.153)	0.009 (0.228)	0.120 (0.169)	0.187 (0.122)	0.362** (0.147)	0.122 (0.086)
Democratic spirit	0.072*** (0.016)	0.016 (0.048)	0.120** (0.047)	0.162*** (0.050)	0.026 (0.032)	0.085*** (0.023)	0.135*** (0.031)	0.042** (0.018)
View government	0.013*** (0.005)	0.017 (0.017)	0.012 (0.011)	-0.019 (0.015)	0.022** (0.010)	0.018** (0.008)	0.020** (0.010)	0.012** (0.006)
Agree with redistribution	0.019*** (0.004)	0.032** (0.012)	0.033*** (0.010)	0.004 (0.010)	0.022*** (0.008)	0.015** (0.006)	0.032*** (0.008)	0.015*** (0.004)
Religiosity	0.069*** (0.021)	0.083 (0.065)	0.065 (0.044)	-0.000 (0.080)	0.092** (0.041)	0.046 (0.036)	0.064 (0.042)	0.057** (0.025)
Age	0.083*** (0.016)	0.032 (0.052)	0.131*** (0.040)	0.102** (0.042)	0.070** (0.033)	0.082*** (0.026)	0.074** (0.033)	0.089*** (0.018)
Gender	0.185*** (0.019)	0.223*** (0.061)	0.204*** (0.043)	0.027 (0.055)	0.245*** (0.038)	0.167*** (0.031)	0.201*** (0.038)	0.178*** (0.022)
Marital status:								
Registered partnership	-0.034 (0.062)	0.161 (0.256)	-0.140 (0.169)	-0.014 (0.179)	0.080 (0.113)	-0.155 (0.096)	0.009 (0.127)	-0.033 (0.072)
Widowed	-0.060 (0.051)	-0.213 (0.291)	-0.016 (0.096)	0.052 (0.155)	-0.140 (0.122)	-0.027 (0.064)	0.017 (0.105)	-0.075 (0.058)
Divorced	-0.119*** (0.032)	0.082 (0.099)	-0.126 (0.081)	-0.483*** (0.127)	-0.094 (0.065)	-0.095* (0.049)	-0.042 (0.061)	-0.131*** (0.038)
Separated	-0.192*** (0.070)	-0.026 (0.121)	-0.124 (0.222)	0.008 (0.136)	-0.403*** (0.153)	-0.133 (0.139)	0.001 (0.121)	-0.241*** (0.085)
Never married	-0.101*** (0.026)	0.032 (0.079)	-0.089 (0.062)	-0.225*** (0.073)	-0.093* (0.053)	-0.078* (0.046)	-0.094* (0.050)	-0.064** (0.032)
Income:								
Medium	-0.002 (0.026)	0.164* (0.091)	-0.023 (0.062)	0.026 (0.080)	0.022 (0.056)	-0.049 (0.038)	-0.011 (0.053)	0.002 (0.029)
High	-0.032 (0.028)	0.140 (0.099)	-0.012 (0.069)	0.006 (0.081)	0.060 (0.059)	-0.167*** (0.042)	0.007 (0.056)	-0.041 (0.032)
Constant	2.313*** (0.102)	2.538*** (0.264)	2.264*** (0.235)	2.597*** (0.278)	2.320*** (0.197)	2.787*** (0.139)	1.669*** (0.209)	2.625*** (0.116)
Observations	10,471	787	1,565	1,245	3,026	3,885	2,773	7,698
R ²	0.067	0.059	0.065	0.062	0.058	0.071	0.080	0.064

The standard errors in parentheses are heteroskedasticity-consistent. We employ *, **, and *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively. The dependent variable is tax morality on a 5-point scale.

One potential concern that needs to be addressed in our analysis is the possible measurement errors in variables. In fact, our explanatory variable of interest is obtained from survey responses which could be inaccurate or involuntarily erroneous. This may be an obstacle especially for those responses about the occupation and income, which are considered for the construction of the intergenerational mobility variable. Moreover, as we discussed in the previous chapter, the measurement error concern could arise also for the dependent variable, considering the self-reporting bias and other social motivations which could lead respondents to not really declare their attitude towards justifying tax cheating. Therefore, we extend the analysis applying an instrumental variables methodology, which estimates are reported in the robustness check analysis in the Appendix E. To do so, we instrument the respondent's level

of intergenerational mobility with the corresponding national average, excluding the individual response. The reasoning behind this approach is that individual level of intergenerational mobility could be reasonably affected by the average labour mobility of people living in the same country (for a similar approach using geographical proximate units see, for instance, Büthe and Milner, 2008; Kouamé, 2021). In fact, it may be that the individuals' level of intergenerational mobility could be influenced both by personal economic conditions (i.e., educational level) but also by the level of the national social mobility, that is in turn affected by the contextual-institutional framework (i.e., effective labour market policies, aggregate economic performances, etc.). The average level of intergenerational mobility at country level, excluding the individual level, is supposed to capture the latter factors. Moreover, by construction, it should be orthogonal to the tax morale (exogenous to the individual level of social mobility, while uncorrelated with the individual's attitude towards tax payment).

However, employing an instrument only is not sufficient to statistically evaluate whether there exists a problem of endogeneity in the original estimation. To overcome this concern, we additionally include as instruments for the potentially endogenous variable the respective second and third moments, following the arguments of Lewbel (1997). In fact, the author states that these kinds of instruments can be used for identification and estimation either as exclusive instruments only or also to augment the list of instruments for a given model, as in this case. We thus employ the two-stages least squares (2SLS) procedure for the ordinary least squares (OLS) estimator, assuming that the dependent variable is a cardinal measure ranging from both 1 to 5 and 1 to 10, to exploit all the original variability of the tax morale measure. Results are provided in the Tables E1 and E2 in the Appendix E, respectively.²³

²³ At the bottom of the table are reported some post estimation statistics, which overall confirm the exogeneity and relevance of our instruments across all the eight columns. According to the 2SLS estimates, the Kleibergen-Paap rk LM test statistic rejects the null of the model's under-identification, and the Hansen J statistic on overidentification fails to reject the exogeneity of instruments. The Kleibergen-Paap Wald F test statistic is larger than 10, suggesting that our instruments are not weak. Lastly, the Durbin-Wu-Hausman test statistic of endogeneity fails to reject the null hypothesis of equality between 2SLS and OLS across all the eight columns, suggesting that the OLS estimates can be assumed as consistent.

The main results are overall confirmed also in the 2SLS estimates. In fact, the intergenerational mobility significantly increases tax morale across all the subject pool with a significance level of 0.01 in the 5-point scale estimation and of 0.05 in the 10-point scale one. Further, the statistical relevance of the results confirms the remaining two hypotheses. The intergenerational mobility plays a significant role in shaping the individual willingness to pay taxes in Liberal and Socio democratic countries, and across people who exhibit weak family ties. We thus conclude that, despite the endogeneity concern should be considered when drawing conclusions from this kind of studies, our estimates seem to correctly evaluate the effect of the intergenerational mobility on the individual tax morality.

3.7. Concluding remarks

Results provide clear evidence that socio-economic inequality is not only a short-term within-generational problem, but it can be perpetuated across generation, discouraging people to contribute to the public expenditures. To this extent, tax payment might be meant as an investment which will not be rewarded in the future. On the contrary, the larger the intergenerational mobility, the larger the willingness to pay taxes.

Despite its theoretical foundation, in this work we provided the first empirical evidence of the relationship between upward intergenerational mobility and tax morale across European citizens. We analysed this problem both as family affair and Government's duty, by applying different estimation strategies, including an instrumental-variables methodology.

Considering the first aspect, we showed how the role of family is crucial in shaping individuals' preferences: where family ties are stronger, one can suspect that subjects' fate is fully anchored to the support of their family, hence such "family affair" does not consider the role of State, and then, this do not influence tax payment.

On the contrary, where independence matters, we observed that the higher is the mobility, i.e. the higher is the improvement of offspring condition compared with the one of their wellspring, the higher is propensity to pay taxes. Interestingly, here the role of State becomes

prominent, since the more effective are the defamiliarizing policies, the more citizen are crowded in.

Once again, the generosity of the welfare state is crucial in enhancing citizen participation (Caferra et al., 2021) and, in this case, in spurring tax compliance (Doerrenberg, 2015), since Governments might influence the size of tax evasion by improving the tax morale attitude (Halla, 2012). Indeed, the perpetuation of social inequality may erode tax revenues as citizens lose trust in the state's ability to provide a better future. This mechanism might be self-reinforcing in improving each country fiscal capacity and budget to reinvest in economic redistribution, triggering a virtuous cycle.

Finally, we would like to note that, although this third chapter provides some innovative evidence on the importance of occupational status mobility in shaping society's attitude to comply with fiscal duties, the results presented here are based on relatively outdated data from 2008. This aspect of the study may be seen as a limitation, which could be overcome in future research if forthcoming survey waves are published with relevant information to address our research objective.

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Appendix D. Alternative estimation method

Table D1. General Linear Model (Poisson) estimates

	(1) Pooled	(2) Liberal	(3) Socio democratic	(4) Mediterran ean	(5) Conservati ve	(6) CEE	(7) Weak family	(8) Strong family
Intergenerational mobility	-0.327** (0.158)	-0.888** (0.390)	-0.702** (0.344)	-0.070 (0.487)	-0.134 (0.358)	-0.290 (0.258)	-0.708** (0.310)	-0.181 (0.185)
Democratic spirit	-0.158*** (0.033)	-0.025 (0.099)	-0.250** (0.102)	-0.350*** (0.108)	-0.064 (0.068)	-0.188*** (0.048)	-0.290*** (0.066)	-0.096*** (0.036)
View government	-0.024** (0.011)	-0.045 (0.037)	-0.017 (0.026)	0.040 (0.031)	-0.037* (0.022)	-0.034** (0.017)	-0.032 (0.021)	-0.022* (0.011)
Agree with redistribution	-0.037*** (0.008)	-0.067** (0.026)	-0.064*** (0.022)	-0.009 (0.023)	-0.045*** (0.017)	-0.027** (0.012)	-0.064*** (0.018)	-0.030*** (0.009)
Religiosity	-0.159*** (0.045)	-0.180 (0.138)	-0.172* (0.097)	0.019 (0.168)	-0.179** (0.086)	-0.144* (0.076)	-0.163* (0.087)	-0.126** (0.051)
Age	-0.196*** (0.034)	-0.115 (0.109)	-0.314*** (0.090)	-0.224** (0.090)	-0.156** (0.070)	-0.200*** (0.055)	-0.180*** (0.068)	-0.208*** (0.039)
Gender	-0.401*** (0.040)	-0.523*** (0.130)	-0.453*** (0.093)	-0.075 (0.118)	-0.508*** (0.081)	-0.366*** (0.065)	-0.428*** (0.081)	-0.386*** (0.046)
Marital status:								
Registered partnership	0.069 (0.133)	-0.316 (0.489)	0.409 (0.393)	-0.113 (0.378)	-0.139 (0.241)	0.322 (0.206)	-0.068 (0.264)	0.079 (0.136)
Widowed	0.151 (0.110)	0.546 (0.634)	0.091 (0.190)	-0.016 (0.344)	0.212 (0.256)	0.118 (0.138)	0.016 (0.227)	0.171 (0.125)
Divorced	0.261*** (0.068)	-0.095 (0.216)	0.258 (0.175)	1.013*** (0.265)	0.186 (0.136)	0.229** (0.103)	0.085 (0.129)	0.283*** (0.078)
Separated	0.414*** (0.148)	0.089 (0.260)	0.326 (0.552)	0.009 (0.276)	0.765** (0.328)	0.396 (0.283)	-0.025 (0.254)	0.525*** (0.162)
Never married	0.243*** (0.056)	-0.055 (0.172)	0.263* (0.139)	0.508*** (0.156)	0.210* (0.111)	0.192** (0.097)	0.208** (0.105)	0.166*** (0.064)
Income:								
Medium	0.020 (0.055)	-0.323* (0.197)	0.092 (0.134)	-0.052 (0.170)	-0.059 (0.119)	0.148* (0.080)	0.032 (0.111)	0.015 (0.062)
High	0.110* (0.059)	-0.264 (0.212)	0.132 (0.155)	0.037 (0.172)	-0.127 (0.124)	0.419*** (0.089)	0.042 (0.118)	0.121* (0.066)
Constant	4.643*** (0.217)	4.360*** (0.551)	4.858*** (0.504)	4.215*** (0.593)	4.546*** (0.419)	3.739*** (0.296)	5.995*** (0.438)	3.986*** (0.244)
Observations	10,471	787	1,565	1,245	3,026	3,885	2,773	7,698

The standard errors in parentheses are heteroskedasticity-consistent. We employ *, **, and *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively. The dependent variable is tax cheating attitude on a 10-point scale.

