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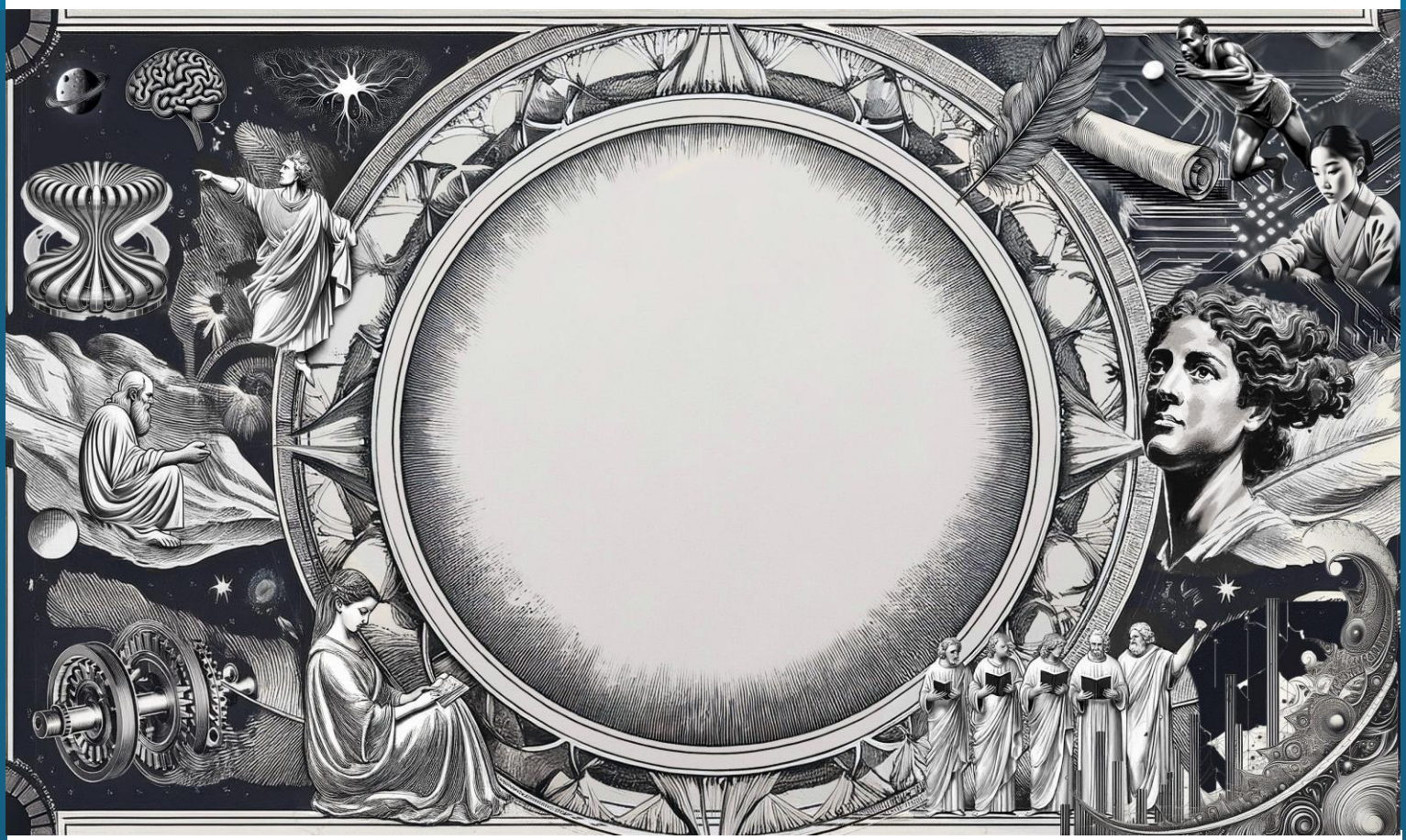

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# Multidimensional Tax Compliance Attitude[ab]

Christoffer Bruns[c], Martin Fochmann[d], Peter N.C. Mohr[e], Benno Torgler[f]

## Abstract

Citizen tax compliance significantly dictates governmental fiscal capacities. Therefore, understanding the differences in individuals' tax compliance attitudes remains paramount. Utilizing three online surveys, we develop a taxpayer typology based on a factor and a cluster analysis. Our findings underscore that taxpayers can be classified into two categories: (a) moralists and (b) rationalists. Notably, rationalists consistently exhibit lower tax compliance levels than their moralist counterparts. We introduce a questionnaire labeled the Tax Compliance Attitude Inventory (TCAI) alongside a classification algorithm. These tools enable users to categorize individuals in any dataset applying the TCAI as moralists and rationalists. The heterogeneity in taxpayer attitudes can primarily be attributed to disparities in four key factors: (i) morale, (ii) monetary benefit, (iii) deterrence, and (iv) authority. Lastly, to demonstrate the practical application of our findings, we present an online experiment that tests our results against an incentivized and out-of-sample backdrop. Overall, this work provides an instrument for predicting individuals' tax compliance intentions and assessing taxpayer attitudes.

## Keywords

Tax compliance, taxpayer attitudes, taxpayer typology, compliance behavior, heterogeneous individuals

## JEL-Classification

C38, C83, D91, H26

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## 1 Introduction

Tax compliance is intricately tied to the obligation of tax payments. In most countries, individuals must file tax returns to ascertain their tax obligations. A critical question then emerges: on what basis do individuals decide to comply? An understanding of the motivations underpinning tax compliance is essential because each act of non-compliance diminishes tax revenues, subsequently constraining the national budget. Such insights enable governments and tax authorities to more effectively promote compliant behavior.

The landscape of tax compliance research has steadily advanced over time. Recent literature confirms that it is not always a rational, strictly economic calculus that underlies individuals' decision-making (Lohse et al., 2024; Müller et al., 2023). Also trust in the authorities, crucially determined by the perceived legitimacy of governmental enforcement, plays an important role (Batrancea et al., 2019; Gobena and Van Dijke, 2017; Hofmann et al, 2022). For instance, stronger coercion triggering the fear of a conflict with the tax authorities and higher complexity of the tax law steer individuals toward increased employment of tax practitioners, which eventually reduces tax compliance (Alm et al., 2010; Frecknall-Hughes et al., 2023). Next to coercive measures, positive incentives featuring a reward mechanism for those who have been found compliant were tested, showing mixed results (Fatas et al., 2021; Fochmann and Kroll, 2016). Additionally, social factors influence tax compliance intentions. Individuals fear the consequences of their tax evasion behavior being disclosed, consequently complying more in a system of reduced anonymity (Schitter et al., 2019). However, if others signal non-compliance an individual's willingness for tax evasion rises concurringly (Burgstaller and Pfeil, 2024; Garcia et al., 2020). An array of important tax compliance driving forces has been identified by existing research. Yet, integrated approaches considering several dimensions are scarce. Moreover, individuals are heterogeneous and might differ in what they deem important in their tax compliance decision. Thus, not all findings might be generalizable.

In this study, we allow for such heterogeneity in the taxpayer attitude as well as a multidimensional perspective, creating a taxpayer typology based on a quantitative approach. In three consecutive online surveys ($N$ = 201; $N$ = 303; $N$ = 2,825), we apply a factor and a cluster analysis, identifying two taxpayer clusters: *(a) the moralist and (b) the rationalist*. It shows, that the former behaves significantly more tax-compliant than the latter.

To make our findings applicable we introduce the *Tax Compliance Attitude Inventory (TCAI)*. Based on 104 items taken from the tax compliance literature and a qualitative online survey, we identify four underlying factors: (i) morale, (ii) monetary benefit, (iii) deterrence, and (iv)

authority. Subsequently, we derive a condensed 16-item, or alternatively 12-item, questionnaire that we label as the TCAI-16 and the TCAI-12, respectively. A classification algorithm is presented, that enables its users to divide every newly collected dataset based on the TCAI-16 or TCAI-12 into moralists and rationalists, and therefore to predict tax compliance behavior. Lastly, we utilize an online experiment ($N = 334$) where we demonstrate the applicability and validity of our taxpayer typology against an incentivized and out-of-sample background.

This article offers several contributions to the existing body of research. First, we provide a taxpayer typology that can serve as a predictive tool for tax compliance-related decision-making. Applying our presented classification algorithm, future studies can identify moralists and rationalists within a survey, and thus make statements about their potential tax compliance behavior. Second, we analyze taxpayer attitudes and show that they consist of four different factors. Thereby, the initial work by Kirchler and Wahl (2010) on creating a tax compliance inventory is both validated and expanded upon. Third, our taxpayer typology leverages quantitative methodologies, distinguishing it from prior typology approaches such as Torgler (2003) and Vogel (1974) which exclusively rely on qualitative measures.

The structure of this article is as follows: In Section 2, we elucidate some of the background of tax compliance history. Section 3 presents the data and variables used before Section 4 derives the taxpayer typology. In Section 5, we demonstrate its predictive power and present the classification algorithm. Finally, Section 6 provides the discussion and conclusion of this study.

## 2 Background of tax compliance research

The field of crime is a well-researched topic in literature. Becker's (1968) seminal work introduced the economics of crime model, highlighting the audit probability and penalty system as primary drivers of compliant behavior. Subsequently, Allingham and Sandmo (1972) refined Becker's model creating a tax evasion framework and laying the groundwork for extensive research into the nuances of tax compliance motivations. Historically, much of the focus rested in the beginning on the neoclassical model of human decision-making, viewing individuals as rational utility maximizers. However, advances in behavioral taxation challenge this perspective by accommodating a more realistic view of the decision-making structure. Over the years, this has led to the identification of a plethora of variables influencing tax compliance. The classic work by Allingham and Sandmo (1972) and later Beck et al. (1991) suggest that audit probabilities and penalty systems significantly influence tax compliance. Yet, perceptions of these variables also matter. Notably, Alm et al. (1992) demonstrated that participants tend to overestimate audit

probabilities, a finding corroborated by other studies (Kirchler, 2007; Scholz and Pinney, 1995). Additionally, individual risk attitudes, complexities in the tax system, and (un)awareness of potential penalties all factor into tax compliance (Kirchler, 2007; Alm, 2019; Andreoni et al., 1998; Hofmann et al., 2017). On the other hand, in line with rational decision-making, Gordon (1989) and Friedland et al. (1978) show a negative relation between tax rate and tax compliance behavior. The higher the tax obligation the less attractive is the compliance choice.

Beyond individual behavior, the reciprocal relationship between taxpayers and the government plays a crucial role in tax compliance. For many, tax payment is not merely an obligation but a price for benefits like infrastructure and social security. Bordignon (1993) emphasizes the value citizens place on this exchange relationship. Trust in authorities is paramount; a sentiment echoed in Kirchler et al.'s (2008) *slippery slope model*, which differentiates between enforced and voluntary tax compliance. A wealth of literature underscores the positive correlation between trust in government and tax compliance (Kastlunger et al., 2013; Torgler, 2003; Torgler and Schneider, 2005; Wahl et al., 2010). Feld and Frey (2002) term this relationship a 'psychological contract'.

Also, the way how fairly taxes are collected and spent influences tax compliance. Alm et al. (1993) show higher tax compliance when taxpayers support the tax usage. Spicer and Becker (1980) show decreasing tax compliance in a laboratory experiment when taxpayers believe that they are facing above-average tax rates. In general, fairness of the tax system shows to have a significant influence (Bordignon, 1993; Cullis and Lewis, 1997; Spicer, 1986).