Please note that in the GLM-Poisson case, we consider as dependent variable the original order of the “tax cheating” question since, restoring the initial order (1=highest tax morale; 10=lowest tax morale), responses follow a Poisson distribution. The estimated coefficients show the opposite sign respect to the previous estimation methods. A negative (positive) sign of the coefficient can be interpreted as a decrease (increase) of the individual’s tax cheating attitude, which can be intended as a higher (lower) tax morale.

Appendix E. Robustness check: instrumental variables methodology

Table E1. Two stages least squares estimates with intergenerational mobility as potential endogenous variable, and with dependent variable tax morality on a 5-point scale

	(1) Pooled	(2) Liberal	(3) Socio democratic	(4) Mediterranean	(5) Conservative	(6) CEE	(7) Weak family	(8) Strong family
Intergenerational mobility	0.202*** (0.074)	0.488*** (0.189)	0.282* (0.156)	0.009 (0.225)	0.148 (0.171)	0.196 (0.123)	0.388*** (0.145)	0.132 (0.086)
Democratic spirit	0.072*** (0.016)	0.016 (0.047)	0.120** (0.047)	0.162*** (0.050)	0.026 (0.032)	0.085*** (0.023)	0.135*** (0.031)	0.042** (0.018)
View government	0.013*** (0.005)	0.017 (0.017)	0.012 (0.011)	-0.019 (0.015)	0.022** (0.010)	0.018** (0.008)	0.020** (0.010)	0.012** (0.006)
Agree with redistribution	0.019*** (0.004)	0.032*** (0.012)	0.033*** (0.010)	0.004 (0.010)	0.022*** (0.008)	0.015** (0.006)	0.032*** (0.008)	0.015*** (0.004)
Religiosity	0.069*** (0.021)	0.083 (0.064)	0.065 (0.044)	-0.000 (0.079)	0.092** (0.041)	0.046 (0.036)	0.064 (0.041)	0.057** (0.025)
Age	0.083*** (0.016)	0.031 (0.051)	0.131*** (0.040)	0.102** (0.042)	0.070** (0.033)	0.082*** (0.026)	0.074** (0.033)	0.089*** (0.018)
Gender	0.185*** (0.019)	0.223*** (0.060)	0.204*** (0.043)	0.027 (0.055)	0.246*** (0.038)	0.166*** (0.031)	0.201*** (0.038)	0.178*** (0.022)
Marital status:								
Registered partnership	-0.034 (0.062)	0.162 (0.254)	-0.140 (0.168)	-0.014 (0.178)	0.080 (0.112)	-0.155 (0.096)	0.010 (0.127)	-0.033 (0.072)
Widowed	-0.060 (0.051)	-0.213 (0.288)	-0.015 (0.095)	0.052 (0.153)	-0.140 (0.122)	-0.028 (0.063)	0.016 (0.105)	-0.075 (0.058)
Divorced	-0.119*** (0.032)	0.082 (0.098)	-0.125 (0.080)	-0.484*** (0.126)	-0.094 (0.064)	-0.095** (0.048)	-0.042 (0.061)	-0.131*** (0.038)
Separated	-0.191*** (0.070)	-0.026 (0.120)	-0.123 (0.221)	0.008 (0.135)	-0.402*** (0.152)	-0.133 (0.139)	0.001 (0.120)	-0.241*** (0.085)
Never married	-0.101*** (0.026)	0.031 (0.078)	-0.090 (0.062)	-0.225*** (0.072)	-0.093* (0.053)	-0.078* (0.046)	-0.094* (0.050)	-0.064** (0.032)
Income:								
Medium	-0.002 (0.026)	0.164* (0.090)	-0.022 (0.062)	0.026 (0.079)	0.021 (0.056)	-0.049 (0.038)	-0.012 (0.053)	0.001 (0.029)
High	-0.033 (0.028)	0.138 (0.098)	-0.011 (0.069)	0.006 (0.080)	0.059 (0.058)	-0.168*** (0.042)	0.005 (0.055)	-0.042 (0.032)
Constant	2.307*** (0.102)	2.527*** (0.260)	2.272*** (0.233)	2.597*** (0.275)	2.307*** (0.197)	2.783*** (0.139)	1.657*** (0.207)	2.621*** (0.115)
Observations	10,471	787	1,565	1,245	3,026	3,885	2,773	7,698
R ²	0.067	0.059	0.065	0.062	0.058	0.071	0.080	0.064
Kleibergen-Paap rk LM	4292.78 [0.000]	338.15 [0.000]	703.08 [0.000]	529.74 [0.000]	133754 [0.000]	1560.20 [0.000]	1129.35 [0.000]	3163.54 [0.000]
Kleibergen-Paap rk Wald F	3.6e+04	2.063	1.9e+04	8.9e+04	7.8e+04	2.6e+04	9654.59	2.7e+04
Hansen J statistic	1.219 [0.544]	11.025 [0.004]	12.91 [0.002]	0.297 [0.862]	1.074 [0.585]	0.158 [0.928]	0.485 [0.785]	1.146 [0.564]
Durbin-Wu-Hausman test	1.492 [0.222]	0.391 [0.532]	0.734 [0.391]	0.051 [0.82]	0.604 [0.437]	0.370 [0.543]	1.165 [0.281]	0.575 [0.448]

The standard errors in parentheses are heteroskedasticity-consistent. We employ *, **, and *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively. P-values are presented in brackets. The intergenerational mobility variable has been instrumented by its corresponding averaged level among individuals of the same country, its second and third moment, following the Lewbel (1997) method. The dependent variable is tax morality on a 5-point scale.

Table E2. Two stages least squares estimates with intergenerational mobility as potential endogenous variable, and with dependent variable tax morality on a 10-point scale

	(1) Pooled	(2) Liberal	(3) Socio democratic	(4) Mediterranean	(5) Conservative	(6) CEE	(7) Weak family	(8) Strong family
Intergenerational mobility	0.363** (0.157)	0.977** (0.393)	0.611* (0.334)	0.068 (0.483)	0.186 (0.364)	0.313 (0.260)	0.769** (0.308)	0.209 (0.182)
Democratic spirit	0.158*** (0.033)	0.025 (0.099)	0.265*** (0.100)	0.350*** (0.108)	0.064 (0.068)	0.188*** (0.048)	0.289*** (0.066)	0.096** (0.038)
View government	0.024** (0.011)	0.045 (0.037)	0.017 (0.024)	-0.040 (0.031)	0.037* (0.022)	0.034** (0.017)	0.032 (0.021)	0.022* (0.012)
Agree with redistribution	0.037*** (0.008)	0.067** (0.026)	0.063*** (0.021)	0.009 (0.023)	0.045*** (0.017)	0.027** (0.012)	0.064*** (0.018)	0.030*** (0.009)
Religiosity	0.159*** (0.045)	0.182 (0.138)	0.168* (0.094)	-0.019 (0.168)	0.179** (0.086)	0.145* (0.076)	0.162* (0.087)	0.126** (0.052)
Age	0.195*** (0.034)	0.114 (0.109)	0.308*** (0.085)	0.224** (0.090)	0.155** (0.070)	0.200*** (0.055)	0.180*** (0.068)	0.208*** (0.039)
Gender	0.401*** (0.040)	0.522*** (0.130)	0.444*** (0.091)	0.075 (0.118)	0.509*** (0.081)	0.366*** (0.065)	0.428*** (0.081)	0.386*** (0.046)
Marital status:								
Registered partnership	-0.068 (0.133)	0.320 (0.489)	-0.367 (0.367)	0.113 (0.378)	0.140 (0.241)	-0.321 (0.205)	0.069 (0.264)	-0.078 (0.154)
Widowed	-0.152 (0.110)	-0.546 (0.634)	-0.087 (0.189)	0.016 (0.344)	-0.212 (0.256)	-0.118 (0.138)	-0.017 (0.227)	-0.172 (0.125)
Divorced	-0.261*** (0.068)	0.096 (0.215)	-0.246 (0.168)	-1.013*** (0.265)	-0.187 (0.136)	-0.229** (0.103)	-0.085 (0.129)	-0.283*** (0.081)
Separated	-0.414*** (0.148)	-0.091 (0.260)	-0.281 (0.483)	-0.009 (0.276)	-0.764** (0.328)	-0.396 (0.283)	0.026 (0.254)	-0.525*** (0.181)
Never married	-0.243*** (0.056)	0.053 (0.172)	-0.247* (0.131)	-0.508*** (0.156)	-0.210* (0.111)	-0.192** (0.097)	-0.209** (0.105)	-0.166** (0.067)
Income:								
Medium	-0.020 (0.055)	0.321 (0.197)	-0.041 (0.131)	0.052 (0.170)	0.057 (0.119)	-0.149* (0.080)	-0.034 (0.111)	-0.015 (0.063)
High	-0.111* (0.059)	0.258 (0.212)	-0.071 (0.147)	-0.037 (0.172)	0.125 (0.124)	-0.420*** (0.090)	-0.045 (0.118)	-0.122* (0.068)
Constant	6.341*** (0.217)	6.601*** (0.547)	6.119*** (0.492)	6.786*** (0.592)	6.429*** (0.421)	7.252*** (0.296)	4.978*** (0.437)	7.001*** (0.246)
Observations	10,471	787	1,565	1,245	3,026	3,885	2,773	7,698
R ²	0.072	0.061	0.073	0.065	0.057	0.082	0.079	0.071
Kleibergen-Paap rk LM statistic	4292.78 [0.000]	338.15 [0.000]	703 [0.000]	529.74 [0.000]	1337.54 [0.000]	1560 [0.000]	1129 [0.000]	3163.55 [0.000]
Kleibergen-Paap rk Wald F statistic	3.6e+04	2.063	1.9e+04	8.9e+04	7.8e+04	2.6e+04	9.655	2.7e+04
Hansen J statistic	1.235 [0.539]	12.020 [0.003]	11.918 [0.003]	0.109 [0.947]	1.361 [0.506]	0.838 [0.658]	0.756 [0.685]	1.064 [0.587]
Durbin-Wu-Hausman test	2.156 [0.142]	0.974 [0.324]	0.467 [0.494]	0.533 [0.466]	0.468 [0.494]	0.465 [0.495]	1.362 [0.243]	1.017 [0.313]

The standard errors in parentheses are heteroskedasticity-consistent. We employ *, **, and *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively. P-values are presented in brackets. The intergenerational mobility variable has been instrumented by its corresponding averaged level among individuals of the same country, its second and third moment, following the Lewbel (1997) method. The dependent variable is tax morality on a 10-point scale.

Chapter 4

Does climate change concern alter individual tax preferences? Evidence from an Italian survey

4.1. Introduction and literature review on the public acceptance of environmental taxes

Nowadays, political agendas across governments are converging on several global-common concerns. Among others, there is the need on one hand to globally reduce CO₂ emissions and on the other to increase tax compliance across both individuals and businesses. For both these two topics, insights from behavioural economics could be included and used as a tool to strengthen the policy-making process's effectiveness. Starting from tax compliance, several experimental and empirical studies found that it can be increased through policies focused on stimulating individual tax morale (OECD, 2017). Tax morale refers to the intrinsic motivations of people in paying taxes (Alm and Torgler, 2006), which in turn can significantly increase overall tax compliance in a society given the evidence of a causal link between tax morale and tax compliance behaviour (Cummings et al., 2009; Halla, 2012; Xin Li, 2010). As we discussed in the first chapter of this thesis, tax morale varies according to the socio-demographic information at the individual level, as well as their economic and social preferences, such as trust in institutions, confidence in government, and agreement with redistributive policies. However, diverse sorts of taxes can be differently perceived by taxpayers, thus tax morale can vary according to the kind of tax considered within a country (Luttmer and Singhal, 2014), and this could be the case of environmental taxes.

This intuition leads us to contribute to the literature about the environmental tax morale, namely the individual willingness to accept an environmental tax on non-renewable energy resources, such as fossil fuels.²⁴ An environmental tax can be intended as the tax rate imposed on the negative externalities coming from polluting productions (i.e. the Government could

²⁴ With the term “environmental tax” we refer to taxes on fossil fuels, such as oil, gas and coal, that may be generally intended as “carbon tax” or “Pigouvian tax”.

set a tax in terms of euros per ton of CO₂ emissions or a tax on the percentage of carbon present in non-renewable energy resources, such as oil, gas, and coal). Despite the theoretical and empirical foundations about the efficiency and effectiveness of an environmental tax, international organizations are pushing governments to impose it (UN, 2015; OECD, 2021) since it can lead to a behavioural change in both citizens and firms in the use of greener or renewable energy resources (Aldy and Stavins, 2012), in line with the UN's sustainable development goals, in particular SDG 7 (Affordable and clean energy) and SDG 13 (Climate Action). However, to get a visible economic and environmental impact of an environmental tax, the latter must be supported and accepted by the public. For this reason, it is paramount to understand which factors determine the individuals' level of environmental tax morale.

Muhammad et al. (2021) reviewed the topic, analyzing the determinants of public acceptance of environmental taxes, arguing that most of the studies in this field were conducted through surveys and with experimental approaches. The most tested variables are the use of revenue, environmental attitude, political ideology, trust in the government, and perceived policy effectiveness, as well as demographic traits (income, age, education, gender) obtaining mixed results. In general, it seems that people appear more willing to support a carbon tax when they (i) are aware of its efficacy and the policy content, (ii) believe that the government is trustworthy, (iii) have a positive attitude toward environmental protection, (iv) perceive the policy is fair in terms of costs distribution and social sharing, and (v) are concerned about climate change issues.

This Chapter focuses on the latter reason, thus on the role that the individual concern about climate change plays on the environmental tax morale, considering the interplay with the general level of tax morale. We focus our attention to the Italian case since it has been argued that the potential acceptability of a carbon tax in Italy is relatively high, and this topic has been scarcely explored so far among Italian citizens (Rotaris and Danielis, 2019). By conducting an online survey among Italian economics students, this Chapter contributes to the literature by analyzing the role that the individual climate change concern has on the willingness to accept an environmental tax both directly and indirectly, trying to grasp how the individual general tax preferences can differ respect to the specific (environmental) tax.

Indeed, we aim to demonstrate whether and how climate change concern alters individual attitudes toward paying taxes, by investigating its effect on the willingness to accept an environmental tax among both tax morale and tax immoral subject groups. Insights from this paper may help to understand how policymakers should design policies according to (i) the group of individuals targeted based on their general level of tax morale; (ii) the behavioural preferences of the new generations about energy use and taxation.

Our results show that tax policies should be designed to increase the general level of tax morale and to raise climate change awareness among people. The latter could be focused on a specific target group (individuals who show a lower attitude towards paying taxes) and carried out through non-monetary tools, which have been shown to be effective in positively influencing both individuals' energy behaviours and tax attitudes.

The Chapter is structured as follows: Section 4.2 describes data and research hypotheses; Section 4.3 deals with the description of the empirical strategy; Section 4.4 describes the results; finally, section 4.5 concludes with some tax policy implications.

4.2.Data and variables

To obtain individual attitudes toward tax payment, most of the empirical studies in behavioural economics employ international surveys.²⁵ For studies across citizens living in European countries, the European Social Survey (ESS) and European Values Study (EVS) represent the most used ones (see, for instance, Martinez-Vazquez and Torgler (2009) in Spain; Torgler and Werner (2005) in Germany; Nemore and Morone (2019) in Italy). However, these surveys do not allow to study the relationship between the environmental and general tax morale across the same subject pool. In fact, despite the ESS (2016) provides individual responses about the willingness to pay an environmental tax, it does not provide information about the general individual attitude toward tax payment (this information is contained only in the ESS wave of 2004, hence referring to a different subject pool). On the

²⁵ Some examples: European Social Survey (ESS), European Values Study (EVS), International Social Survey Programme (ISSP), Latinobarómetro and World Values Survey (WVS)

contrary, each wave of the EVS (i.e., 2008, 2017) provides information about the general individuals attitude toward tax payment, but this survey does not provide a question regarding the willingness to pay an environmental tax. Therefore, to obtain information about the willingness to pay both general and environmental taxes, across the same subject pool, it is needed to carry out a survey.

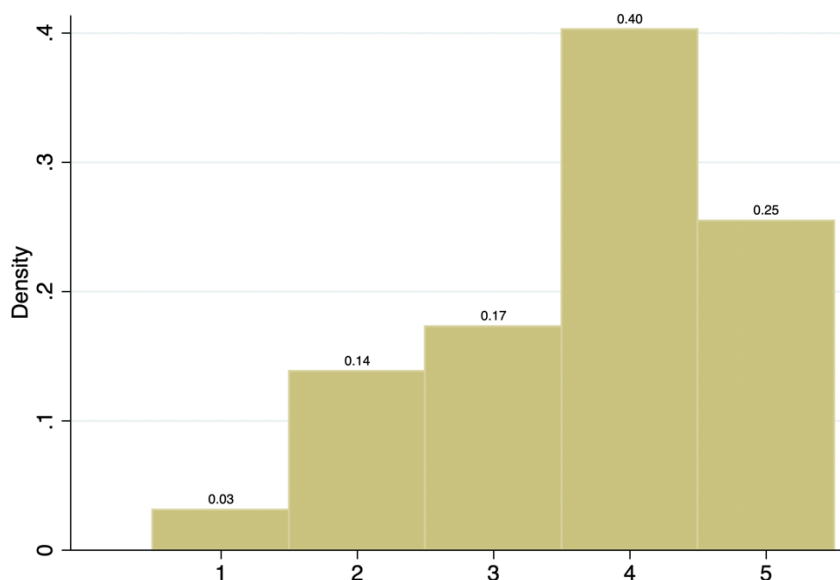
We surveyed 514 Italian university students in economics, which is the common subject pool in experimental economics studies, such as in tax experiments (Mascagni, 2018, p. 275). We administered the questionnaire via Google Forms, spreading it through the Instagram profile “Economia del Suicidio”, the largest social community of economics students in Italy. The sample is composed of 54,7% males and 45,3% females, with an average of 23 years old.²⁶

We collected information at the individual level about their perception of environmental issues, their political orientation, their economic preferences as well as their socio-demographic information. The structure of the questions that we used in the questionnaire was inspired by the European Social Survey regarding energy use and environmental preferences (Public Attitudes to Climate Change, 2016), and by the European Values Study for the individual willingness to pay taxes.

Our dependent variable is “Environmental tax morale” (ETM_i), proxied by the individual answer to the question “*To what extent are you in favor or against the following policies in Italy to reduce climate change? Increasing taxes on fossil fuels, such as oil, gas and coal*” on a 5-point Likert scale from 1, “strongly against”, to 5, “strongly in favor”. The distribution of the dependent variable is visible in the following Figure 4.1. The average level of environmental tax morale is 3,71 with a standard deviation of 1,09.

²⁶ The structure of the survey is reported in the Appendix F.

Figure 4.1. Environmental tax morality (1-5) across all the sample



Source: Own elaboration, based on data from the original survey conducted.

The main independent variable is the climate change concern (CCC_i), which we measured with the question “*How worried are you about climate change?*” on a 5-point Likert scale from 1, “not at all worried”, to 5, “extremely worried”.

The other main independent variable of interest is the general level of tax morale (TM_i), proxied by the question “*Please tell me whether you think it can always be justified, never be justified, or something in between: Cheating on taxes if you have the chance*”. Answers range from 1, “always justified”, to 10, “never justified”.

According to the literature, we accounted for several control variables (see Hordonic, 2018; Muhammad et al., 2021): trust in government, trust in politicians and political parties, political orientation (left-right), political participation, personal responsibility in combating climate change, social network activity, religiosity, age and gender. The summary of all the variables employed with their relative survey questions and descriptive statistics is reported in Table 4.1.

Table 4.1. Variables description and summary statistics

Variable	Description	Obs.	Mean	Std. Dev.	Min	Max
Dependent variable						
Environmental tax morale	“To what extent are you in favor or against the following policies in Italy to reduce climate change? Increasing taxes on fossil fuels, such as oil, gas and coal” (1=strongly against; 5= strongly in favor)	514	3.712	1.086	1	5
Main regressors						
Climate change concern	“How worried are you about climate change?” (1=not at all worried; 5=extremely worried)	514	4.023	.83	1	5
Tax morale	“Cheating on taxes if you have the chance” (1=always justified; 10=never justified)	514	8.85	1.792	1	10
Control variables						
Trust in government	“Please tell me on a score of 1-10 how much you personally trust each of the institutions. 0 means you do not trust an institution at all, and 10 means you have complete trust: Government.”	514	4.99	2.337	1	10
Political trust	“Please tell me on a score of 1-10 how much you personally trust each of the institutions. 0 means you do not trust an institution at all, and 10 means you have complete trust: Political parties and politicians.”	514	3.222	2.026	1	9
Political orientation	“In politics people sometimes talk of ‘left’ and ‘right’. Where would you place yourself on this scale, where 1 means the left and 10 means the right?”	514	6.185	2.468	1	10
Social network activity	“Have you posted or shared anything about online politics, for example on a blog, via email or on social media like Facebook or Twitter?”	514	0.36	0.48	0	1
Political participation	“Did you vote in the last national election?” (1=yes; 0=no)	514	0.671	0.47	0	1
Climate responsibility	“To what extent do you feel a personal responsibility to try to reduce climate change?” (1=not at all; 10= a great deal)	514	6.206	3.053	1	10
Religiosity	“How religious would you say you are?”(1=not at all; 10= a great deal)	514	2.846	2.973	1	10
Gender	Dummy = 1 for males	514	0.547	0.498	0	1
Age	Age level	514	22.82	6.19	15	32

4.3. Research hypotheses

Building on the proposed literature and data, we formalize the following research hypotheses:

Hypothesis 1: There exists a direct and positive relationship between environmental tax morale and climate change concern.

According to the literature, we expect that the more people are concerned with climate change the more they are willing to pay an environmental tax.

Hypothesis 2: The environmental tax morale positively depends on the level of individual tax morale.

The expected result is that the people who are more willing to pay taxes, in general, will be also more willing to pay a specific (environmental) tax.

Hypothesis 3: For individuals with high tax morale, an increase in climate change concern increases the environmental tax morale. For individuals with low tax morale, the relationship between environmental tax morale and climate change concern should vanish.

We expect that an increase in climate change concern should positively affect the willingness to pay an environmental tax only for those showing a higher level of general tax morale. They correctly evaluate the positive externalities generated by the tax payment. Thus, with an increasing interest in a particular topic (concern about climate change), it is logical to expect that the estimated value of the positive externality generated by the tax payment on that specific topic would be positive.

On the contrary, an increase in climate change concern should not affect the willingness to pay an environmental tax for those who are tax immoral. In fact, given that they show low general tax morale, they should not evaluate the importance of paying either a specific tax. The theoretical prediction is that, given that they do not recognize the economic value of the positive externality generated by the tax payment, they would not be willing to accept an environmental tax even though they are concerned with climate change. Evidence against this hypothesis can be intended as incoherence between general and specific tax preferences (Luttmer and Singhal, 2014), which can demonstrate whether and how climate change concern alters individual tax morale preferences.

4.4. Empirical strategy

Given the ordinal distribution of our respondent variable, we estimate an ordered probit model. We start by estimating the baseline (restricted) model represented by the following equation:

$$ETM_i^* = \alpha CCC_i + X_i' \beta + u_i \quad \text{Equation (4.1)}$$

where ETM_i^* represents an unobservable latent variable underlying the 5-point scale measure of the environmental tax morale ETM_i of each subject i .²⁷ The variable CCC_i refers to the individual climate change concern, X_i' is a vector including the control variables previously described, and u_i represents the error term.