Taxpayer interrelations also influence tax compliance. Social norms and moral obligations tied to tax payments strengthen compliance behavior (Alm and Torgler, 2011; Gordon, 1989). The fear of reputational damage, should one be caught evading taxes, also steers behavior, as illustrated in a laboratory experiment by Blaufus et al. (2017). The authors reveal a 'shame effect' that finds widespread affirmation in the literature (Borgonovo et al., 2021; Schitter et al., 2019). This effect guides individuals toward tax compliance due to the potential shame of non-compliance. However, the study also unveils a 'contagion effect' where witnessing others evading taxes reduces one's inclination toward compliance (see also Frey and Torgler, 2007). Such contagion is particularly pronounced among peer groups, friends, and acquaintances, a finding substantiated by various studies (Bordignon, 1993; Feld and Tyran, 2002; Grasmick and Green, 1980).

Some studies delve into intrinsic pressures individuals face. There exists an inherent moral obligation associated with tax payments (Dawes, 1980; Scholz and Pinney, 1995). Casal et al. (2022) provide evidence for a distinguishable 'unconditional tax propensity'. This internal compulsion,

when violated, induces guilt, positioning it as the psychological cost of tax evasion (Dulleck et al., 2016; Gordon, 1989).

In essence, existing research implies that tax compliance is a multifaceted issue, akin to assembling a complex puzzle. Yet, integrated approaches considering several dimensions or approaches allowing for differences in the taxpayer attitude among individuals are mostly absent. Kirchler and Wahl's (2010) study undertakes an initial step in this field. The authors introduce a tax compliance inventory and provide empirical evidence supporting the notion that there are distinct attitudes associated with tax compliance. Based on 35 items from the literature and factor analysis, distinct results are found for intentions of voluntary and enforced tax compliance as well as legal tax avoidance. Validating and expanding upon findings by Kirchler and Wahl we introduce the multidimensional Tax Compliance Attitude Inventory (*TCAI*).

## 3 Data and variables

For this study, three online surveys and one online experiment are carried out. Each data collection is conducted by a market research agency (Münster Research Institute) between 2019 and 2020 and exclusively includes genuine taxpayers from Germany. The first and the second online survey contain a sample size of $N = 201$ and $N = 303$ participants, respectively. To determine an appropriate sample size for the third online survey, which serves for hypotheses testing, a priori power analysis is executed using G*Power (Faul et al., 2007). Incorporating a small effect size following Cohen (1992), an alpha of 0.001, and a power of 0.95 results in a recommended sample size of 2,211 participants. The final sample contains $N = 2{,}825$ participants. For the online experiment, we end with a sample size of $N = 334$ participants, exceeding the recommended sample size of a priori power analysis for logistic regressions that, based on effect sizes from the third online survey, recommends a sample size of 217 participants.

In all data collections, various demographics are surveyed, including gender, age, education, employment status, family status, risk preference, religiousness, and income. *Education* is quantified by the number of years spent in educational institutions. *Employment Status* is a dummy variable that is set to one for individuals employed either full-time or part-time, and zero otherwise. *Family Status* comprises three dummy variables indicating if an individual is married, divorced/widowed, or has another status, with 'single' being the reference group. *Risk Attitude* is gauged based on the *Socio-Economic Panel* item, where individuals express their risk preferences on a 10-point Likert scale, ranging from 0 ("Not risk-loving at all") to 10 ("Very risk-loving"). *Religiousness* is a

dummy variable set to one if an individual reports praying more than zero times per week on average. *Income* is classified into six brackets, ranging from under 1,000 EUR to over 5,000 EUR of monthly household net income. An overview of sample statistics is provided in Table A.1 (Online Appendix A).

Additionally, the third online survey ($N = 2{,}825$) includes three items to measure tax compliance intentions: The first tax compliance measure (*TC1*) is derived from the World Values Survey and asks participants about their opinion on tax cheating if there is a chance. Answers can be given on a scale ranging from "Never justifiable" to "Always justifiable". The second and third measures are scenario-based. In the second item (*TC2*), participants are presented with an opportunity to under-report taxable revenue. They then rate their likelihood of doing so on a 10-point Likert scale. The third measure (*TC3*) offers a scenario where participants can over-report expenses, with their willingness to do so assessed on a similar 10-point Likert scale. For a consistent interpretation of tax compliance (where higher values signify greater compliance), we invert the scales for TC1 and TC3 in subsequent analyses. A detailed breakdown of these tax compliance measures, with their adjusted scales, can be found in Table A.2 (Online Appendix A).

The online experiment ($N = 334$) includes two tax compliance measures. First, the measure *TC1Exp* is the same item as TC1 asking about the justifiability of tax cheating. For the second measure, a classical tax evasion game is conducted. Each individual receives an initial endowment of 5 EUR, which must be taxed with a tax rate of 50%. Participants are informed that they are free to decide between two options: First, they could declare the full income of 5 EUR. Second, they could declare an income of 0 EUR. Moreover, information about the audit probability being 30% and about the penalty for caught evaders being 5 EUR are provided. As renumeration participants receive the money they earned in the game and a show-up fee of 2.50 EUR. From the tax evasion game emerges *TCExp* as a binary variable turning one for individuals declaring their income and zero otherwise.

Next to the here described basic item structures of the online surveys and the online experiment, varying variables concerning the TCAI and the development of the taxpayer typology are included. These variables are derived and determined in the subsequent sections. Online Appendix B provides an overview of the translated transcripts of the conducted online surveys and the online experiment.

## 4 Derivation of the taxpayer typology

### 4.1 Factor analysis

Our formulation of the TCAI integrates both established research and a bottom-up methodology. The latter is represented by the first online survey ($N = 201$), prompting participants to delineate their considerations while completing their tax return. Subsequently, responses are reviewed: unrelated entries are discarded, and analogous submissions are consolidated. This process results in a refined set of 45 items. Complementarily, we incorporate an additional 59 items sourced from tax compliance literature, which signify individual attitudes empirically demonstrated to influence tax compliance behavior. Consequently, our compiled TCAI comprises 104 items (referred to as TCAI-104). A detailed enumeration of all items within the TCAI-104, alongside their corresponding literature references, is presented in Tables A.3 to A.7 (Online Appendix A).

To apply the TCAI-104, we utilize the second online survey ($N = 303$). Participants are presented with statements corresponding to the individual items. Initially, they encounter an introductory text that situates them in the context of completing their tax return. Subsequently, they are prompted to self-evaluate their agreement on a 6-point Likert scale, spanning from "Do not agree at all" to "Fully agree", regarding the significance of each item in their tax compliance decision-making process.

Following this, we employ principal component factor analysis using the data from the second online survey to discern potential interrelations between the items. We assign every item to a factor and reduce the number of items per factor in a way that a certain explanatory value is kept. The outcome is a more concise TCAI that encapsulates individual tax compliance attitudes. While there is not a definitive approach to ascertain the optimal number of factors, we apply four different methods: (1) The Kaiser criterion posits that factors should only be retained if their eigenvalue exceeds one (Kaiser and Dickman, 1959). According to our results, up to 21 factors have an eigenvalue above one. (2) The Elbow criterion (Cattell, 1966) graphs eigenvalues against factor count, identifying a point (or 'elbow') where the introduction of an additional factor does not substantially increase the eigenvalue. Our data indicates this 'elbow' occurs at the fourth factor. The associated scree plot is illustrated in Figure A.1 (Online Appendix A). (3) We examine factor loadings for varied factor counts, deploying varimax rotation. Beginning with four factors – suggested by the elbow criterion – we primarily consider items with the highest factor loadings, intending to omit others subsequently. The highest loadings consistently hover around 0.7 (see Table A.8 to A.10 (Online Appendix A) for an overview of all factor loadings). (4) Our final approach emphasizes the textual coherence of the factors. The four factors resonate thematically

with *(i) morale, (ii) monetary benefit, (iii) deterrence, and (iv) authority*. A model with four factors thus appears coherent, maintaining thematic clarity. The final model elucidates 42.64% of the cumulative variance.

To increase applicability, a curtailment of the items under each factor is helpful. The goal is to maintain a substantial degree of explanatory value while distilling the items to a manageable scope, paving the way for a more concise TCAI. Hence, we prioritize items for retention that exhibit factor loadings around 0.7, show low cross-loadings with other factors, and have minimal textual overlap with other items. The reduction process culminates in a list of 16 items. Each of the four identified factors encompasses four specific items. Notably, five items emanate from the first online survey, where participants documented decision-relevant thoughts. The remaining 11 items are derivative of established literature. An additional, subsequent factor analysis, this time exclusively including these 16 items, reaffirms our item allocation. Table 1 displays the streamlined multidimensional TCAI, denoted as TCAI-16.

| Item | Factor |
|---|---|
| Please imagine the following situation:<br>In real life, you are faced with the decision to pay taxes (for example, by filling in your tax return). In doing so, you can pay your taxes honestly or you can benefit yourself by unlawfully reducing your total taxes payable through tax evasion. Please read the statements below and decide to what extent you agree with each. Do not agree at all Fully agree<br>1 2 3 4 5 6 | |
| **When I fill in my tax return, it is especially important to me …** | |
| … that I do not provide any wrong information. | Moral |
| … that I comply with the responsibility towards society to pay taxes in full. | Moral |
| … that I fulfil the moral obligation to make my tax contribution. | Moral |
| … that I pay all my taxes even if I know that I will not be audited. | Moral |
| … that I receive a lot in return. | Monetary benefit |
| … that I get the best possible out of it for me. | Monetary benefit |
| … that I save money/reduce taxes. | Monetary benefit |
| … that I get a tax refund. | Monetary benefit |
| … that I only cheat to the point where I can avoid imprisonment. | Deterrence |
| … that financial penalties, should I be caught while tax evading, are not too high. | Deterrence |
| … that the probability of getting caught while tax evading is not too high. | Deterrence |
| … that I do not experience negative social consequences from other members of society should I be caught cheating. | Deterrence |
| … that I perceive the distribution of the tax burden as fair. | Authority |
| … that I agree with the intended use of my taxes. | Authority |
| … that the tax system is easy to understand for the average citizen. | Authority |
| … that I have the impression the state has earned the money I provide it with. | Authority |

**Table 1:** The TCAI-16

*Notes:* This table shows the TCAI-16 with the introductory text. Originating from a factor analysis, questions are systematically allocated to the four underlying factors: morale, monetary benefit, deterrence, and authority. Through the reduction process, the item count has been streamlined from an initial pool of 104 down to a succinct set of 16. A detailed exposition of the initial items is presented in Tables A.3 to A.7 (Online Appendix A).

### 4.2 Factors and tax compliance

With the introduction of the TCAI-16, we have identified four factors, i.e., attitudes, in which individuals differ when it comes to paying taxes. To examine whether these differences affect the tax compliance decision and are thus of interest to a taxpayer typology, regression analysis is performed. For this purpose, we utilize the third online survey ($N$ = 2,825) including, next to the tax compliance and demographic items, the TCAI-16 questionnaire. To mitigate potential sequence effects or unintended biases, items in the TCAI-16 were presented to participants in a randomized order.

Three linear regression models are conducted using TC1, TC2, and TC3 as dependent variables. Independent variables are sourced from the TCAI-16. Assuming equal weights, we aggregate the values of the items under each factor resulting in the independent variables: *morale, monetary benefit, deterrence*, and *authority*. We control for several demographics and personal attributes, including gender, age, education, employment status, family status, risk preference, religiousness, and income, in alignment with prior studies (Alm, 2019; Grasmick et al., 1991; Hofmann et al., 2017; Kastlunger et al., 2013, Torgler, 2006, 2007).

In addition, we use the online experiment ($N$ = 334) to test for potential effects in front of an incentivized background and out-of-sample data. Using TCExp and TC1Exp as dependent variables a logistic and a linear regression model, respectively, are conducted. Again, the four factors and the demographic items serve as independent variables. Results are displayed in Table 2. The outcome shows that the morale variable, i.e., the importance of morality, has a consistently positive and significant effect on tax compliance. In contrast, monetary benefit and deterrence have a negative influence on tax compliance. Only for TC1 and TCExp, monetary benefit does not show a measurable effect. Turning to the authority factor, indications for a present effect on tax compliance are weak. Except for a positive effect on TC2, all coefficients remain statistically insignificant. Altogether, individuals concentrating on questions of morality instead of deterrence mechanisms or monetary incentives are more tax compliant, while an increased focus on authority-related issues seems to have a rather small effect.

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| VARIABLES | TC1 | TC2 | TC3 | TCExp | TC1Exp |
| *Regression model* | *Linear* | *Linear* | *Linear* | *Logistic* | *Linear* |
| Morale | 0.2106*** | 0.2369*** | 0.1403*** | 0.2472*** | 0.2426*** |
| | (0.0103) | (0.0130) | (0.0141) | (0.0534) | (0.0292) |
| Monetary benefit | -0.0169 | -0.0736*** | -0.0796*** | 0.0146 | -0.0632* |
| | (0.0094) | (0.0119) | (0.0129) | (0.0516) | (0.0257) |
| Deterrence | -0.1134*** | -0.0991*** | -0.0863*** | -0.0864* | -0.1128*** |
| | (0.0082) | (0.0104) | (0.0113) | (0.0398) | (0.0216) |
| Authority | -0.0138 | 0.0344** | -0.0115 | -0.0625 | -0.0111 |
| | (0.0093) | (0.0118) | (0.0128) | (0.0470) | (0.0235) |
| Constant | 6.6430*** | 2.7115*** | 5.2028*** | -2.6369 | 6.3943*** |
| | (0.3187) | (0.4116) | (0.4468) | (1.7122) | (1.0065) |
| Observations | 2,825 | 2,825 | 2,825 | 334 | 334 |
| R-squared | 0.3704 | 0.2654 | 0.1401 | | 0.4501 |
| Pseudo R-squared | | | | 0.2487 | |
| Controls | YES | YES | YES | YES | YES |

**Table 2:** Regression analyses – individual factor influences on tax compliance

*Notes:* Columns one to three of this table show the results of different linear regression models, based on the third online survey ($N$ = 2,825), using TC1, TC2, and TC3 as dependent variables, respectively. Columns four and five show the results of a logistic and a linear regression model, respectively, based on the online experiment ($N$ = 334). All models include the four factors morale, monetary benefit, deterrence, and authority as independent variables. Included controls are gender, age, education, employment status, family status, risk preference, religiousness, and income. Full results are displayed in Table A.11 (Online Appendix A). All values are rounded to the fourth decimal place. Standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05.

### 4.3 Cluster analysis

Up to this point, we have identified different tax compliance attitudes and have shown that these attitudes influence tax compliance. However, such a finding is not yet sufficient for predictive application in tax compliance behavior. Consider, for instance, a respondent who exhibits elevated values for both the morale and deterrence factors. Such a profile creates an ambiguity based on our present data. To address this issue, we employ a cluster analysis with our four factors morale, monetary benefit, deterrence, and authority using data from the third online survey ($N$ = 2,825). Discerning patterns in the expression of the four factors, allows us to determine different clusters, i.e., taxpayer types, and to predict tax compliance behavior.

Considering the findings from the preceding section, it could be argued that the authority factor, given its weak relationship with tax compliance, may not be critical for clustering aimed at predicting tax compliance. Consequently, there is an opportunity to refine the TCAI to a further streamlined, 12-item version (TCAI-12), eliminating the questions associated with the authority

factor. However, it cannot be explicitly excluded that the authority factor plays a role in the differentiation of tax compliance behavior as we do observe some significance in the values. Therefore, the subsequent analysis will proceed with a dual approach: a cluster analysis encompassing all four factors, as represented in the TCAI-16, and another analysis that focuses on the triad of factors, excluding authority, as represented in the TCAI-12.

We use the Euclidean distance and k-means clustering as they are commonly applied in cluster analysis (Backhaus et al., 2021). To determine the "true" number of clusters various stopping rules are considered. First, the elbow criterion indicates a two- or three-cluster solution, with slight advantages for the former. The scree plots can be seen in Figure A.2 (Online Appendix A). Second, the Caliñski and Harabasz (1974) index, acknowledged as a reliable stopping rule (Milligan and Cooper, 1985), recommends a two-cluster solution. Results can be seen in Table A.12 (Online Appendix A). Third, we have a look at the contextual fit. To interpret the clusters, mean values for the factors of the TCAI-16 and the TCAI-12 are displayed in Figure 1 by cluster. To allow for an interpretation of the variations in the factor values (e.g., between the morale values of the moralist and the rationalist), it is first tested for statistical differences. Results of *Mann-Whitney U tests* show significance to the 0.01% level for all combinations of factors and both TCAIs.

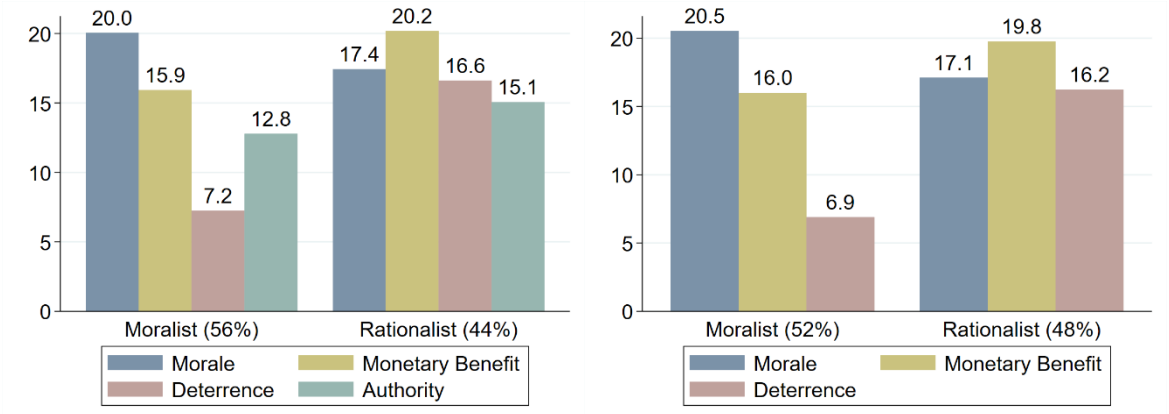


**Figure 1:** Mean factor values per cluster using the TCAI-16 (left) and the TCAI-12 (right)

*Notes:* In this figure, the different clusters are presented based on the third online survey ($N = 2{,}825$). The four factor variables morale, monetary benefit, deterrence, and authority of the TCAI-16 serve as cluster variables in the left chart, and the three factor variables morale, monetary benefit, and deterrence of the TCAI-12 in the right chart. The bars represent the average factor value for the corresponding cluster. Values are rounded to the first decimal place. The sample distribution on the clusters is shown in parenthesis and is rounded to the full value.

Contextually, the first cluster is characterized by a higher importance of the morale factor and a lower importance of the monetary benefit, deterrence, and authority factors when compared to the second cluster. The notably small deterrence values in the first cluster question the suitability of the standard expected utility model, mostly relying on enforcement mechanisms, for such taxpayers. While taxpayers in the first cluster seem to rely on questions of morality, individuals in the second cluster are more sensitive to the classical enforcement parameters.

Overall, the two clusters seem to represent a distinct and thus appropriate categorization. We label individuals falling into the first and second taxpayer cluster as 'moralists' and 'rationalists', respectively. To examine how subjects are distributed when using the TCAI-16 compared to when using the TCAI-12, the frequency distribution of the clusters is displayed in Table 3. Moralists (rationalists) account for 56% (44%) of the sample under the TCAI-16 and 52% (48%) under the TCAI-12. The exclusion of the authority factor in the cluster analysis results in an alteration of 5.6% in the clustering pattern.

| | | TCAI-12 | | Sum |
|---|---|---|---|---|
| | | Moralist | Rationalist | |
| TCAI-16 | Moralist | 1,445 | 133 | 1,578 |
| | Rationalist | 24 | 1,223 | 1,247 |
| Sum | | 1,469 | 1,356 | 2,825 |

**Table 3:** Frequency distribution of clusters using the TCAI-16 and the TCAI-12

*Notes:* This table presents the sample distribution when using two clusters. It is shown how individuals are distributed in a four-factor solution using the TCAI-16 compared to a three-factor solution using the TCAI-12.

## 5 Application of the taxpayer typology

### 5.1 Survey data

Along the preceding sections, we have developed a taxpayer typology representing different tax compliance attitudes. To assess the typology's usefulness, its predictive power for tax compliance behavior must be examined. Therefore, we utilize data from the third online survey ($N$ = 2,825) and analyze whether moralists and rationalists differ in the tax compliance measures TC1 to TC3. Checking for differences between an application of the TCAI-16 and the TCAI-12, we conduct analyses in parallel.

An exploration of descriptive results as presented in Figure 2 yields first insights. Across all tax compliance metrics, individuals categorized under the 'moralist' cluster consistently register higher values compared to those within the 'rationalist' cluster. These variations lay between 1.6 and 2 units on the 10-point Likert scale, with minimal deviations between TCAI-16 and TCAI-12 methodologies.

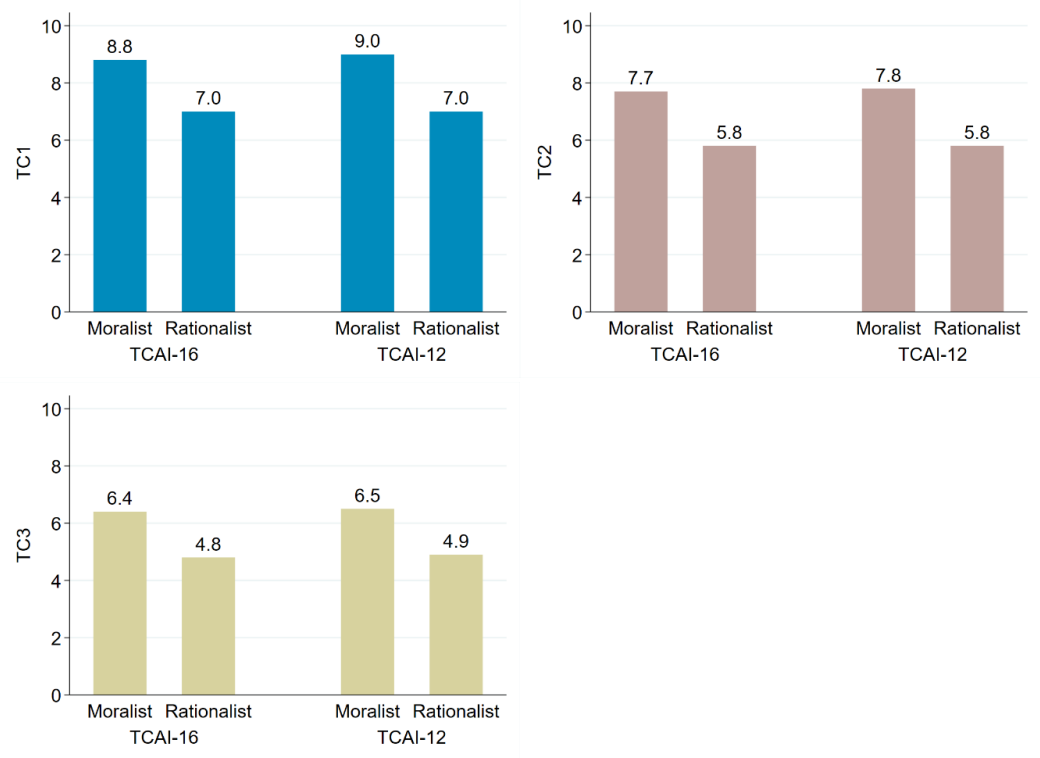


**Figure 2:** Descriptive statistics – mean tax compliance across clusters using the TCAI-16 (left) and the TCAI-12 (right)

*Notes:* In this figure, the mean values for TC1, TC2, and TC3 using the TCAI-16 and the TCAI-12 are presented based on the third online survey ($N$ = 2,825). Values are rounded to the first decimal place.