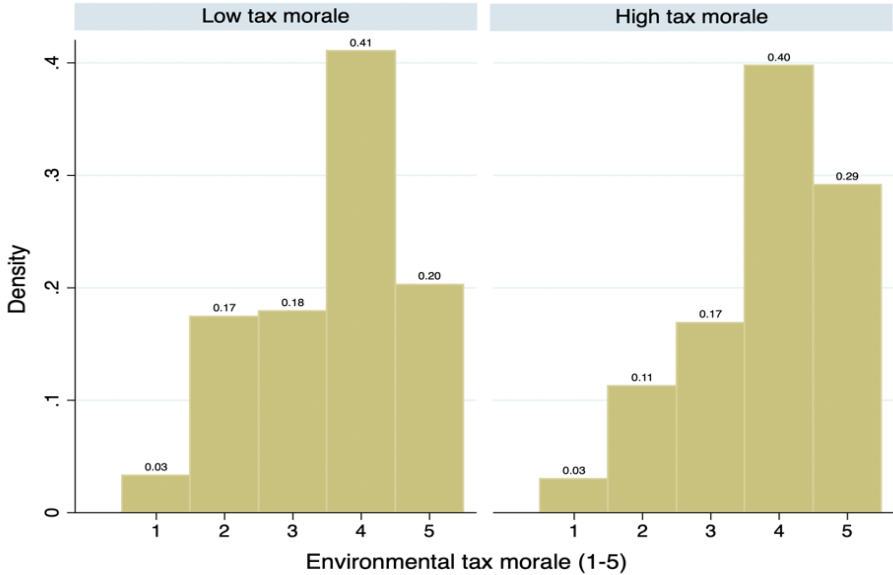
According to the first hypothesis ($H1$), we expect a positive sign of the CCC_i coefficient. To test our second hypothesis ($H2$) we extend the previous model by including as regressor the individual level of general tax morale, TM_i , expecting a positive sign of the respective coefficient. Finally, to understand the role played by the general tax morale on the relationship between CCC and ETM by testing the third hypothesis ($H3$), we employ a category-based approach. In this last case, we used the tax morale (TM_i) as contextual variable to split the subject pool into two categories: High tax morale (HTM) and Low tax morale (LTM). According to several studies about tax morale, to get the respective categories, it is common to construct a dummy equal to one if the respondent declared that cheating on taxes is “never justified”, while it is zero for all the other cases (see, for instance, Torgler and Valev, 2010). This is done because, with a dichotomous measure, it is possible to distinguish the group of individuals who do not justify tax evasion under any circumstances from the others (Andriani, 2016). Following this methodology, we insert in the High tax morale group (HTM) only respondents who answered “never justified” to the tax morale question,

²⁷ The relationship between the unobservable latent variable (ETM_i^*) and the observed one (ETM_i) in an ordered probit framework is assumed to be the same as the one discussed in chapter 2 for the general level of individual tax morale.

clustering the remaining ones in the Low tax morale group (LTM). The HTM group is composed by 302 subjects, while the remaining 212 subjects compose the LTM group.

We report the distribution of the environmental tax morale for the two groups of subjects in the Figure 4.2. As one can see, the 29% of the high tax morale group of subjects declared the largest level of environmental tax morale, while this percentage is equal to the 20% in the low tax morale group. We run some statistical tests to evaluate whether the average level of environmental tax morale is statistically different between the two subgroups of individuals. The Mann-Whitney U test suggests that the average willingness to pay an environmental tax between high and low tax morale subjects is statistically different at 5% level ($z = -2.481$; $p\text{-value} = 0.013$). The same result is given by the two-sample t-test ($t = -2.400$; $p\text{-value} = 0.008$).

Figure 4.2. Environmental tax morality (1-5) across High and Low tax morale subjects



Source: Own elaboration, based on data from the original survey conducted.

Hence, we run the baseline model separated for both groups, HTM and LTM respectively. According to hypothesis 3, we expect the coefficient to be positive and statistically significant in the HTM group only, while its effect should be not statistically significant in the LTM group.

4.5. Results

Table 4.2 reports the estimated coefficients and the average marginal effects for the highest score of environmental tax morale, obtained by using the ML procedure. Specifically, the columns 1 and 2 reports the results based on two different versions of Equation (4.1)., while columns 3 and 4 show the outcomes from a restricted version of Equation (4.1) corresponding to the subsamples HTM and LTM, respectively.^{28 29}

Starting from the first column, the coefficient of climate change concern is positive and statistically significant at a 1% level. This confirms the first hypothesis (*H1*), as already evidenced in Italy from the empirical work of Rotaris and Danielis (2019). Moreover, the individual political ideology matters: people from the right-wing seem to be less willing to accept an environmental tax, and this result is in line with the conclusions of Lozza et al. (2013) who argue that left-wing taxpayers generally show higher levels of voluntary cooperation and seem to be more prone to consider tax compliance a civic duty rather than right-wing subjects. Another interesting result is that the more people trust the government the more they are willing to accept an environmental tax, and this is in line with the existing evidence (Savin et al., 2020; Umit and Schaffer, 2020). The effect of other control variables is overall statistically negligible.

Looking at the second column, the positive and statistically significant coefficient of tax morale variable confirms the second hypothesis (*H2*). Also in this specification, the effect of control variables is overall reasonable and consistent with previous results.

²⁸ To check the robustness of our results, we replicate the analysis of the fourth chapter by using linear regression, applying the OLS method, assuming that the dependent variable is a cardinal measure ranging from 1 to 5. The estimates are reported in Table G1 from Appendix G.

²⁹ In the extended version of equation (4.1.), TM_i and ETM_i could be jointly determined, and this may cause endogeneity. Therefore, in this case we also use the two-stages least squares estimator, instrumenting the potential endogeneous variable (i.e., TM_i) by its own second and third moments, following the methodology proposed by Lewbel (1997). New results, which are reported in the Appendix H, remain consistent with our main conclusions.

Surprisingly, focusing on columns 3 and 4, one can see that the coefficient of climate change concern is positive and statistically significant at 1% level in both HTM and LTM groups, a result that is partially against our expectation from the third hypothesis. Although an increase in climate change concern positively affects the willingness to pay an environmental tax for those showing a higher level of general tax morale (HTM group), we did not expect a positive and significant coefficient also among tax immoral subjects (LTM group). This opposite evidence can be interpreted as a behavioural bias that leads people to show preferences that are not coherent across kinds of taxes (general vs particular). This means that even though there exists a group of people who are less willing to pay taxes in general (i.e., tax immoral) this does not imply that they would not be willing to pay a specific tax. Rather, they would increase their willingness to pay the specific tax if they were stimulated and made aware of the tax-specific topic. The magnitude of the climate change concern coefficient in the LTM group is still positive and statistically significant, implying that there is a margin to increase the environmental tax morale also among the tax immoral subjects.

To conclude, we summarize the following main results:

R1: The climate change concern is positively related to the environmental tax morale.

R2: The general level of tax morale is positively related to the willingness to pay an environmental tax.

R3: An increase in climate change concern significantly increases the willingness to pay an environmental tax either for moral or tax immoral subjects.³⁰

³⁰ Additionally, we also provide an alternative way to test the third hypothesis (*H3*) by estimating by OLS the restricted version of Equation (4.1), including as additional regressors the tax morale dummy identifying the respondents declaring that cheating on taxes is “never justified” and its interaction with the climate change concern. The new outcomes, which are consistent with our main conclusions, are reported and described in Appendix I.

Table 4.2. Results from the Equation (4.1), ordered probit estimates

	(1)		(2)		(3)		(4)	
	Restricted		Extended		Category-based approach (HTM)		Category-based approach (LTM)	
	Estimated coefficient	Average ME †	Estimated coefficient	Average ME †	Estimated coefficient	Average ME †	Estimated coefficient	Average ME †
Climate change concern	0.426*** (0.061)	0.125***	0.422*** (0.061)	0.124***	0.466*** (0.083)	0.145***	0.381*** (0.092)	0.098***
Tax morale			0.055** (0.027)	0.016**				
Trust in government	0.115*** (0.029)	0.034***	0.111*** (0.030)	0.033***	0.110*** (0.041)	0.034***	0.128*** (0.044)	0.033***
Political orientation	-0.052** (0.020)	-0.015**	-0.047** (0.020)	-0.014**	-0.045* (0.027)	-0.014*	-0.066** (0.032)	-0.017**
Political trust	-0.034 (0.034)	-0.010	-0.034 (0.034)	-0.010	-0.058 (0.045)	-0.018	-0.010 (0.052)	-0.002
Political participation	-0.077 (0.111)	-0.023	-0.062 (0.111)	-0.018	-0.223 (0.147)	-0.070	0.101 (0.174)	0.026
Climate responsibility	-0.007 (0.016)	-0.002	-0.006 (0.016)	-0.002	0.020 (0.022)	0.006	-0.033 (0.026)	-0.008
Social network activity	-0.043 (0.101)	-0.013	-0.034 (0.101)	-0.010	0.031 (0.135)	0.010	-0.145 (0.156)	-0.037
Religiosity	0.044 (0.101)	0.013	0.042 (0.101)	0.012	-0.020 (0.134)	-0.006	0.086 (0.156)	0.022
Gender	0.134 (0.099)	0.039	0.167* (0.101)	0.049*	0.246* (0.133)	0.077*	0.119 (0.159)	0.030
Age	0.010 (0.009)	0.003	0.008 (0.009)	0.002	0.018 (0.012)	0.006	0.000 (0.013)	0.000
Observations	514	514	514	514	302	302	212	212
Pseudo R^2	0.062		0.065		0.065		0.070	

The standard errors in parentheses are heteroskedasticity-consistent. We employ *, **, and *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively. † We report the average marginal effects for the highest score of tax morality.

4.6. Concluding remarks

This work attempted to grasp evidence on how to stimulate the willingness to pay an environmental tax considering the level of individual climate change concern and the general level of tax morale, employing a survey among 514 Italian economics students. Our results provide innovative insights from a tax policy point of view, which we point out as follows.

First, in line with previous studies, our results remark the importance of increasing climate change awareness among people to let them be more willing to pay the environmental tax, for instance through investments in sensibilization campaigns on the importance of energy source usage and climate-related topic.

Second, we demonstrated that an increase in the general tax morale leads to an increase in the specific (environmental) tax morale. Our evidence showed that people with high tax morale logically recognize the positive impact of paying an environmental tax when the climate change concern increases, since the more the theme becomes important, the larger the willingness to pay the specific tax. For this reason, policymakers should carry on campaigns to increase the general level of tax morale to increase the overall tax compliance level and the relative tax revenues, following the guidelines given by the OECD (2019) to support taxpayer education programs, such as including tax morale research and analysis into education programs, improving the ease of paying taxes or strengthening revenue-expenditure links to build the social contract (Feld and Frey, 2007).

Finally, we evidenced that also people with low tax morale turned out to be willing to pay an environmental tax if aware of the environmental issues. Hence, the climate change concern affects the environmental tax morale in two ways: its effect is transmitted directly on the dependent variable and indirectly by altering the general-specific tax morale preferences of subjects. The latter inconsistent preference implies that a key point in designing an effective tax policy is not to convince those who are already willing to pay taxes, which is a relatively easier task, but it is to increase the specific-tax morale also among those who are generally less willing to pay taxes. It should be paramount to increase awareness about environmental

topics among people in general, and among those who are relatively tax immoral. Following the arguments of Caferra et al. (2021), our results remark the importance of targeting energy and environmental tax policies to groups rather than to individuals. According to this evidence, we support the use of non-monetary tools proposed by Colasante et al. (2021) to nudge people in the environmental transition by changing their behaviour in energy use, for instance through the taxation on fuel and other non-renewable energy resources. Several studies showed that it could be effective to influence individuals' energy use preferences through social and moral nudging, namely a soft power policy to discourage negative consumption behaviours (Thaler and Sunstein, 2009), which can influence individual behaviour (Allcott, 2011; Allcott and Rogers, 2014; Andor et al., 2020; Brandon et al., 2019; Colasante et al., 2021; Gilbert and Zivin, 2014; Nolan et al., 2008; Schultz et al., 2007). Also from the side of tax compliance attitude and behaviour, the literature showed the effectiveness of these policy tools, such as social nudging and moral suasion (Blumenthal et al., 2001; Bott et al., 2020; Castro and Scartascini, 2013; Del Carpio, 2014; Torgler, 2004a). Finally, given the goal to increase the public acceptance of an environmental tax, we suggest a policy based on non-monetary tools targeted at a group rather than at an individual level.