Next, we employ linear regression analysis using TC1, TC2, and TC3 as dependent variables. The independent variable of interest, denoted as *Rationalist*, is a dummy construct: it assumes a value of one for individuals nested within the 'rationalist' cluster and zero otherwise. With the 'moralist' cluster operating as the baseline reference, the coefficient of the variable Rationalist measures the difference in tax compliance behavior between the two clusters. Taking the control variables into account we conduct regression analyses for the clustering based on the TCAI-16 and the TCAI-12. Results are displayed in Table 4.

| CLUSTERING | TCAI-16 | | | TCAI-12 | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| VARIABLES | TC1 | TC2 | TC3 | TC1 | TC2 | TC3 |
| Rationalist | -1.79*** | -1.73*** | -1.48*** | -1.93*** | -1.93*** | -1.49*** |
| | (0.09) | (0.11) | (0.11) | (0.09) | (0.11) | (0.11) |
| Constant | 9.42*** | 5.74*** | 6.04*** | 9.61*** | 5.96*** | 6.14*** |
| | (0.25) | (0.32) | (0.33) | (0.25) | (0.31) | (0.33) |
| Observations | 2,825 | 2,825 | 2,825 | 2,825 | 2,825 | 2,825 |
| R-squared | 0.25 | 0.13 | 0.09 | 0.27 | 0.14 | 0.09 |
| Controls | YES | YES | YES | YES | YES | YES |

**Table 4:** Linear regressions – influence of the taxpayer cluster on tax compliance

*Notes:* In this table, based on the third online survey ($N$ = 2,825) results of six linear regression models are presented with TC1, TC2, and TC3 as dependent variables. Models (1), (2), and (3) are based on the TCAI-16 while models (4), (5), and (6) are based on the TCAI-12. *Rationalist* is included as an independent variable turning one for individuals in the rationalist cluster and zero otherwise. The moralist cluster is used as the reference group. Included controls are gender, age, education, employment status, family status, risk preference, religiousness, and income. Full results including control variables are displayed in Table A.13 (Online Appendix A). All values are rounded to the second decimal place. Standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05

Coefficients for Rationalist are constantly negative through all tax compliance variables for both cluster solutions. Results are significant at the 0.1% level. Hence, we can conclude that rationalists have a higher tendency to cheat on taxes than moralists. Overall, the findings are very much in line with the results from Section 4.2. While higher importance of the morale factor leads to increased tax compliance, higher values for the monetary benefit and the deterrence factor cause a decrease.

### 5.2 Classification algorithm

In all cases where new data is collected and tax compliance behavior is of interest, our findings could be used as an instrument for segmentation or as a control measure. We present a classification algorithm with which every new dataset applying the relevant questions can be classified into moralists and rationalists. This can be done independently of the sample size.

The classification algorithm, here presented for the three-factor solution, consists of several steps: *First*, all questions of the TCAI-12 need to be asked with answers based on a 6-point Likert scale

(see Table 1 but without items of the factor authority). An example filled with fictitious data for three participants is depicted in Table 5.

| | Morale | | | | Monetary Benefit | | | | Deterrence | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 | Q11 | Q12 |
| 1 | 5 | 6 | 6 | 3 | 3 | 2 | 3 | 1 | 1 | 1 | 2 | 1 |
| 2 | 5 | 3 | 4 | 5 | 5 | 5 | 5 | 4 | 6 | 4 | 3 | 5 |
| 3 | 3 | 2 | 4 | 4 | 5 | 6 | 5 | 6 | 5 | 4 | 2 | 5 |

**Table 5:** Exemplary data – answers on the TCAI-12 questionnaire

*Notes:* Synthetic data to illustrate the application of our results. The data represent answers given on the TCAI-12 for three subjects.

*Second*, values for the factors morale, monetary benefit and deterrence are calculated for each subject by summing up the scores of the corresponding questions of each factor. Results are shown in Table 6.

| No. | Morale | Monetary Benefit | Deterrence |
|---|---|---|---|
| 1 | 20 | 9 | 5 |
| 2 | 17 | 19 | 18 |
| 3 | 13 | 22 | 18 |

**Table 6:** Exemplary data – factor values per subject

*Notes:* Fictious data to illustrate the application of our results. The data represent answers given on the TCAI-12 questionnaire for three subjects and summed up for each of the three factors morale, monetary benefit, and deterrence.

*Third*, the distance for each subject to each of the clusters needs to be calculated. To secure the classification's explanatory value of tax compliance behavior, it is recommended to use the Euclidean distance. This is because the Euclidean distance is also applied in the cluster analysis. Using a different distance measure could lead to a classification which is not in line with the clustering. Hence, the explanatory value of the tax compliance behavior induced by the clustering could be lower. The formula for the Euclidean distance can be seen in equation (1) showing the distance between subject $i$ and cluster $c$. The factor values $f$ are determined by the factor type $j$ with $j \in [1, 2, 3]$ (or $j \in [1, 2, 3, 4]$ when using the TCAI-16) on the one hand and by subject $i$ or cluster $c$ on the other hand. The factor values of a factor $j$ and a cluster $c$ are defined by the mean

factor values shown in Figure 1 and are shown again in Table 7. All new classifications rely on these one-time defined values. Exemplary calculations can be seen below.

(1) $$\| i - c \| = \sqrt{\sum_{j=1}^{J} ( f_{ji} - f_{jc} )^2}$$

| | **TCAI-12** | | | |
|---|---|---|---|---|
| | Morale | Monetary benefit | Deterrence | |
| Moralist | 20.5 | 16.0 | 6.9 | |
| Rationalist | 17.1 | 19.8 | 16.2 | |
| | **TCAI-16** | | | |
| | Morale | Monetary benefit | Deterrence | Authority |
| Moralist | 20.0 | 15.9 | 7.2 | 12.8 |
| Rationalist | 17.4 | 20.2 | 16.6 | 15.1 |

**Table 7:** One-time defined factor values per cluster using the TCAI-12 and the TCAI-16

*Notes:* In this table, the one-time defined factor values are presented for the moralist and the rationalist cluster in line with Figure 1. The upper chart states the three factor values morale, monetary benefit and deterrence for the TCAI-12 and the bottom chart the four factor values morale, monetary benefit, deterrence and authority for the TCAI-16.

The Euclidean distance of subject no. 1 to …

… the moralist cluster is: $\sqrt{(20 - 20.5)^2 + (9 - 16.0)^2 + (5 - 6.9)^2} = 7.3$

… the rationalist cluster is: $\sqrt{(20 - 17.1)^2 + (9 - 19.8)^2 + (5 - 16.2)^2} = 15.8$

*Fourth*, subjects are assigned to a cluster. Thereby, the lowest distance value determines the cluster a subject is assigned to. This categorization provides insights into the tax compliance tendencies of the participants, grounded on the regression analyses previously undertaken. The final assignment step can be seen in Table 8. The procedure for the TCAI-16 is similar. Differences lay in the inclusion of the authority factor in every step and the change in the one-time defined factor values per cluster.

| No. | Moralist | Rationalist | Cluster |
|---|---|---|---|
| 1 | 7.3 | 15.8 | Moralist |
| 2 | 12.0 | 2.0 | Rationalist |
| 3 | 14.7 | 5.0 | Rationalist |

**Table 8:** Exemplary data – Euclidean distance and cluster assignment

*Notes:* Synthetic data to illustrate the application of our results. The data show for each of the three subjects the Euclidean distance to each of the two clusters. Calculations are based on the average cluster values per factor of the three-factor solution presented in Figure 1 and Table 7. All values are rounded to the first decimal place.

### 5.3 Experiment data

To demonstrate applicability of the classification algorithm in out-of-sample data and check for robustness of the predictive power regarding tax compliance behavior we use the online experiment data ($N = 334$). We classify the data based on the TCAI-16 and the TCAI-12 as presented in the preceding section. As distance measure, we use the Euclidean distance as recommended. The results of the classification can be seen in Figure 3. Despite the smaller sample size, we find similar factor manifestations as in the cluster analysis. Using the TCAI-12 instead of the TCAI-16 causes a change in the classification of 6.9%.

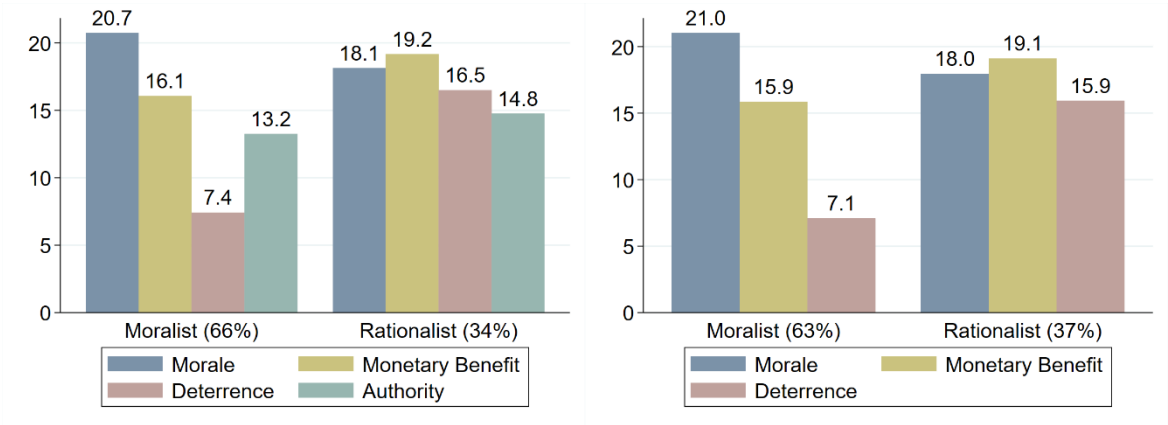


**Figure 3:** Experiment data – mean factor values per cluster using the TCAI-16 (left) and the TCAI-12 (right)

*Notes:* In this figure, the different clusters are presented based on the online experiment ($N = 334$). The clustering is executed based on the Euclidean distance of the four or three factors to the average values of the pre-defined clusters from Figure 1 and Table 7. Results are shown for the TCAI-16 and TCAI-12. The bars represent the average factor value for the corresponding cluster. Values are rounded to the first decimal place. The sample distribution on the clusters is shown in parenthesis and is rounded to the full value.

When analyzing tax compliance behavior descriptive statistics presented in Figure 4 offer first implications. For both cluster solutions and tax compliance variables, moralists show higher values than rationalists. The results of subsequent regression analysis are displayed in Table 9. As the dependent variable, we use TC1Exp in a linear regression model and TCExp in a logistic regression model. As independent variables we use the dummy variable *Rationalist* and the demographic control variables. The findings validate prior results: Coefficients for the Rationalist variable are negative and significant at the 0.1% level and thus depict the lower willingness to pay taxes of rationalists compared to moralists.

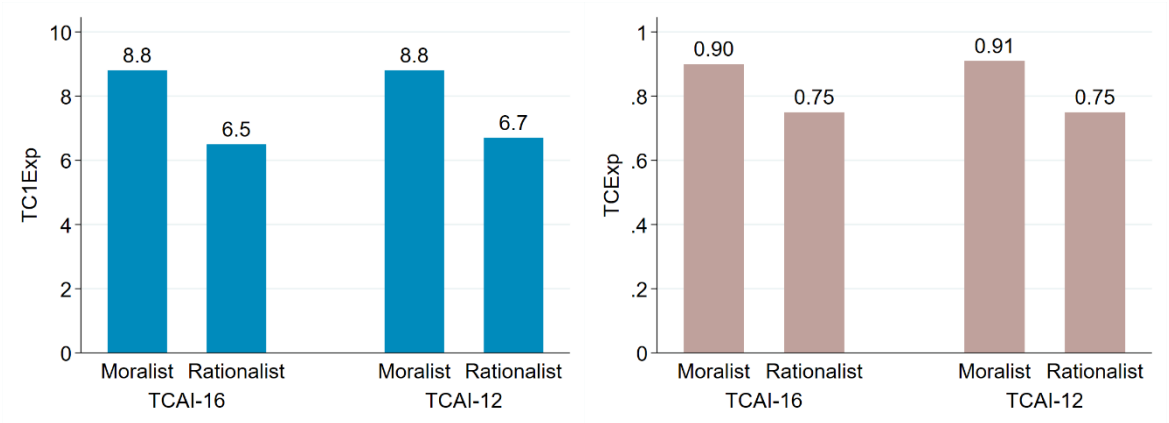


**Figure 4:** Descriptive statistics – mean experiment tax compliance values in the different clusters using the TCAI-16 (left) and the TCAI-12 (right)

*Notes:* In this figure, the mean values for TC1Exp and TCExp using the TCAI-16 and the TCAI-12 are presented based on the online experiment data ($N = 334$). Values are rounded to the first or second decimal place.

| CLUSTERING | TCAI-16 | | TCAI-12 | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| VARIABLES | TC1Exp | TCExp | TC1Exp | TCExp |
| Rationalist | -1.97*** | -1.17*** | -1.85*** | -1.33*** |
| | (0.25) | (0.34) | (0.24) | (0.34) |
| Constant | 9.40*** | 0.79 | 9.53*** | 0.97 |
| | (0.81) | (1.13) | (0.82) | (1.13) |
| Observations | 334 | 334 | 334 | 334 |
| R-squared | 0.30 | | 0.30 | |
| Pseudo R-squared | | 0.13 | | 0.14 |
| Controls | YES | YES | YES | YES |

**Table 9:** Logistic and linear regression models – influence of experiment clusters on tax compliance

*Notes:* In this table, based on the online experiment ($N = 334$) results of two linear regression models using TC1Exp as the dependent variable and two logistic regression models using TCExp as the dependent variable are presented. Models (1) and (2) are based on the TCAI-16, while models (3) and (4) are based on the TCAI-12. Rationalist is included as an independent variable turning one for individuals in the rationalist cluster and zero otherwise. The moralist cluster is used as a reference group. Included controls are gender, age, education, employment status, family status, risk preference, religiousness, and income. The independent variable "other family status" is excluded in the logistic regression as it predicts success perfectly. All values are rounded to the second decimal place. Standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05

Finally, concluding remarks have to be made on the selection of the appropriate number of factors. First, using the TCAI-12 instead of the TCAI-16 would reduce the number of items needed in the questionnaire from 16 to 12. This leads to time-related advantages increasing the applicability of the TCAI-12. Second, coefficients of regression analyses show to be slightly more distinctive when using the TCAI-12 instead of the TCAI-16. Overall, arguments for a three-factor clustering with the TCAI-12 prevail.

In an additional analysis, we further reduce the number of questions down to a number of four. Such a shortened questionnaire could be of importance if space in a survey is limited. However, doing so results in some reduction of explanatory value. The analysis is provided in Online Appendix C.

## 6 Discussion and Conclusion

In this paper, we introduce a quantitative typology approach that enables users to assess taxpayers in terms of their compliance behavior. Predicting tax compliance intentions, we can show that individuals belonging to the rationalist taxpayer type exhibit significantly lower compliance behavior when compared to the moralist taxpayer type. To categorize individuals the TCAI is derived, that is a quantitative questionnaire consisting of either 16 or 12 items, that analyzes taxpayer

attitudes and can be applied in any newly conducted survey. Presenting a classification algorithm, a tool is provided that allocates participants based on their given answers to one of the taxpayer types.

Previous work has endeavored to determine taxpayer types but predominantly leaned on qualitative methods for derivation. Based on the early work of Kelman (1965), Vogel (1974) creates three types of taxpayers: The 'complier' pays taxes for fear of the consequences of not doing so. The 'identifier' is influenced by social norms and perceives paying taxes as a moral obligation. As the third taxpayer type the author defines the 'internalizer' complying with the tax law because it is consistent with their value system. In the context of our research, the complier can be associated with a pronounced emphasis on the deterrence factor, specifically considering the significance of varied penalty forms. Analogously, while the complier mirrors the characteristics of the rationalist, both the identifier and internalizer resonate more closely with the traits of the moralist.

In a later work, Torgler (2003) defines four taxpayer types. The 'social taxpayer', similar to the identifier, and the 'honest taxpayer', similar to the internalizer, would be close to the moralist cluster. The 'intrinsic taxpayer' focuses on reciprocity in the citizen-government relationship and could be described by a high value of the authority factor. Last type is the 'tax evader', which is closely related to the rationalist cluster. Only concentrating on an expected utility calculation, the tax evader would cheat on taxes, congruent with the standard model. Conclusions for the tax evader are in line with the empirical results of the present paper. However, the results additionally imply that the clustering is not exclusive. There are compliant rationalists as well as cheating moralists.

Our research bolsters the initial contributions made by Kirchler and Wahl (2010) toward developing a tax compliance inventory. Specifically, we observe consistent patterns regarding their distinction between voluntary and enforced tax compliance intentions when considering differences between morale and deterrence factors in the two taxpayer types. Furthermore, Kirchler and Wahl find that while both voluntary and enforced tax compliance intentions are positively correlated with legal tax avoidance intentions, correlations are stronger for enforced tax compliance. We support this finding by showing that while moralists do value monetary benefit, rationalists see it as significantly more important.

In sum, our findings have different practical implications. Especially governments and tax authorities can profit in several ways: Applying our approach could help to receive cues about the tax compliance preferences of citizens and implement preventive countermeasures. Moreover, with a more in-depth knowledge of its citizens' tax compliance motivation, governments, and tax

authorities could expand and improve the use of choice architecture to foster tax-compliant behavior. Tapping into these nuanced motivations, governments and tax authorities can design more targeted behavioral interventions to promote tax compliance. For instance, reminders for tax filings might be more effective if they are tailored to the specific motivations of the recipient. Instead of a generic reminder, a message that speaks to an individual's specific concerns or motivations could prove more compelling. Thus, future research should focus on the further exploration of behavioral differences between the clusters. For instance, there could be a different reaction to behavioral tax compliance interventions in dependence on the cluster. However, this approach is limited by citizens consciously giving answers in a way they want to be perceived by the government. Addressing future research, also the composition of the monetary benefit factor and the relevance of its components for the tax compliance decision should be of matter. We can show that monetary benefit is not a single attribute but includes various facets (e.g., reduction of taxable income, avoidance of tax arrears). Ultimately, as we continue to refine our understanding of tax compliance motivations, we inch closer to creating systems that are both efficient for governments and accommodating for citizens.

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# Multidimensional Tax Compliance Attitude

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## Online Appendix A

| Variable | Description | Survey $N = 201$ | Survey $N = 303$ | Survey $N = 2,825$ | Experiment $N = 334$ |
|---|---|---|---|---|---|
| Age | in years | 48.66 | 48.03 | 43.38 | 55.83 |
| Gender | male = 1; 0 otherwise | 49.75% | 49.18% | 49.74% | 52.54% |
| Education | in years at educational institutions | 14.53 | 13.95 | 14.23 | 13.58 |
| Employment status | full-time/part-time employed = 1; 0 otherwise | 68.66% | 69.31% | 74.66% | 57.02% |
| Family Status | | | | | |
| Single | single = 1; 0 otherwise | 33.33% | 32.01% | 33.98% | 26.35% |
| Married | married = 1; 0 otherwise | 49.25% | 47.52% | 55.97% | 51.80% |
| Divorced/Widowed | divorced/widowed = 1; 0 otherwise | 15.92% | 17.49% | 8.78% | 20.06% |
| Other | other = 1; 0 otherwise | 1.49% | 2.97% | 1.27% | 1.80% |
| Risk attitude | 0 = not risk-loving at all; 10 = very risk-loving | 4.62 | 3.99 | 4.76 | 4.41 |
| Religiousness | 1 = praying > zero times/week; 0 otherwise | 41.29% | 32.67% | 32.32% | 36.42% |
| Household net income | in EUR | | | | |
| 0 - 1,000 | | 13.93% | 15.51% | 11.01% | 17.66% |
| 1,001 - 2,000 | | 26.37% | 29.04% | 17.49% | 28.14% |
| 2,001 - 3,000 | | 27.36% | 23.43% | 23.43% | 26.65% |
| 3,001 - 4,000 | | 18.91% | 18.48% | 21.73% | 14.97% |
| 4,001 - 5,000 | | 9.45% | 9.57% | 16.81% | 6.59% |
| Above 5,000 | | 3.98% | 3.96% | 9.52% | 5.99% |

**Table A.1:** Descriptive sample statistics

*Notes:* Descriptive sample statistics are presented for the first online survey ($N = 201$), the second online survey ($N = 303$), the third online survey ($N = 2,825$), and the online experiment ($N = 334$). All values are rounded to the second decimal place.

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| Variable | Item | Scale (decoded) |
|---|---|---|
| TC1 | How do you assess the following statement: Cheating on taxes if you have a chance. | Ten-point response: Ranging from 0 ("*Always justifiable*") to 10 ("*Never justifiable*"). |
| TC2 | Scenario 1: Your annual tax return is due. Imagine that your annual basic income is 60,000 EUR. Furthermore, this year you were able to earn an additional income of 500 EUR from another activity - namely from freelance work. Since this is a freelance job, the information about the income has not been automatically forwarded to the tax office yet. How would you assess your willingness to report the entire additional income of 500 EUR on your tax return? | Ten-point response: Ranging from 1 ("*Very low*") to 10 ("*Very high*"). |
| TC3 | Scenario 2: As part of your annual tax return, the tax office asks you for several pieces of information. Among other things, they ask how much money you personally spent on job expenses in the relevant year. These expenses are called income-related expenses and are tax deductible. Basically, the higher the income-related expenses, the lower the tax to be paid. A component of the income-related expenses are the expenses for work equipment. This includes specialist literature, office supplies and technical equipment such as a computer. Since 2018, receipts no longer have to be submitted with the tax return for income-related expenses. However, the tax office can request these and occasionally does so. Please imagine that last year you spent a total of 274 EUR on specialist literature, office supplies and technical equipment that are clearly related to your job. In addition, you had expenses of 43 EUR, which are also considered as office supplies, but actually have no connection to your professional activity. How would you assess your willingness to state more than the 274 EUR in your tax return? | Ten-point response: Ranging from 1 ("Very high") to 10 ("Very low"). |

**Table A.1:** Tax compliance measures

*Notes:* Items used to measure tax compliance behavior. TC1 is taken from *World Value Survey* and measures the general attitude towards tax cheating. TC2 and TC3 are scenarios putting participants in the situation of a tax evasion opportunity and measuring their reaction. Response scales for TC1 and TC3 are reversed for the analysis compared to the original survey to enable homogenous measures where a high response value is going along with high tax compliance.