Even if this study's evidence reinforces the usefulness of behavioural studies in the context of social sciences and energy-related topics, we want to point out that there are several limitations: although we used a common methodology in this strand of research, we are aware that in an online survey individuals can be influenced by the self-reporting and hypothetical choice bias (see Swamy et al., 2001), that in turn can characterize their reported preferences. Moreover, even if economics university students are commonly used as a subject pool in experimental economics settings, and although several studies showed that the behavioural responses of students are largely the same as those of nonstudents in identical experiments (for a discussion see Alm, 2012; Alm et al., 2015; Choo et al., 2016), we are aware that in this case, they are not taxpayers yet (Barabas and Jerit, 2010). Even though this can be seen as a limitation for the external validity of results, it can be also seen as an opportunity since they represent the class of future taxpayers, and hence the relevance of results remains still important.

Acknowledgements

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Appendix F. Survey structure

This appendix provides the structure of the survey that we conducted in order to carry out the analysis in the chapter 4. It is reported in the following Table F1.

Table F1. Survey structure

N.	Question	Answer	Scale
1	Gender	Male; Female; Other	1-3
2	Age	Open question	-
3	Are there children/young people in your household?	Yes; No; Don't know	1-3
4	Please indicate a score from 1 to 10. 1 means that you do not trust at all, and 10 means that you trust completely. Most people.	From "no trust at all" to "completely trust"	1-10
5	Please indicate a score from 1 to 10. 1 means that you do not trust at all, and 10 means that you trust completely. Your country's government.	From "no trust at all" to "completely trust"	1-10
6	Please indicate a score from 1 to 10. 1 means that you do not trust at all, and 10 means that you trust completely. Politicians and political parties.	From "no trust at all" to "completely trust"	1-10
7	Have you posted or shared anything about politics online, for example on blogs, via email or on social media such as Facebook or Twitter?	Yes; No; Don't know	1-3
8	In politics people sometimes talk about 'left' and 'right': where would you place yourself considering this scale, where 1 means left and 10 means right?	From "left" to "right"	1-10
9	Would you say that it is a behaviour that can always be justified, never justified, or something in between that of cheating on taxes to be paid if you have the chance?	From "always justified" to "never justified"	1-10
10	Regardless of whether you belong to a particular religion, how religious would you say you are?	From "not religious at all" to "a great deal"	1-10
11	Overall, how confident are you that you could use less energy than you do now?	From "not sure at all" to "completely sure"	1-10

Table F1 (continued)

12	You may have heard the idea that the world's climate is changing due to increases in temperature over the past 100 years. What is your opinion on this? Do you think the world's climate is changing?	From "not changing at all" to "completely changing"	1-5
13	To what extent do you feel a personal responsibility to try to reduce climate change?	From "not at all" to "a great deal"	1-10
14	How worried are you about climate change?	From "not worried at all" to "extremely worried"	1-5
15	To what extent are you in favor or against the following policies in your country to reduce climate change: Increasing taxes on fossil fuels, such as oil, gas and coal.	From "strongly against" to "strongly in favor"	1-5

Appendix G. Alternative estimation method: OLS estimates of Equation (4.1)

We replicated the empirical analysis by applying the OLS, obtaining the same statistical relevance of the results. Estimated coefficients are reported in the following Table G1.

Table G1. Results from the Equation (4.1), ordinary least squares estimates

	(1)	(2)	(3)	(4)
	Restricted	Extended	Category-based approach (HTM)	Category-based approach (LTM)
Climate change concern	0.391*** (0.055)	0.386*** (0.055)	0.427*** (0.075)	0.340*** (0.085)
Tax morale		0.051** (0.025)		
Trust in government	0.104*** (0.027)	0.100*** (0.027)	0.093** (0.037)	0.118*** (0.041)
Political orientation	-0.050*** (0.019)	-0.045** (0.019)	-0.044* (0.025)	-0.060** (0.030)
Political trust	0.025 (0.031)	0.026 (0.031)	0.043 (0.041)	0.007 (0.049)
Political participation	-0.092 (0.104)	-0.078 (0.104)	-0.227* (0.135)	0.081 (0.167)
Climate responsibility	0.001 (0.015)	0.001 (0.015)	0.024 (0.020)	-0.020 (0.024)
Social network activity	-0.055 (0.095)	-0.048 (0.095)	-0.010 (0.124)	-0.121 (0.149)
Religiosity	0.025 (0.094)	0.023 (0.094)	-0.028 (0.124)	0.051 (0.148)
Gender	0.103 (0.093)	0.133 (0.094)	0.195 (0.122)	0.107 (0.152)
Age	0.009 (0.01)	0.008 (0.01)	0.0175 (0.01)	-0.000 (0.01)
Constant	1.827*** (0.353)	1.341*** (0.429)	1.571*** (0.480)	1.980*** (0.528)
Observations	514	514	302	212
R ²	0.157	0.164	0.160	0.173

The standard errors in parentheses are heteroskedasticity-consistent. We employ *, **, and *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Appendix H. Alternative estimation method: 2SLS estimates of Equation (4.1)

Table H1. Results from the extended version of Equation (4.1), two-stages least squares estimates with tax morale as potential endogenous variable.

Variables	(2) 2SLS-Extended	
	Coeff.	SE
Climate change concern	0.383***	(0.056)
Tax morale	0.054*	(0.028)
Trust in government	0.105***	(0.028)
Political orientation	-0.044**	(0.019)
Political trust	-0.028	(0.033)
Political participation	-0.074	(0.097)
Climate responsibility	-0.000	(0.015)
Social network activity	-0.041	(0.095)
Religiosity	0.028	(0.096)
Gender	0.124	(0.090)
Age	0.008	(0.008)
Constant	1.312***	(0.443)
Observations		514
R ²		0.163
Kleibergen-Paap rk LM	298.261	[0.000]
Kleibergen-Paap rk Wald F	2316.512	
Hansen J statistic	1.993	[0.574]
Durbin-Wu-Hausman test	0.677	[0.381]

The standard errors in parentheses are heteroskedasticity-consistent. We employ *, **, and *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively. P-values are presented in brackets. The tax morale variable has been instrumented by its second and third moment, following the methodology of Lewbel (1997). The dependent variable is environmental tax morality on a 5-point scale.

As it is visible from the Table H1, the sign and the magnitude of the coefficients remained overall stable respect to the OLS estimates. Regarding the postestimation tests, the Kleibergen-Paap rk LM rejects the null hypothesis, suggesting the absence of an under-identification concern, while the Hansen J statistic fails to reject the exogeneity of instruments. The Kleibergen-Paap Wald F test statistic is larger than the rule of thumb of 10, suggesting that our instruments are not weak. Finally, the Durbin-Wu-Hausman test fails to reject the null hypothesis of equality between 2SLS and OLS, suggesting that the OLS estimates can be assumed as consistent.

Appendix I. Robustness check: alternative empirical strategy to test hypothesis 3

In order to test hypothesis 3 in an alternative way, we estimate by OLS a linear regression of the restricted version of Equation (4.1), including as additional regressors the high tax morale dummy identifying subjects declaring that cheating on taxes is “never justified” (HTM_i), as well as its interaction with the climate change concern ($CCC_i \times HTM_i$). The estimates are presented in Table II.³¹

Table II: Results from the Equation (4.1), ordinary least squares estimates with interaction

	Restricted model with interaction	
	Coeff.	SE
Climate change concern (CCC_i)	0.402***	(0.129)
High tax morale dummy (HTM_i)	0.702**	(0.352)
$CCC_i \times HTM_i$	0.223***	(0.095)
Trust in government	0.112***	(0.027)
Political orientation	-0.054***	(0.019)
Political trust	0.034	(0.031)
Political participation	-0.081	(0.105)
Climate responsibility	0.015	(0.016)
Social network activity	-0.062	(0.096)
Religiosity	0.030	(0.095)
Gender	0.126	(0.095)
Age	0.018	(0.01)
Constant	1.571***	(0.480)
Observations		514
R ²		0.149

The standard errors in parentheses are heteroskedasticity-consistent. We employ *, **, and *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively.

In line with our main results, it is visible that the coefficient of the interaction term between climate change concern and tax morale is positive and statistically significant at 5%. This result indicates that the concern about climate change has a diverse effect among different subgroups of people based on the level of tax morale. It could play a stronger role for those individuals who declare to never justify cheating on taxes, while it is relatively weaker for those who show a lower level of general tax morale.

³¹ We decided to employ OLS estimator since interpreting interaction terms in nonlinear models, such as in ordered probit, is not as straightforward as in linear ones, given that the average coefficient could be unreliable. In fact, these cannot be evaluated by looking at the sign, magnitude, or statistical significance of the coefficient, but they require computing the cross derivative or cross difference (for a discussion see Ai and Norton, 2003; Norton et al., 2004).

General conclusions

This thesis contributes to the literature of *searching for facts* on tax compliance behaviour in Europe, providing empirical evidence on some determinants of voluntary tax compliance which, as yet, have still not been sufficiently explored. We show that the attitude of European citizens towards contributing to public expenditure is influenced by their social ties, by their perceptions of the welfare state, as well as by their concerns about actual problems in society, such as climate change. Our research is organised into separate chapters, in each of which we focus on one specific determinant of tax morale.

First, our findings suggest that social interactions among citizens can encourage or hinder the willingness to pay taxes, depending on their capacity to build “bridging” or “bonding” social ties. Additionally, we find that the sensibility of individual tax morale to the different types of social capital is higher in those countries with relatively low levels of institutional quality. In this vein, the government should carry out tax policies that consider the importance of volunteering, stimulating social cohesion and integration both within and between voluntary associations. As reported in a communication of the European Commission (1997), voluntary organisations should be encouraged and promoted, given their importance in social activities and their crucial role in the development and implementation of public policies.³² Moreover, the European Commission conducted a survey of over 2300 voluntary organisations, showing that their first perceived need is the demand for more funds such as public subsidies, despite these actually being mainly dependent on external financial resources. Given the findings of our research, we suggest designing policies that index the allocation of public funds to the bridging potential of each voluntary organisation. For instance, the actual structure of funds allocation could be integrated as follows: 1) analysing the association members’ composition; 2) analysing the intensity of association cross-associational activities; 3) allocate funds giving priority to those associations whose members are more heterogeneous and that carry out more inter-organisational activities. This mechanism would incentivize the

³² For further information see: “[Communication from the Commission of 6 June 1997 on promoting the role of voluntary organisations and foundations in Europe](#)”, accessed 12 August, 2022.

bridging potential of each voluntary organisation, encouraging the positive effect on tax compliance of volunteering.

Second, we show that individuals are more willing to pay taxes when their labour condition is relatively better than that of their parents, hence when there is upward social mobility. Therefore, tax policies should take into account the influence of intergenerational inequalities on future tax revenues, which in turn may determine the size of future expenditure budgets. Although this result is overall verified across European citizens, we show that the family context and the type of welfare state play an important role in the intensity of this relationship. Accordingly, tax policies should be designed to reduce the economic dependence of individuals on family support. As argued by the Eurofound (2017), policies should focus on providing equality of opportunity to Generation X (people born after 1964) and young people, given the current limitations on life opportunities and deteriorating economic prospects. Several country-specific policies could be taken into consideration to reverse this trend. For instance, recently, the Italian government has introduced a State guarantee for young people under 36 years old who aim to buy their first house, which would cover up to 80% of the house cost.³³ In this way, young people will no longer need to pay an advance to ask for a mortgage at credit institutions, and will have more possibility of moving out of the family home.

Third, we provide evidence on the positive effect that environmental concern has on the willingness of individuals to pay a carbon tax. This result is also verified among subjects who appear to have a low level of tax morale, suggesting that the issues of both tax evasion and climate change might be linked. Therefore, to increase the public acceptance of environmental taxes, fiscal policies should focus on stimulating the interest in climate change topics. Several European programmes are moving in this direction. At the institutional level, in 2020, the European Commission launched the Climate Pact, which is a movement of citizens, communities and organisations that aim to mobilise people to take part in climate

³³ Italian Ministry of Economy and Finance (https://www.dt.mef.gov.it/it/attivita_istituzionali/interventi_finanziari/misure_casa/fondo_garanzia/), accessed 10 August, 2022.

action to lower carbon pollution.³⁴ At the individual level, the “Stop global warming EU” is a citizens’ bottom-up initiative with the aim of pushing institutions to apply a carbon tax in European countries. The petition has been supported by 27 Nobel prize winners and endorsed by the signatures of more than 60,000 European citizens and 100 Mayors.³⁵

Despite the potential relevance of our results, we are aware that some limitations exist in this type of study. In fact, the reader may note that the chapters of this thesis are fragmented, although this is mainly due to the availability of data. The information collected by relevant international micro-surveys (i.e., European Values Study, World Values Survey, European Social Survey) are not the same across the different survey waves. This makes it difficult to carry out a holistic empirical analysis to be able to evaluate together the role of social ties, the intergenerational labour mobility, and the environmental concerns in tax morale. This is one of the reasons why we decided to separately exploit in each chapter the cross-sectional information available in the more appropriate survey wave, according to our proposed research questions. In other words, despite employing the European Values Study in chapters two and three, we could not merge the information of different waves because of some discrepancies in the corresponding survey questionnaires. So, for instance, the fifth wave of the European Values Study contains a different list of voluntary associations to which the respondents belong with respect to the previous waves. Additionally, the survey question that we employed to construct the intergenerational labour mobility in chapter three is available only in the fourth wave of the European Values Study, but not in the fifth. In the last chapter, we had to conduct an original survey in order to collect appropriate data for the generic tax morale and the willingness to pay an environmental tax, given that this information is not available in an official single survey.

Another limitation of this type of study is the absence of a time-series dimension. In fact, although each wave of the surveys is typically conducted over a representative sample of the country population, this does not provide multiple observations over time for the same subjects. This implies that only cross-sectional analyses can be conducted at micro level,

³⁴ European Commission (https://ec.europa.eu/clima/eu-action/european-green-deal/european-climate-pact_en), accessed 12 August, 2022.

³⁵ For more information see: <https://www.stopglobalwarming.eu/>, accessed 12 August, 2022.

hampering the possibility of conducting more accurate causal-effect studies. Ideally, gaining access to panel survey data in the future by conducting the same survey questions with the same subject pool, but in a different period, would offer more valuable data. However, in reality, this is difficult to achieve.

The behavioural insights from this thesis can be developed as future research projects which look closer at both conceptual and methodological aspects. Indeed, in the last stage of the PhD programme I started working on some of them, which I briefly summarize below.

Regarding the morality of people towards civic duties, such as tax compliance and/or pollution, we propose a theoretical framework that we test in a laboratory experiment in which the Becker's (1968) maximal fine hypothesis (i.e., an increase in the fine level leads to a strictly decreasing amount of criminal activity) is shown to fail due to corruption of public officials. Our theoretical model is based on a sequential setting where, at the first stage, the criminal chooses the optimal effort to be exerted in the illegal activity in the presence of perfect information on the optimal corruption decision of the public official at the second stage. We provide experimental evidence on the contribution of bribery as one of the possible determinants of the departure from maximum fine. This aspect of research is being investigated jointly by myself and professors Roberto Dell'Anno, Antonio Abatemarco and Andrea Morone.

In addition, following on from the insights given by chapter two on the importance of social ties, we investigate the effect of the interaction of agents in economic contexts other than taxation, such as financial markets. We develop an agent-based model with the aim of analysing how interactions among initially homogeneous traders, who can follow three diverse trading strategies, may generate market heterogeneity and are able to replicate some well-known stylized facts in financial markets (i.e., financial bubbles, volatility clustering, gain-loss asymmetry, herding behaviour, etc.). This is investigated by myself along with professors Gabriele Tedeschi and Jordi Ripollés.

Finally, the insights from chapter three on the role of inequality of labour opportunities and the results from chapter four on the importance of environmental concerns prompt us to

investigate the role of both inequality and environmental preferences on a technological innovation. To do so, we conduct an original survey to analyse the satisfaction of Italian students with the distance learning activities adopted during the COVID-19 pandemic. To this end, we consider both the positive impact on the environment due, for instance, to a reduction in travel, and the potential negative aspects due to unequal access to learning resources that might have repercussions on higher future socio-economic inequality. Interestingly, we identify a negative correlation between environmental preferences and inequality concerns that can be explained in light of the different evaluations of distance learning: those giving positive (negative) feedback consider such an approach an opportunity (a threat), weighting environmentally positive aspects more (less) than economic inequality concerns. These results highlight how equal access to any learning resource is crucial in lessening potential future inequality, generating a subsequent positive environmental impact. This is a joint study carried out by myself, Dr. Rocco Caferra and Prof. Andrea Morone.

References

- Ai, C., Norton, E. (2003). Interaction terms in logit and probit models. *Economics Letters*, 80(1), 123-129.
- Acciari, P., Polo, A., and Violante, G. L. (2022). And yet it moves: Intergenerational mobility in Italy. *American Economic Journal: Applied Economics*, 14(3), 118-63.
- Adler, P. S., and Seok-Woo Kwon. (2002). Social Capital: Prospects for a New Concept. *The Academy of Management Review*, 27(1), 17-40.
- Ahlerup, P., Olsson, O., and Yanagizawa, D. (2009). Social capital vs institutions in the growth process. *European Journal of Political Economy*, 25(1), 1-14.
- Akçomak, I. S., and Ter Weel, B. (2009). Social capital, innovation and growth: Evidence from Europe. *European Economic Review*, 53(5), 544-567.
- Aldy, J.E., and Stavins, R.N. (2012). The Promise and Problems of Pricing Carbon: Theory and Experience. *The Journal of Environment and Development*, 21(2), 152–180.
- Alesina, A., and Giuliano, P. (2010). The power of the family. *Journal of Economic Growth*, 15(2), 93-125.
- Alesina, A., and Rodrik, D. (1994). Distributive politics and economic growth. *The quarterly journal of economics*, 109(2), 465-490.
- Alesina, A., Stantcheva, S., and Teso, E. (2018). Intergenerational mobility and preferences for redistribution. *American Economic Review*, 108(2), 521-54.
- Allcott, H. (2011). Social norms and energy conservation. *Journal of Public Economics*, 95(9-10), 1082-1095.
- Allcott, H., and Rogers, T. (2014). The short-run and long-run effects of behavioural interventions: Experimental evidence from energy conservation. *American Economic Review*, 104(10), 3003-37.
- Allingham, M. G., and Sandmo, A. (1972). Income tax evasion: A theoretical analysis. *Taxation: Critical Perspectives on the World Economy*, 1(3-4), 323-338.
- Alm, J. (2012). Measuring, explaining, and controlling tax evasion: lessons from theory, experiments, and field studies. *Int Tax Public Finance* 19, 54-77.
- Alm, J., Bloomquist, K.M., and McKee, M. (2015). On the external validity of laboratory policy experiments. *Econ. Inq.*, 53 (2) (2015), pp. 1170-1186

- Alm, J., Bloomquist, K.M., and McKee, M. (2016). When You Know Your Neighbor Pays Taxes: Information, Peer Effects, and Tax Compliance. *Fiscal Studies* 38(4).
- Alm, J., McClelland, G. H., and Schulze, W. D. (1992). Why do people pay taxes? *Journal of public Economics*, 48(1), 21-38.
- Alm, J., Torgler, B. (2006). Culture differences and tax morale in the United States and in Europe. *Journal of Economic Psychology* 27, 224-246.
- Alm, J., and Yunus, M. (2009). Spatiality and Persistence in U.S. Individual Income Tax Compliance. *National Tax Journal*, 62(1), 101-24.
- Andor, M. A., Gerster, A., Peters, J., and Schmidt, C. M. (2020). Social norms and energy conservation beyond the US. *Journal of Environmental Economics and Management*, 103, 102351.
- Andriani, L. (2016). Tax morale and prosocial behaviour: evidence from a Palestinian survey. *Cambridge Journal of Economics*, 40(3), 821-841.
- Audia, P. G., and Teckchandani, A. (2010). The effect of connected and isolated voluntary associations on economic activity in the United States, 1984–2000. *Social Science Research*, 39(6), 1153-1163.
- Baldry, J. C. (1986). Tax evasion is not a gamble: A report on two experiments. *Economics Letters*, 22(4), 333-335.
- Barabas, J., and Jerit, J. (2010). Are Survey Experiments Externally Valid? *American Political Science Review*, 104(2), 226-242.
- Baron, S., Field, J., and Schuller, T. (2000). *Social Capital. Critical Perspectives*. Oxford: Oxford University Press.
- Barone, G., and Mocetti, S. (2011). Tax morale and public spending inefficiency. *International Tax and Public Finance*, Vol. 18 No. 6, pp. 724-749.
- Bartolini, S., Bilancini, E., and Pugno, M. (2013). Did the decline in social connections depress Americans' happiness? *Social Indicators Research*, 110(3), 1033-1059.
- Becker, G.S. (1968). Crime and Punishment: An Economic Approach. *Journal of Political Economy*, 76(2), 169–217.
- Becker, G.S., Kominers, S. D., Murphy, K. M., and Spenkuch, J. L. (2018). A theory of intergenerational mobility. *Journal of Political Economy*, 126(S1), S7-S25.
- Beller, E., and Hout, M. (2006). Intergenerational social mobility: The United States in comparative perspective. *The future of children*, 19-36.

- Benabou, R. (1993). Workings of a city: location, education, and production. *The Quarterly Journal of Economics*, 108(3), 619-652.
- Bethencourt, C., and Kunze, L. (2019). Tax evasion, social norms, and economic growth. *Journal of Public Economic Theory*, 21(2), 332-346.
- Beugelsdijk, S., and Smulders, S. (2009). Bonding and bridging social capital and economic growth. Tilburg: Tilburg University.
- Beugelsdijk, S., and Van Schaik, T. (2005). Social capital and growth in European regions: an empirical test. *European Journal of Political Economy*, 21(2), 301-324.
- Blau, P. M. (1977). *Inequality and heterogeneity: A primitive theory of social structure*. New York: Free Press.
- Blumenthal, M., Christian, C. and Slemrod, J. (2001). Do normative appeals affect tax compliance? Evidence from a controlled experiment in Minnesota. *National Tax Journal* 54(1), 125–138.
- Bott, K. M., Cappelen, A. W., Sørensen, E. Ø., and Tungodden, B. (2020). You've got mail: A randomized field experiment on tax evasion. *Management Science*, 66(7), 2801-2819.
- Bourguignon, F. (1981). Pareto superiority of unegalitarian equilibria in Stiglitz' model of wealth distribution with convex saving function. *Econometrica: Journal of the Econometric Society*, 1469-1475.
- Bousquet, L., Casamatta, G., Poniowski, G., and Vellutini, C. (2019). Estimating international tax evasion by individuals. Directorate-General for Taxation and Customs Union (European Commission).
- Brandon, A., List, J.A., Metcalfe, R.D., Price, M.K., and Rundhammer, F. (2019). Testing for crowd out in social nudges: Evidence from a natural field experiment in the market for electricity. *Proceedings of the National Academy of Sciences*, 116(12), 5293-5298.
- Bratberg, E., Davis, J., Mazumder, B., Nybom, M., Schnitzlein, D. D., and Vaage, K. (2017). A comparison of intergenerational mobility curves in Germany, Norway, Sweden, and the US. *The Scandinavian Journal of Economics*, 119(1), 72-101.
- Breen, R., and Luijkx, R. (2004). Social mobility in Europe between 1970 and 2000. *Social mobility in Europe*, 1, 37-77.
- Bukodi, E., Paskov, M., and Nolan, B. (2020). Intergenerational class mobility in Europe: a new account. *Social Forces*, 98(3), 941-972.