| Var | Item | Source |
|---|---|---|
| | Please imagine the following situation:<br>In real life, you are faced with the decision to pay taxes (for example, by filling in your tax return). In doing so, you can pay your taxes honestly or you can benefit yourself by unlawfully reducing your total taxes payable through tax evasion. Please read the statements below and decide to what extent you agree with each. | |
| | **When I fill in my tax return, it is especially important to me …** | |
| v1 | ... that there are no conflicts with my personal values and standards. | Vogel (1974); Torgler (2003); Torgler and Schneider (2005); Alm and Torgler (2011); Dulleck et al. (2016) |
| v2 | ... that my friends and family will not think anything bad of me. | Erard and Feinstein (1994); Kirchler (2007); Blaufus et al. (2017) |
| v3 | ... that I fulfil the moral obligation to make my tax contribution. | Vogel (1974); Frey (1997); Torgler and Schneider (2005); Alm and Torgler (2011); Cullis et al. (2012) |
| v4 | ... that I do not feel bad afterwards because I made false statements. | Erard and Feinstein (1994); Andreoni et al. (1998); Dulleck et al. (2016) |
| v5 | ... that my sense of duty to pay taxes is not violated. | Vogel (1974); Frey (1997); Torgler (2003); Alm and Torgler (2011); Cullis et al. (2012); Dulleck et al. (2016) |
| v6 | ... that I do not do anything that could mean a break with my religious beliefs. | Grasmick et al. (1991); Lipford et al. (1993); Hull and Bold (1994); Torgler (2005) |
| v7 | ... that there are people in my circle of acquaintances who behave in a similar way. | Frey and Torgler (2007); Traxler (2010); Blaufus et al. (2017) |
| v8 | ... that my self-image of declaring taxes honestly is fulfilled. | Vogel (1974); Torgler (2003); Alm and Torgler (2011); Dulleck et al. (2016) |
| v9 | ... that the probability of getting caught while tax evading is not too high. | Allingham and Sandmo (1972); Friedland et al. (1978); Witte and Woodbury (1985); Alm et al. (1990; 1992; 1992a; 1995); Beck et al. (1991); Scholz and Pinney (1995); Kirchler (2007); Kleven et al. (2011) |
| v10 | ... that financial penalties, should I be caught while tax evading, are not too high. | Allingham and Sandmo (1972); Friedland et al. (1978); Alm et al. (1990; 1992a; 1995); Beck et al. (1991) |
| v11 | ... that the criminal consequences, should I be caught, are not too high for me. | Allingham and Sandmo (1972); Friedland et al. (1978); Alm et al. (1990; 1992a; 1995); Beck et al. (1991) |
| v12 | ... that I only evade enough to avoid financial punishment. | Allingham and Sandmo (1972); Friedland et al. (1978); Beck et al. (1991); Alm et al. (1992a; 1995) |
| v13 | ... that I only cheat to the point where I can avoid imprisonment. | Allingham and Sandmo (1972); Schwartz and Orleans (1967); Friedland et al. (1978); Alm et al. (1990; 1992a; 1995); Beck et al. (1991) |
| v14 | ... that I only evade enough that the probability of future tax audits does not increase for me. | Erard (1992); Blumenthal et al. (2001); Kleven et al. (2011); DeBacker et al. (2018); Bergolo et al. (2023) |
| v15 | ... that my personal tax rate is not too high. | Allingham and Sandmo (1972); Friedland et al. (1978); Clotfelder (1983); Alm et al. (1990; 1992a) |

**Table A.3:** Overview of introduction text and items (items v1-v15)

*Notes*: This table gives an overview of the Tax Compliance Attitude Inventory (TCAI) with the variable code, the item and the reference. Moreover, it shows the introductory text. This table includes items v1 to v15.

| Var | Item | Source |
|---|---|---|
| | **When I fill in my tax return, it is especially important to me …** | |
| v16 | ... that my tax payable is not too high. | Allingham and Sandmo (1972); Friedland et al. (1978); Clotfelder (1983); Alm et al. (1990; 1992a) |
| v17 | ... that my taxable income is not too high. | Allingham and Sandmo (1972); Alm et al. (1992a) |
| v18 | ... that I achieve a great financial benefit for myself. | Allingham and Sandmo (1972); Alm et al. (1992a) |
| v19 | ... that the tax payment does not mean a substantial financial disadvantage for me. | Allingham and Sandmo (1972); Alm et al. (1992a) |
| v20 | ... that I behave as in comparable situations. | Vogel (1974); Cullis and Lewis (1997); Torgler (2003); Torgler and Schneider (2005); Dulleck et al. (2016); Alm (2019) |
| v21 | ... that I do not take too much of a risk. | Kirchler (2007); Alm (2019) |
| v22 | … that the tax system is easy to understand for the average citizen. | Long and Caudill (1987); Alm et al. (1992b; 2010); Dubin et al. (1992); Erard (1993; 1997); Andreoni et al. (1998); Hofmann et al. (2017) |
| v23 | … that I pay all my taxes even if I know that I will not be audited. | Alm et al. (1992) |
| v24 | ... that I will not go so far as to make tax avoidance illegal. | McBarnet (2001, 2004) |
| v25 | ... that I can narrow down the level of audit probability as precisely as possible. | Long and Caudill (1987); Alm et al. (1992b; 2010); Dubin et al. (1992); Erard (1993; 1997) |
| v26 | ... that I am informed as accurately as possible about the consequences of tax evasion. | Long and Caudill (1987); Alm et al. (1992b; 2010); Dubin et al. (1992); Erard (1993; 1997); Andreoni et al. (1998) |
| v27 | ... that my past interactions with governmental authorities, especially tax authorities, have been positive. | Tittle (1980); Erard (1992); Feld and Frey (2002; 2005); Feld and Torgler (2007); Tyler (2006); Kirchler (2007); Kirchler et al. (2008); Wahl et al. (2010); Kastlunger et al. (2013) |
| v28 | ... that my opinion on the use of tax revenue receives sufficient attention. | Alm et al. (1993); Feld and Frey (2002); Li et al. (2011); Lamberton et al. (2018); Doerrenberg (2015) |
| v29 | ... that thoughts of the tax authorities do not trigger any negative associations in me. | Tittle (1980); Erard (1992); Feld and Frey (2002; 2005); Feld and Torgler (2007); Tyler (2006); Kirchler (2007); Kirchler et al. (2008); Wahl et al. (2010); Kastlunger et al. (2013) |
| v30 | ... that I have already received help from state authorities, especially the tax authorities, with a request. | Tittle (1980); Erard (1992); Feld and Frey (2002; 2005); Feld and Torgler (2007); Tyler (2006); Kirchler (2007); Kirchler et al. (2008); Wahl et al. (2010); Kastlunger et al. (2013) |
| v31 | ... that state institutions are not wasteful with tax money. | Alm et al. (1993); Torgler and Schneider (2009); Li et al. (2011); Lamberton et al. (2018); Doerrenberg (2015) |
| v32 | ... that I feel positively encouraged to cooperate with the tax authorities. | Tittle (1980); Erard (1992); Feld and Frey (2002; 2005); Feld and Torgler (2007); Tyler (2006); Kirchler (2007); Kirchler et al. (2008); Wahl et al. (2010); Kastlunger et al. (2013) |
| v33 | ... that I would describe the work of state institutions as efficient. | Torgler and Schneider (2009); Li et al. (2011) |
| v34 | ... that I have the impression the state has earned the money I provide it with. | Kinsey et al. (1991); Feld and Frey (2002); Wahl et al. (2010); Kastlunger et al. (2013) |

**Table A.4:** Overview of items (v16-v34)

*Notes*: This table gives an overview of the Tax Compliance Attitude Inventory (TCAI) with the variable code, the item and the reference. This table includes items v16 to v34.

| Var | Item | Source |
|---|---|---|
| | **When I fill in my tax return, it is especially important to me …** | |
| v35 | ... that the state has done something positive for me in the past. | Tittle (1980); Erard (1992); Feld and Frey (2002; 2005); Feld and Torgler (2007); Tyler (2006); Kirchler (2007); Kirchler et al. (2008); Wahl et al. (2010); Kastlunger et al. (2013) |
| v36 | ... that I receive or have received transfer payments that are comparable to the tax payments I have made. | Scott and Grasmick (1981); Cowell and Gordon (1988); Kinsey et al. (1991); Kirchler (1998) |
| v37 | ... that lower tax revenues do not impair the functioning of the state. | Vogel (1974); Myles and Naylor (1996); Kirchler (1998); Traxler (2010); Alm (2019) |
| v38 | ... that I agree with the intended use of my taxes. | Alm et al. (1993); Li et al. (2011); Lamberton et al. (2018); Doerrenberg (2015) |
| v39 | ... that I perceive the distribution of the tax burden as fair. | Spicer and Becker (1980); Spicer (1986); Erard and Feinstein (1994); Cullis and Lewis (1997); Wenzel (2003); Hofmann et al. (2008) |
| v40 | ... that the distribution of the tax burden is beneficial to me personally. | Erard and Feinstein (1994); Cullis and Lewis (1997); Wenzel (2003); Hofmann et al. (2008) |
| v41 | ... that the process of tax collection is appropriate. | Spicer and Becker (1980); Cullis and Lewis (1997); Wenzel (2003); Feld and Torgler (2007); Hofmann et al. (2008) |
| v42 | ... that people who evade taxes are also consistently prosecuted and punished. | Cullis and Lewis (1997); Feld and Tyran (2002); Wenzel (2003); Hofmann et al. (2008) |
| v43 | ... that other people are not better at avoiding high tax payments legally or illegally. | Spicer (1986); Erard and Feinstein (1994); Cullis and Lewis (1997) |
| v44 | ... that other people I know (relatively speaking) do not pay less taxes than I do. | Spicer and Becker (1980); Spicer (1986); Erard and Feinstein (1994); Cullis and Lewis (1997); Wenzel (2003); Hofmann et al. (2008) |
| v45 | ... that I would describe myself as an above-average honest taxpayer compared to my social environment. | Alm et al. (1992a); Erard and Feinstein (1994); Cullis and Lewis (1997); Kim (2003); Fortin et al. (2007); Traxler (2010) |
| v46 | ... that the overall tax burden for citizens is not too high. | Kinsey et al. (1991); Erard and Feinstein (1994) |
| v47 | ... that similarly high taxes are paid in other countries. | Kinsey et al. (1991); Erard and Feinstein (1994); Hofmann et al. (2008) |
| v48 | ... that my taxes help to finance public services such as kindergartens and schools. | Alm et al. (1990); Cowell and Gordon (1988) |
| v49 | ... that my friends, family and neighbors contribute to society just as I do. | Grasmick and Green (1980); Alm et al. (1992a); Bordignon (1993); Erard and Feinstein (1994); Cullis and Lewis (1997); Kim (2003); Fortin et al. (2007); Traxler (2010) |
| v50 | ... that I comply with the responsibility towards society to pay taxes in full. | Myles and Naylor (1996); Kim (2003); Fortin et al. (2007); Traxler (2010); Alm and Torgler (2011) |
| v51 | ... that those people who benefit from my taxes deserve it. | Spicer (1986); Kinsey et al. (1991); Alm et al. (1992a); Bordignon (1993); Erard and Feinstein (1994); Cullis and Lewis (1997); Blaufus et al. (2017) |
| v52 | ... that I myself have already benefited from the taxes paid by others. | Kinsey et al. (1991); Bordignon (1993) |
| v52 | ... that I myself have already benefited from the taxes paid by others. | Kinsey et al. (1991); Bordignon (1993) |
| v53 | ... that I am satisfied with the social structures. | Kinsey et al. (1991); Bordignon (1993); Kim (2003) |

**Table A.5:** Overview of items (v35-v53)

*Notes*: This table gives an overview of the Tax Compliance Attitude Inventory (TCAI) with the variable code, the item and the reference. This table includes items v35 to v53.