- Büthe, T., and Milner, H. V. (2008). The politics of foreign direct investment into developing countries: increasing FDI through international trade agreements? *American journal of political science*, 52(4), 741-762.
- Caferra, R., Colasante, A., and Morone, A. (2021). The less you burn, the more we earn: The role of social and political trust on energy-saving behaviour in Europe. *Energy Research and Social Science*, 71, 101812.
- Castro, L. and Scartascini, C. (2013). Tax compliance and enforcement in the Pampas: evidence from a field Experiment. *Journal of Economic Behaviour and Organization* 116, 65-82.
- Chetty, R., Hendren, N., and Katz, L. F. (2016). The Effects of Exposure to Better Neighborhoods on Children: New Evidence from the Moving to Opportunity Experiment. *American Economic Review* 106(4): 855-902.
- Chetty, R., Hendren, N., Kline, P., and Saez, S. (2014). Where is the Land of Opportunity? The Geography of Intergenerational Mobility in the United States. *Quarterly Journal of Economics* 129(4): 1553-1623.
- Choo, C., Fonseca, M., Myles, G. (2016). Do students behave like real taxpayers in the lab? Evidence from a real effort tax compliance experiment. *Journal of Economic Behaviour and Organization*, 124, 102-114.
- Claridge, T. (2020). Sources of social capital. *Social Capital Research*, Dunedin, New Zealand.
- Coffé, H., and Geys, B. (2007). Toward an empirical characterization of bridging and bonding social capital. *Nonprofit and Voluntary Sector Quarterly*, 36(1), 121-139.
- Colasante, A., D'Adamo, I., Morone, P. (2021). Nudging for the increased adoption of solar energy? Evidence from a survey in Italy. *Energy Research and Social Science*, 74, 101978.
- Corak, M. (2013). Income inequality, equality of opportunity, and intergenerational mobility. *Journal of Economic Perspectives*, 27(3), 79-102.
- Cortinovis, N., Xiao, J., Boschma, R., and van Oort, F. G. (2017). Quality of government and social capital as drivers of regional diversification in Europe. *Journal of Economic Geography*, 17(6), 1179-1208.
- Crescenzi, R., Gagliardi, L. (2015). Social capital and the innovative performance of Italian provinces. In: Crespi, F. and Quatraro, F. (eds) *The Economics of Knowledge, Innovation and Systemic Technology Policy*. Abingdon, UK: Routledge, pp.188–218.

- Crescenzi, R., Gagliardi, L., Percoco, M. (2013). The 'bright'side of social capital: How 'bridging'makes Italian provinces more innovative. In *Geography, institutions and regional economic performance*. Springer, Berlin, Heidelberg, pp. 143-164.
- Crivelli, E., De Mooij, R., and Keen, M. (2016). Base erosion, profit shifting and developing countries. *FinanzArchiv/Public Finance Analysis*, 268-301.
- Cummings, R. G., Martinez-Vazquez, J., McKee, M., and Torgler, B. (2009). Tax morale affects tax compliance: Evidence from surveys and an artefactual field experiment. *Journal of Economic Behaviour and Organization*, 70(3), 447-457.
- Del Carpio, L. (2014). Are the neighbors cheating? Evidence from a social norm experiment on property taxes in Peru. *Mimeo, INSEAD*.
- Dell'Anno, R. (2009). Tax evasion, tax morale and policy maker's effectiveness. *The Journal of Socio-Economics*, 38(6), 988-997.
- Doerrenberg, P. (2015). Does the use of tax revenue matter for tax compliance behaviour? *Economics Letters*, Volume 128, Pages 30-34.
- Dwenger, N., Kleven, H., Rasul, I. and Rincke, J. (2016). Extrinsic and intrinsic motivations for tax compliance: evidence from a field experiment in Germany. *American Economic Journal: Economic Policy* 8(3): 203–232.
- Eisenberg, N. (1982). The Development of Prosocial Behaviour. *Developmental Psychology*. Pages 1-21.
- Elffers, H., Weigel, R. H., and Helsing, D. J. (1987). The consequences of different strategies for measuring tax evasion behaviour. *Journal of Economic Psychology*, 8(3), 311-337.
- Erikson, R., and Goldthorpe, J. H. (1992). Individual or family? Results from two approaches to class assignment. *Acta Sociologica*, 35(2), 95-105.
- Erikson, R., and Goldthorpe, J. H. (2010). Has social mobility in Britain decreased? Reconciling divergent findings on income and class mobility. *The British journal of sociology*, 61(2), 211-230.
- Esping-Andersen, G. (1990). *The three worlds of welfare capitalism*. Princeton University Press.
- Esping-Andersen, G. (1999). *Social foundations of postindustrial economies*. OUP Oxford.
- Esping-Andersen, G., and Wagner, S. (2012). Asymmetries in the opportunity structure. Intergenerational mobility trends in Europe. *Research in Social Stratification and Mobility*, 30(4), 473-487.

- ESS Round 8: European Social Survey Round 8 Data (2016). Data file edition 2.2. NSD - Norwegian Centre for Research Data, Norway – Data Archive and distributor of ESS data for ESS ERIC.
- Eurofound (2017). Social mobility in the EU. Publications Office of the European Union, Luxembourg.
- EVS (2020): European Values Study Longitudinal Data File 1981-2008 (EVS 1981-2008). GESIS Data Archive, Cologne. ZA4804 Data file Version 3.1.0, <https://doi.org/10.4232/1.13486>
- Feld, L.P., and Frey, B.S. (2007). Tax compliance as the result of a psychological tax contract: the role of incentives and responsive regulation. *Law and Policy* 29, 102-120.
- Field, J. (2003). *Social Capital*. London: Routledge.
- Filippin, A., Fiorio, C. V., and Viviano, E. (2013). The effect of tax enforcement on tax morale. *European Journal of Political Economy*, 32, 320-331.
- Fine, B. (1999). The Developmental State Is Dead—Long Live Social Capital? *Development and Change* 30: 1-19.
- Frey, B. S. (2003). Deterrence and tax morale in the European Union. *European Review*, 11(3), 385-406.
- Frey, B. S., Torgler, B. (2007). Tax morale and conditional cooperation. *Journal of comparative economics*, 35(1), 136-159.
- Galor, O., and Zeira, J. (1993). Income distribution and macroeconomics. *The review of economic studies*, 60(1), 35-52.
- Gamso, J., and Yuldashev, F. (2018). Does rural development aid reduce international migration?. *World Development*, 110, 268-282.
- Ganzeboom, H. B., De Graaf, P. M., and Treiman, D. J. (1992). A standard international socio-economic index of occupational status. *Social science research*, 21(1), 1-56.
- García-Faroldi, L. (2015). Welfare states and social support: An international comparison. *Social Indicators Research*, 121(3), 697-722.
- Gërxxhani, K., and Schram, A. (2006). Tax evasion and income source: A comparative experimental study. *Journal of Economic Psychology*, 27(3), 402-422.
- Geys, B., and Murdoch, Z. (2008). How to make head or tail of ‘bridging’ and ‘bonding’?: addressing the methodological ambiguity 1. *The British journal of sociology*, 59(3), 435-454.

- Geys, B., and Murdoch, Z. (2010). Measuring the 'bridging' versus 'bonding' nature of social networks: A proposal for integrating existing measures. *Sociology*, 44(3), 523-540.
- Gilbert, B., and Zivin, J. G. (2014). Dynamic salience with intermittent billing: Evidence from smart electricity meters. *Journal of Economic Behaviour and Organization*, 107, 176-190.
- Graetz, M. J., and Reinganum, J. F., and Wilde, L. L. (1986). The tax compliance game: Toward an interactive theory of law enforcement. *JL Econ. and Org.*, 2, 1.
- Granovetter, M. (1973). The Strength of Weak Ties. *American Journal of Sociology*, 1360-1380.
- Granovetter, M. (1985). Economic Action and Social Structure: The Problem of Embeddedness. *American Journal of Sociology* 91(3): 481 – 510.
- Griesshaber, N., and Geys, B. (2012). Civic engagement and corruption in 20 European democracies. *European Societies*, 14(1), 57-81.
- Gugushvili, A. (2016). Intergenerational social mobility and popular explanations of poverty: A comparative perspective. *Social Justice Research*, 29(4), 402-428.
- Gugushvili, A. (2019). A multilevel analysis of perceived intergenerational mobility and welfare state preferences. *International Journal of Social Welfare*, 28(1), 16-30.
- Guiso, L., Sapienza, P., and Zingales, L. (2004). "The Role of Social Capital in Financial Development." *American Economic Review*, 94 (3): 526-556.
- Halla, M. (2012). Tax morale and compliance behaviour: First evidence on a causal link. *The BE Journal of Economic Analysis and Policy*, 12(1).
- Helliwell, J. F. and Putnam, R. D. (1995). Economic growth and social capital in Italy. *Eastern Economic Journal*, 21, 295–307.
- Horodnic, I. A. (2018). Tax morale and institutional theory: a systematic review. *International Journal of Sociology and Social Policy*.
- Hoyman, M., McCall, J., Paarlberg, L., and Brennan, J. (2016). Considering the role of social capital for economic development outcomes in US counties. *Economic Development Quarterly*, 30(4), 342-357.
- Huang, H., and Wei, S. J. (2006). Monetary policies for developing countries: The role of institutional quality. *Journal of International Economics*, 70(1), 239-252.
- Hwang, M., Grabb, E., and Curtis, J. (2005). Why get involved? Reasons for voluntary-association activity among Americans and Canadians. *Nonprofit and Voluntary Sector Quarterly*, 34(3), 387-403.

- Jennings, M. K., Stoker, L., and Bowers, J. (2009). Politics across generations: Family transmission reexamined. *The Journal of Politics*, 71(3), 782-799.
- Kim, B. Y., and Kang, Y. (2014). Social capital and entrepreneurial activity: A pseudo-panel approach. *Journal of Economic Behaviour and Organization*, 97, 47-60.
- Kinsey, K. A. (1992). Deterrence and alienation effects of IRS enforcement: An analysis of survey data. J. Slemrod, ed. *Why People Pay Taxes*.
- Kirchler E. (2007). *The Economic Psychology of Tax Behaviour*, Press, Cambridge.
- Kirchler E., Hoelzl E., and Wahl I. (2008). Enforced versus voluntary tax compliance: the 'slippery slope' framework, *Journal of Economic Psychology*, 29(2), 210–225.
- Kleibergen, F., and R. Paap (2006). "Generalized Reduced Rank Tests using the Singular Value Decomposition." *Journal of Econometrics*, 133: 97–126.
- Kluegel, J. R., and Smith, E. R. (2017). *Beliefs about inequality: Americans' views of what is and what ought to be*. Routledge.
- Kleven, H.J., Knudsen, M.B., Kreiner, C.T., Pedersen, S. and Saez, E. (2011). Unwilling or unable to cheat? Evidence from a tax audit experiment in Denmark. *Econometrica* 79(3): 651–692.
- Knack, S. (2003). Groups, growth and trust: Cross-country evidence on the Olson and Putnam hypotheses. *Public Choice*, 117(3), 341-355.
- Knack, S., and Keefer, P. (1997). Does social capital have an economic payoff? A cross-country investigation. *The Quarterly Journal of Economics*, 112(4), 1251-1288.
- Koessler, A.K., Torgler, B., Feld, L.P. and Frey, B.S. (2016). Commitment to pay taxes: a field experiment on the importance of promise. *Tax and Transfer Policy Institute Working Paper 10/2016*.
- Kouamé, W. A. (2021). Trust to Pay? Tax Morale and Trust in Africa. *The Journal of Development Studies*, 1-20.
- Lago-Peñas I., and Lago-Peñas S. (2010). The determinants of tax morale in comparative perspective: Evidence from European countries. *European Journal of Political Economy* 26 (2010) 441–453.
- Lefranc, A., and Trannoy, A. (2005). Intergenerational earnings mobility in France: Is France more mobile than the US?. *Annales d'Economie et de Statistique*, 57-77.
- Lentz, B. F., and Laband, D. N. (1989). Why so many children of doctors become doctors: Nepotism vs. human capital transfers. *Journal of Human Resources*, 396-413.

- Lewbel, A. (1997). Constructing instruments for regressions with measurement error when no additional data are available, with an application to patents and R&D. *Econometrica*, 65(5), 1201-1213.
- Lisi, G. (2015). Tax morale, tax compliance and the optimal tax policy. *Economic Analysis and Policy*, 45, 27-32.
- Lisi, G. (2019). Slippery slope framework, tax morale and tax compliance: a theoretical integration and an empirical assessment. *Discussion Papers in Economic Behaviour*, 2, 19.
- Lozza, E., Kastlunger, B., Tagliabue, S., and Kirchler, E. (2013). The Relationship Between Political Ideology and Attitudes Toward Tax Compliance: The Case of Italian Taxpayers. *Journal of Social and Political Psychology*, 1(1), 51-73.
- Luttmer, E. and Singhal, M. (2014). Tax morale. *Journal of Economic Perspectives* 28(4), 149-168.
- Marè, M., Motroni, A., and Porcelli, F. (2020). How family ties affect trust, tax morale and underground economy. *Journal of Economic Behaviour and Organization*, 174, 235-252.
- Marshall, M. J. and Stolle, D. (2004). Race and the City: Neighborhood Context and the Development of Generalized Trust. *Political Behaviour* 26(2), 125-53.
- Martinez-Vazquez, J., Torgler, B. (2009). The Evolution of Tax Morale in Modern Spain. *Journal of Economic Issues*, 43(1):1-28.
- Mascagni, G. (2018). From the lab to the field: A review of tax experiments. *Journal of Economic Surveys*, 32(2), 273-301.
- Merton, R. K., and Kitt, A. S. (1953). Reference group theory and social mobility. *Class, Status and Power*. Free Press, New York.
- Mo, P. H. (2000). Income inequality and economic growth. *Kyklos*, 53(3), 293-315.
- Molyneux, M. (2002). Gender and the Silences of Social Capital: Lessons from Latin America. *Development and Change*, 33(2), 167-188.
- Morris, D. (2012). *Tax Cheating: Illegal--but is it Immoral?*. Suny Press.
- Muhammad, I., Mohd Hasnu, N.N., and Ekins, P. (2021). Review: Empirical Research of Public Acceptance on Environmental Tax: A Systematic Literature Review. *Environments*, 8(10),109.

- Muringani, J., Fitjar, R. D., and Rodríguez-Pose, A. (2021). Social capital and economic growth in the regions of Europe. *Environment and Planning A: Economy and Space*, 53(6), 1412-1434.
- Murphy, R. (2019). The European tax gap. A report for the Socialists and Democrats Group in the European Parliament. Global Policy. Available at: https://www.socialistsanddemocrats.eu/sites/default/files/2019-01/the_european_tax_gap_en_190123.pdf
- Musick, K., and Mare, R. D. (2004). Family structure, intergenerational mobility, and the reproduction of poverty: Evidence for increasing polarization?. *Demography*, 41(4), 629-648.
- Narayan, A., Van der Weide, R., Cojocaru, A., Lakner, C., Redaelli, S., Mahler, D. G., Ramasubbaiah, R. G. N., and Thewissen, S. (2018). Fair progress?: Economic mobility across generations around the world. World Bank Publications.
- Nemore, F., and Morone, A. (2019). Public spirit on immigration issues and tax morale in Italy: An empirical investigation. *Journal of Behavioural and Experimental Economics*, 81, 11-18.
- Nicoletti, C., and Ermisch, J. F. (2008). Intergenerational earnings mobility: changes across cohorts in Britain. *The BE Journal of Economic Analysis and Policy*, 7(2).
- Nolan, J. M., Schultz, P. W., Cialdini, R. B., Goldstein, N. J., and Griskevicius, V. (2008). Normative social influence is underdetected. *Personality and Social Psychology Bulletin*, 34(7), 913-923.
- North, D.C. (1991). Institutions. *The Journal of Economic Perspectives*, 5(1), 97-112.
- Norton E. C., Wang, H., and Ai, C. (2004). Computing interaction effects and standard errors in logit and probit models. *The Stata Journal*, 4(2), 154-167.
- OECD. (2017). *Behavioural Insights and Public Policy: Lessons from Around the World*. OECD Publishing, Paris.
- OECD. (2019). *Tax Morale: What Drives People and Businesses to Pay Tax?*, OECD Publishing, Paris.
- OECD. (2021). *Taxing Energy Use for Sustainable Development*; OECD Publishing: Paris, France.
- Olson, M. (1965). *The logic of collective action*. Cambridge MA: Harvard University Press.
- Olson, M. (1982). *The rise and decline of nations*. Yale University Press.

- Paxton, P. (2002). Social capital and democracy: An interdependent relationship. *American Sociological Review*, 254-277.
- Pervaiz, Z., and Chaudhary, A. R. (2015). Social Cohesion and Economic Growth: An Empirical Investigation. *Australian Economic Review*, 48(4), 369-381.
- Piketty, T. (2000). Theories of persistent inequality and intergenerational mobility. *Handbook of Income Distribution*, 1, 429-476.
- Prieto, J., Sanzo, M.J., and Suárez-Pandiello, J., (2006). Análisis económico de la actitud hacia el fraude fiscal en España. *Hacienda Pública Española* 177, 107-128.
- Putnam, R. (2000). *Bowling alone: The collapse and revival of American community*. New York: Simon and Schuster.
- Putnam, R. D. (1995). Tuning in, tuning out: The strange disappearance of social capital in America. *PS: Political science and politics*, 28(4), 664-683.
- Putnam, R., Gross, K.A. (2002). "introduction" in R. Putnam (ed.) *Democracies in flux: The evolution of social capital in contemporary society*. Oxford University Press, USA.
- Putnam, R., Leonardi, R., Nanetti, R.Y., (1993). *Making democracy work*. Princeton: Princeton University Press.
- Quibria, M. G. (2003). The puzzle of social capital a critical review.
- Rotaris, L., Danielis, R. (2019). The willingness to pay for a carbon tax in Italy. *Transportation Research Part D: Transport and Environment*, 67, 659-673.
- Rotolo, T. (2000). A time to join, a time to quit: The influence of life cycle transitions on voluntary association membership. *Social Forces*, 78(3), 1133-1161.
- Ruiter, S., De Graaf, N. D. (2009). Socio-economic payoffs of voluntary association involvement: A Dutch life course study. *European Sociological Review*, 25(4), 425-442.
- Russo, F.F. (2013). Tax morale and tax evasion reports. *Economics Letters*, 121(1), 110-114.
- Saad, N. (2014). Tax Knowledge, Tax Complexity and Tax Compliance: Taxpayers' View. *Procedia - Social and Behavioural Sciences* 109, 1069-1075.
- Savin, I., Drews, S., Maestre-Andrés, S., and van den Bergh, J. (2020). Public Views on Carbon Taxation and Its Fairness: A Computational-Linguistics Analysis. *Clim. Change*, 162(4), 2107-2138.
- Scholz, J. T., and Lubell, M. (1998). Trust and taxpaying: Testing the heuristic approach to collective action. *American Journal of Political Science*, 398-417.

- Scholz, J. T., and Pinney, N. (1995). Duty, fear, and tax compliance: The heuristic basis of citizenship behaviour. *American Journal of Political Science*, 490-512.
- Schultz, P. W., Nolan, J. M., Cialdini, R. B., Goldstein, N. J., and Griskevicius, V. (2007). The constructive, destructive, and reconstructive power of social norms. *Psychological Science*, 18(5), 429-434.
- Slemrod, J., Blumenthal, M. and Christian, C. (2001). Taxpayer response to an increased probability of audit: evidence from a controlled experiment in Minnesota. *Journal of Public Economics*, 79(3), 455-483.
- Smith, D. H. (1994). Determinants of Voluntary Association Participation and Volunteering: A Literature Review. *Nonprofit and Voluntary Sector Quarterly*, 23(3), 243–263.
- Staiger, D., and Stock, J. (1997). Instrumental Variables Regression with Weak Instruments. *Econometrica*, 65(3), 557-586.
- Stiglitz, J. E. (1969). Distribution of income and wealth among individuals. *Econometrica: Journal of the Econometric Society*, 382-397.
- Stolle, D., Rochon, T. R. (1998). Are all associations alike? Member diversity, associational type, and the creation of social capital. *American Behavioural Scientist*, 42(1), 47-65.
- Sullivan, P. L., Tessman, B. F., and Li, X. (2011). US military aid and recipient state cooperation. *Foreign Policy Analysis*, 7(3), 275-294.
- Swamy, A., Knack, S., Lee, Y., and Azfar, O. (2001). Gender and corruption. *Journal of Development Economics*, 64(1), 25-55.
- Thaler, R. H., and Sunstein, C. R. (2009). *Nudge: Improving decisions about health, wealth, and happiness*. Penguin.
- Torche, F. (2015). Analyses of intergenerational mobility: An interdisciplinary review. *The Annals of the American Academy of Political and Social Science*, 657(1), 37-62.
- Torgler, B. (2002). Speaking to theorists and searching for facts: tax morale and tax compliance in experiments. *Journal of Economic Surveys*, 16(5), 657-683.
- Torgler, B. (2004a). Moral suasion: An alternative tax policy strategy? Evidence from a controlled field experiment in Switzerland. *Economics of governance*, 5(3), 235-253.
- Torgler, B. (2004b). Cross-culture comparison of tax morale and tax compliance: evidence from Costa Rica and Switzerland. *International Journal of Comparative Sociology*, 45(1-2), 17-43.

- Torgler, B. (2004c). Tax Morale in Asian Countries. *Journal of Asian Economics*, 15(2), 237-266.
- Torgler, B. (2005a). Tax morale and direct democracy. *European Journal of Political Economy*, 21(2), 525-531.
- Torgler, B. (2005b). Tax morale in Latin America. *Public Choice*, 122(1), 133-157.
- Torgler, B. (2006). The importance of faith: tax morale and religiosity. *Journal of Economic Behaviour and Organization*, 61(1), 81-109.
- Torgler, B. (2012). Tax morale, eastern Europe and European enlargement. *Communist and Post-Communist Studies*, 45(1-2), 11-25.
- Torgler, B., and Valev, N. T. (2010). Gender and public attitudes toward corruption and tax evasion. *Contemporary Economic Policy*, 28(4), 554-568.
- Torgler, B., Demir, I.C., Macintyre, A., Schaffner, M. (2008). Causes and Consequences of Tax Morale: An Empirical Investigation. *Economic Analysis and Policy*, 38(2), 313-339.
- Torgler, B., Schneider, F., Schaltegger, C. A. (2010). Local autonomy, tax morale, and the shadow economy. *Public Choice*, 144(1), 293-321.
- Torgler, B., Werner, J. (2005). Fiscal Autonomy and Tax Morale: Evidence from Germany. *Public Finance and Management*, 5(4), 423-452.
- Tripp, A. M. (1997). *Changing the Rules: the politics of liberalization and the urban informal economy in Tanzania*. Univ of California Press.
- Umit, R., Schaffer, L.M. (2020). Attitudes Towards Carbon Taxes Across Europe: The Role of Perceived Uncertainty and Self-Interest. *Energy Policy*, 140, 111385.
- United National Framework Convention on Climate Change (2015). Paris Agreement. Available online: https://unfccc.int/sites/default/files/english_paris_agreement.pdf.
- Van Staveren, I., Knorringa, P. (2007). Unpacking Social Capital in Economic Development: How Social Relations Matter. *Review of Social Economy*, 65(1),107-135.
- Williams C.C., and Krasniqi B., (2017). Evaluating the individual and country-level variations in tax morale: evidence from 35 Eurasian countries. *Journal of Economic Studies*, 44(5), 816-832.
- Williams C.C., and Martínez Á., (2014). Explaining cross-national variations in tax morality in the European Union: an exploratory analysis. *Studies of Transition States and Societies*, 6(1), 5-18.

Wooldridge, J. M. (2015). Control function methods in applied econometrics. *Journal of Human Resources*, 50(2), 420-445.

Xin Li, S. (2010). Social identities, ethnic diversity, and tax morale. *Public Finance Review*, 38(2), 146-177.