| Var | Item | Source |
|---|---|---|
| | **When I fill in my tax return, it is especially important to me …** | |
| v54 | ... that no social norms are violated by evading taxes. | Myles and Naylor (1996); Kim (2003); Fortin et al. (2007); Traxler (2010); Alm and Torgler (2011); Dulleck et al. (2016) |
| v55 | ... that I do not experience negative social consequences from other members of society should I be caught cheating. | Gordon (1989); Erard and Feinstein (1994); Alm and Torgler (2011); Blaufus et al. (2017) |
| v56 | ... that other taxpayers are also honest. | Grasmick and Green (1980); Spicer (1986); Alm et al. (1992a); Erard and Feinstein (1994); Cullis and Lewis (1997); Feld and Tyran (2002); Blaufus et al. (2017); Bordignon (1993) |
| v57 | ... that, from my point of view, tax revenues are used wisely. | Alm et al. (1993); Li et al. (2011); Doerrenberg (2015) |
| v58 | ... that other citizens benefit greatly from my taxes. | Kinsey et al. (1991); Bordignon (1993) |
| v59 | ... that I save taxes, even if I have to declare some expenses fictitiously. | McBarnet (2001; 2004) |
| v60 | ... that I fill in everything conscientiously and correctly. | Survey |
| v61 | ... that I get money/taxes back. | Survey |
| v62 | ... that I do not forget to declare any income. | Survey |
| v63 | ... that I do not forget to declare any expenses/income-related costs. | Survey |
| v64 | ... that I don't pay too much tax. | Survey |
| v65 | ... that I haven't forgotten anything. | Survey |
| v66 | ... that filling out the tax return is not too complicated. | Survey |
| v67 | ... that my actions do not have negative consequences for my job. | Survey |
| v68 | ... that my actions do not have negative consequences for my reputation in my social environment. | Survey |
| v69 | ... the tax amount. | Survey |
| v70 | ... that I receive a lot in return. | Survey |
| v71 | ... that I get as much as possible refunded by the tax authorities. | Survey |
| v72 | ... that I save a lot of taxes. | Survey |
| v73 | ... that I do not have to pay any taxes in arrears. | Survey |
| v74 | ... that I get a tax refund. | Survey |
| v75 | … that everything is clear and comprehensible. | Survey |
| v76 | … how I can legally minimize taxes. | Survey |

**Table A.6:** Overview of items (v54-v76)

*Notes*: This table gives an overview of the Tax Compliance Attitude Inventory (TCAI) with the variable code, the item and the reference. This table includes items v54 to v76.

| Var | Item | Source |
|---|---|---|
| | **When I fill in my tax return, it is especially important to me …** | |
| v77 | ... that I have a personal advantage. | Survey |
| v78 | ... that I understand everything so that I don't do anything wrong. | Survey |
| v79 | ... that I do not accidentally declare something wrong. | Survey |
| v80 | ... that I save money/reduce taxes. | Survey |
| v81 | ... that I do not take any risks. | Survey |
| v82 | ... that I have not forgotten anything and that everything is complete. | Survey |
| v83 | ... that I also take a risk sometimes. | Survey |
| v84 | ... that I exceed the flat rate allowance for expenses/income-related costs. | Survey |
| v85 | ... that I go to the limit. | Survey |
| v86 | ... that I do not give to the state. | Survey |
| v87 | ... that I do not lie. | Survey |
| v88 | ... that I save taxes in an honest way. | Survey |
| v89 | ... that I do not pay too many taxes. | Survey |
| v90 | ... that I have declared all minor things in the income. | Survey |
| v91 | ... that I have declared all the little things in expenses/income-related costs. | Survey |
| v92 | ... that I can avoid paying tax or tax arrears. | Survey |
| v93 | ... that filling in the tax return is worthwhile for me. | Survey |
| v94 | ... that I have receipts for all the information I have provided. | Survey |
| v95 | ... that I do not invest too much effort in filling out the tax return. | Survey |
| v96 | ... that I do not provide any wrong information. | Survey |
| v97 | ... that I take advantage of all tax regulations in order to save taxes. | Survey |
| v98 | ... that I save taxes even if I have to make dishonest statements. | Survey |
| v99 | ... that I do not commit tax evasion just to save taxes. | Survey |
| v100 | ... that I will round up information generously in order to save taxes. | Survey |
| v101 | ... that I exhaust all legal possibilities to save taxes. | Survey |
| v102 | ... that I sometimes set expenses higher in order to save taxes. | Survey |
| v103 | ... that I do not underestimate expenses/income-related costs. | Survey |
| v104 | ... that I get the best possible out of it for me. | Survey |

**Table A.7:** Overview of items (v77-v104)

*Notes*: This table gives an overview of the Tax Compliance Attitude Inventory (TCAI) with the variable code, the item and the reference. This table includes items v77 to v104.

| Variable | Factor1 | Factor2 | Factor3 | Factor4 | Uniqueness |
|---|---|---|---|---|---|
| v95 | 0.7418 | 0.1956 | -0.1319 | 0.0777 | 0.388 |
| v50 | 0.7198 | -0.134 | -0.071 | 0.2026 | 0.4178 |
| v8 | 0.7063 | 0.1199 | -0.2644 | 0.154 | 0.3932 |
| v3 | 0.7061 | -0.0795 | -0.0477 | 0.2223 | 0.4435 |
| v23 | 0.6969 | 0.0802 | -0.2081 | 0.1741 | 0.4342 |
| v86 | 0.6917 | 0.0847 | -0.242 | 0.0282 | 0.455 |
| v59 | 0.6862 | 0.212 | -0.2527 | 0.0443 | 0.4184 |
| v61 | 0.6552 | 0.1898 | -0.1217 | -0.0159 | 0.5197 |
| v5 | 0.6539 | 0.0175 | 0.0997 | 0.2714 | 0.4886 |
| v45 | 0.6348 | 0.023 | 0.2301 | 0.0532 | 0.5407 |
| v64 | 0.6065 | 0.3865 | -0.148 | 0.0646 | 0.4567 |
| v78 | 0.5965 | 0.1921 | -0.0314 | 0.0975 | 0.5969 |
| v49 | 0.5789 | 0.0598 | 0.1872 | 0.2108 | 0.5818 |
| v32 | 0.5777 | 0.1201 | 0.0972 | 0.3887 | 0.4913 |
| v81 | 0.5756 | 0.4327 | -0.2292 | 0.0533 | 0.4261 |
| v80 | 0.5692 | 0.2678 | -0.2115 | 0.0286 | 0.5588 |
| v20 | 0.5622 | 0.0845 | 0.0807 | 0.147 | 0.6487 |
| v42 | 0.558 | 0.0874 | -0.2638 | 0.1655 | 0.5841 |
| v93 | 0.5574 | 0.2165 | -0.0621 | -0.0166 | 0.6383 |
| v98 | 0.543 | 0.1062 | -0.341 | 0.2055 | 0.5354 |
| v1 | 0.5217 | 0.1859 | 0.0597 | 0.2145 | 0.6438 |
| v67 | 0.5182 | 0.0358 | 0.2994 | 0.1317 | 0.6232 |
| v87 | 0.5086 | 0.4646 | -0.2512 | 0.1173 | 0.4486 |
| v89 | 0.4862 | 0.2641 | -0.1553 | -0.0051 | 0.6697 |
| v48 | 0.4524 | 0.1581 | 0.1584 | 0.2869 | 0.6629 |
| v29 | 0.4466 | 0.1382 | 0.1738 | 0.3632 | 0.6194 |
| v2 | 0.4366 | -0.0296 | 0.4107 | 0.2652 | 0.5695 |
| v77 | 0.4291 | 0.366 | -0.1247 | 0.2933 | 0.5804 |
| v74 | 0.4231 | 0.3416 | -0.1801 | 0.2846 | 0.5908 |
| v27 | 0.4176 | 0.2382 | 0.0569 | 0.304 | 0.6732 |
| v6 | 0.2857 | -0.1372 | 0.187 | 0.1773 | 0.8332 |
| v24 | 0.2035 | 0.1714 | 0.1009 | 0.0824 | 0.9122 |
| v4 | 0.1749 | 0.1151 | 0.0744 | 0.1638 | 0.9238 |
| v69 | -0.0531 | 0.7291 | 0.1097 | 0.1251 | 0.4379 |
| v79 | 0.0667 | 0.7253 | 0.0401 | 0.1558 | 0.4437 |
| v103 | 0.0807 | 0.7244 | 0.0969 | -0.0103 | 0.4592 |
| v73 | 0.1094 | 0.7194 | 0.0731 | 0.0003 | 0.4651 |
| v71 | -0.0483 | 0.7175 | 0.129 | 0.1289 | 0.4495 |
| v70 | 0.1247 | 0.7134 | 0.0636 | -0.0086 | 0.4714 |
| v60 | 0.1134 | 0.7094 | 0.0928 | 0.0908 | 0.4671 |
| v88 | 0.1725 | 0.7002 | -0.0633 | 0.1195 | 0.4617 |
| v100 | 0.1854 | 0.6707 | -0.0074 | -0.067 | 0.5112 |

**Table A.8:** Sorted factor loadings (part 1 of 3)

*Notes:* This table shows based on principal component factors analysis with data from the second online survey ($N = 303$) the factor loadings matrix for four factors sorted by the highest loading and the factors from factor 1 to factor 4. Results are rounded to the fourth decimal place.

| Variable | Factor1 | Factor2 | Factor3 | Factor4 | Uniqueness |
|---|---|---|---|---|---|
| v85 | 0.1434 | 0.6679 | 0.0456 | -0.1163 | 0.5177 |
| v16 | 0.1172 | 0.6441 | 0.1302 | 0.2123 | 0.5094 |
| v15 | 0.0404 | 0.636 | 0.0401 | 0.3189 | 0.4906 |
| v96 | 0.163 | 0.6281 | 0.0296 | 0.0079 | 0.578 |
| v92 | 0.0293 | 0.618 | 0.1127 | 0.277 | 0.5278 |
| v75 | 0.1004 | 0.6164 | 0.03 | 0.0334 | 0.608 |
| v91 | 0.1209 | 0.6138 | 0.1136 | -0.0338 | 0.5945 |
| v18 | -0.0178 | 0.6065 | 0.3066 | 0.2388 | 0.4808 |
| v76 | -0.062 | 0.6032 | 0.2085 | 0.083 | 0.582 |
| v63 | 0.1493 | 0.5937 | 0.0185 | 0.2817 | 0.5455 |
| v72 | 0.1085 | 0.5937 | 0.0092 | -0.0997 | 0.6257 |
| v62 | 0.3271 | 0.5908 | -0.012 | -0.0321 | 0.5428 |
| v102 | 0.163 | 0.5389 | 0.1358 | 0.0865 | 0.6571 |
| v90 | 0.3755 | 0.5153 | -0.0016 | -0.0075 | 0.5934 |
| v19 | 0.1003 | 0.5076 | 0.1723 | 0.3139 | 0.6041 |
| v83 | 0.0486 | 0.4837 | 0.3864 | 0.119 | 0.6002 |
| v65 | 0.2125 | 0.4219 | -0.2351 | 0.4111 | 0.5526 |
| v31 | 0.1989 | 0.3586 | -0.0033 | 0.3381 | 0.7175 |
| v94 | 0.005 | 0.3306 | 0.0201 | 0.2177 | 0.8429 |
| v66 | 0.2977 | 0.315 | 0.301 | 0.1168 | 0.7079 |
| v13 | -0.2283 | 0.0029 | 0.7012 | -0.0291 | 0.4553 |
| v14 | -0.2781 | 0.0579 | 0.6937 | -0.0012 | 0.4381 |
| v10 | -0.2033 | 0.1567 | 0.6781 | 0.0295 | 0.4734 |
| v12 | -0.2227 | -0.01 | 0.6689 | 0.0132 | 0.5027 |
| v9 | -0.2394 | 0.0627 | 0.6621 | 0.0087 | 0.5003 |
| v82 | -0.3378 | 0.0202 | 0.659 | 0.0371 | 0.4498 |
| v11 | -0.0649 | 0.1943 | 0.6571 | 0.057 | 0.523 |
| v101 | -0.3575 | 0.0724 | 0.6243 | 0.1336 | 0.4594 |
| v55 | 0.0767 | 0.1299 | 0.6015 | 0.082 | 0.6087 |
| v97 | -0.4096 | -0.0136 | 0.6 | 0.0055 | 0.472 |
| v104 | -0.2103 | 0.0994 | 0.5595 | 0.1472 | 0.6112 |
| v99 | -0.3924 | 0.1782 | 0.5459 | 0.0595 | 0.5127 |
| v25 | 0.022 | 0.2311 | 0.524 | 0.0608 | 0.6678 |
| v44 | 0.2579 | 0.0088 | 0.512 | 0.1837 | 0.6375 |
| v43 | 0.0757 | 0.0409 | 0.4903 | 0.1862 | 0.7175 |
| v7 | 0.2886 | -0.0375 | 0.437 | -0.003 | 0.7243 |
| v47 | 0.3674 | -0.0223 | 0.4177 | 0.3192 | 0.5881 |
| v84 | 0.0151 | 0.3339 | 0.4096 | 0.027 | 0.7198 |
| v26 | 0.3423 | 0.0942 | 0.4034 | 0.0857 | 0.7039 |
| v17 | 0.1374 | 0.1642 | 0.347 | 0.1421 | 0.8136 |
| v37 | 0.3093 | 0.0677 | 0.3336 | 0.2807 | 0.7096 |
| v21 | 0.2881 | 0.2773 | 0.3182 | -0.0166 | 0.7386 |
| v58 | 0.2696 | -0.2124 | 0.3146 | 0.2168 | 0.7362 |

**Table A.9:** Sorted factor loadings (part 2 of 3)

*Notes:* This table shows based on principal component factors analysis with data from the second online survey ($N = 303$) the factor loadings matrix for four factors sorted by the highest loading and the factors from factor 1 to factor 4. Results are rounded to the fourth decimal place.

| Variable | Factor1 | Factor2 | Factor3 | Factor4 | Uniqueness |
|---|---|---|---|---|---|
| v54 | 0.2481 | 0.0369 | 0.3139 | 0.172 | 0.809 |
| v39 | 0.0465 | 0.0821 | 0.0184 | 0.7379 | 0.4462 |
| v38 | 0.1683 | 0.0643 | 0.126 | 0.6811 | 0.4878 |
| v22 | -0.008 | 0.1661 | -0.0803 | 0.6769 | 0.5078 |
| v57 | 0.1202 | 0.2407 | 0.0339 | 0.6757 | 0.4699 |
| v34 | 0.1621 | -0.0709 | 0.1214 | 0.6688 | 0.5066 |
| v33 | 0.1823 | -0.0361 | 0.1974 | 0.667 | 0.4817 |
| v41 | 0.2499 | 0.1234 | -0.0776 | 0.6509 | 0.4926 |
| v53 | 0.3389 | 0.0208 | 0.0934 | 0.6253 | 0.4851 |
| v35 | 0.1371 | -0.0724 | 0.1701 | 0.5372 | 0.6584 |
| v46 | 0.0646 | 0.3611 | -0.0001 | 0.537 | 0.5771 |
| v51 | 0.1442 | 0.1914 | 0.3056 | 0.5119 | 0.5871 |
| v30 | 0.2341 | -0.0003 | 0.1612 | 0.4801 | 0.6887 |
| v56 | 0.4044 | 0.126 | -0.0052 | 0.4773 | 0.5928 |
| v40 | 0.0676 | 0.4557 | 0.1382 | 0.4646 | 0.5528 |
| v28 | 0.2425 | 0.1479 | 0.2779 | 0.4196 | 0.6661 |
| v36 | 0.0478 | 0.1381 | 0.3325 | 0.3814 | 0.7226 |
| v68 | -0.0338 | 0.2673 | 0.0713 | 0.3806 | 0.7774 |
| v52 | 0.228 | -0.0447 | 0.3325 | 0.3761 | 0.6941 |

**Table A.10:** Sorted factor loadings (part 3 of 3)

*Notes:* This table shows based on principal component factors analysis with data from the second online survey ($N = 303$) the factor loadings matrix for four factors sorted by the highest loading and the factors from factor 1 to factor 4. Results are rounded to the fourth decimal place.

| VARIABLES | (1) TC1 | (2) TC2 | (3) TC3 | (4) TCExp | (5) TC1Exp |
|---|---|---|---|---|---|
| *Regression model* | *Linear* | *Linear* | *Linear* | *Logistic* | *Linear* |
| Moral | 0.21*** | 0.24*** | 0.14*** | 0.2472*** | 0.2426*** |
| | (0.01) | (0.01) | (0.01) | (0.0534) | (0.0292) |
| Monetary benefit | -0.02 | -0.07*** | -0.08*** | 0.0146 | -0.0632* |
| | (0.01) | (0.01) | (0.01) | (0.0516) | (0.0257) |
| Deterrence | -0.11*** | -0.10*** | -0.09*** | -0.0864* | -0.1128*** |
| | (0.01) | (0.01) | (0.01) | (0.0398) | (0.0216) |
| Authority | -0.01 | 0.03** | -0.01 | -0.0625 | -0.0111 |
| | (0.01) | (0.01) | (0.01) | (0.0470) | (0.0235) |
| Male | 0.07 | 0.19 | -0.06 | -0.1982 | 0.1538 |
| | (0.08) | (0.10) | (0.11) | (0.3848) | (0.2168) |
| Age | -0.01** | 0.02*** | 0.01 | 0.0230 | -0.0028 |
| | (0.00) | (0.00) | (0.00) | (0.0166) | (0.0096) |
| Education (in years) | 0.05*** | 0.04*** | 0.03 | -0.0097 | 0.0159 |
| | (0.01) | (0.01) | (0.01) | (0.0513) | (0.0302) |
| Employment | -0.11 | 0.03 | 0.04 | 0.7024 | -0.0135 |
| | (0.10) | (0.12) | (0.14) | (0.4447) | (0.2466) |
| Married | -0.20 | -0.12 | -0.02 | -0.3893 | -0.0094 |
| | (0.10) | (0.13) | (0.14) | (0.5025) | (0.2876) |
| Divorced/Widowed | -0.16 | -0.16 | -0.24 | -0.4398 | 0.1000 |
| | (0.16) | (0.21) | (0.23) | (0.5910) | (0.3293) |
| Other family status[a)] | -0.08 | -0.71 | -0.40 | | -0.3232 |
| | (0.36) | (0.45) | (0.49) | | (0.7878) |
| Risk attitude | -0.25*** | -0.05* | -0.09*** | -0.1198 | -0.2342*** |
| | (0.02) | (0.02) | (0.02) | (0.0780) | (0.0442) |
| Religiousness | -0.44*** | 0.14 | -0.05 | 1.3284** | -0.1638 |
| | (0.08) | (0.11) | (0.12) | (0.4430) | (0.2197) |
| Net income | 0.06* | 0.17*** | 0.04 | 0.1803 | 0.0523 |
| | (0.03) | (0.04) | (0.04) | (0.1640) | (0.0871) |
| Constant | 6.64*** | 2.53*** | 5.26*** | -2.6369 | 6.3943*** |
| | (0.32) | (0.40) | (0.44) | (1.7122) | (1.0065) |
| Observations | 2,825 | 2,825 | 2,825 | 334 | 334 |
| R-squared | 0.37 | 0.27 | 0.14 | | 0.4501 |
| Pseudo R-squared | | | | 0.2487 | |

**Table A.11:** Regression analyses – individual factor influences on tax compliance with control results

*Notes:* Columns one to three of this table show the results of different linear regression models, based on the third online survey ($N$ = 2,825), using TC1, TC2 and TC3 as dependent variables, respectively. Columns four and five show the results of a logistic and a linear regression model, respectively, based on the online experiment ($N$ = 334). All models include the four factors morale, monetary benefit, deterrence, and authority as independent variables. Included controls are gender, age, education, employment status, family status, risk preference, religiousness and income. All values are rounded to the fourth decimal place. Standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05. a) We would lose 6 observations in model 4 when controlling for *other family status* as it predicts success perfectly. Thus we exclude this control.

| Number of clusters | Pseudo F (4 Factors) | Pseudo F (3 Factors) |
|---|---|---|
| 2 | 1,183.02 | 1,183.02 |
| 3 | 1,060.08 | 1,060.04 |
| 4 | 935.41 | 936.68 |
| 5 | 865.16 | 867.15 |
| 6 | 836.17 | 833.91 |
| 7 | 832.12 | 831.89 |
| 8 | 721.48 | 782.94 |
| 9 | 751.70 | 745.14 |
| 10 | 725.30 | 719.32 |

**Table A.12:** Calinski/Harabasz stopping rule

*Notes:* Results of the Calinski/Harabasz stopping rule are presented for the cluster analysis using the four factors morale, monetary benefit, deterrence and authority as well as the three factors morale, monetary benefit and deterrence. A high pseudo F value indicates a good suitability of the corresponding number of clusters. Results are rounded to the second decimal place.

| CLUSTERING | TCAI-16 | | | TCAI-12 | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| VARIABLES | TC1 | TC2 | TC3 | TC1 | TC2 | TC3 |
| Rationalist | -1.79*** | -1.73*** | -1.48*** | -1.93*** | -1.93*** | -1.49*** |
| | (0.09) | (0.11) | (0.11) | (0.09) | (0.11) | (0.11) |
| Male | -0.07 | 0.03 | -0.13 | -0.02 | 0.08 | -0.10 |
| | (0.09) | (0.11) | (0.12) | (0.09) | (0.11) | (0.12) |
| Age | -0.00 | 0.02*** | 0.01 | -0.01 | 0.02*** | 0.01* |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Education (in years) | 0.06*** | 0.06*** | 0.03* | 0.05*** | 0.05*** | 0.03* |
| | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| Employment | -0.09 | -0.02 | 0.00 | -0.08 | 0.00 | 0.01 |
| | (0.11) | (0.14) | (0.14) | (0.11) | (0.13) | (0.14) |
| Married | -0.16 | -0.08 | -0.01 | -0.14 | -0.06 | 0.01 |
| | (0.11) | (0.14) | (0.14) | (0.11) | (0.14) | (0.14) |
| Divorced/Widowed | -0.16 | -0.16 | -0.24 | -0.15 | -0.16 | -0.24 |
| | (0.18) | (0.23) | (0.23) | (0.18) | (0.22) | (0.23) |
| Other family status | 0.01 | -0.63 | -0.35 | -0.03 | -0.67 | -0.36 |
| | (0.39) | (0.49) | (0.51) | (0.38) | (0.49) | (0.51) |
| Risk attitude | -0.31*** | -0.11*** | -0.14*** | -0.30*** | -0.10*** | -0.13*** |
| | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) |
| Religiousness | -0.42*** | 0.21 | 0.00 | -0.42*** | 0.20 | -0.00 |
| | (0.09) | (0.12) | (0.12) | (0.09) | (0.12) | (0.12) |
| Net income | 0.10** | 0.22*** | 0.06 | 0.09** | 0.21*** | 0.05 |
| | (0.03) | (0.04) | (0.04) | (0.03) | (0.04) | (0.04) |
| Constant | 9.42*** | 5.74*** | 6.04*** | 9.61*** | 5.96*** | 6.14*** |
| | (0.25) | (0.32) | (0.33) | (0.25) | (0.31) | (0.33) |
| Observations | 2,825 | 2,825 | 2,825 | 2,825 | 2,825 | 2,825 |
| R-squared | 0.25 | 0.13 | 0.09 | 0.27 | 0.14 | 0.09 |

**Table A.13:** Linear regressions – influence of clusters on tax compliance with control results

*Notes:* In this table, based on the third online survey ($N$ = 2,825) results of six linear regression models are presented with TC1, TC2 and TC3 as dependent variables. Rationalist is included as independent variable turning one for individuals in the rationalist cluster, zero otherwise. The moralist cluster is used as reference group. Additionally, control variables are included as independent variables. Results are rounded to the second decimal place. Standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05

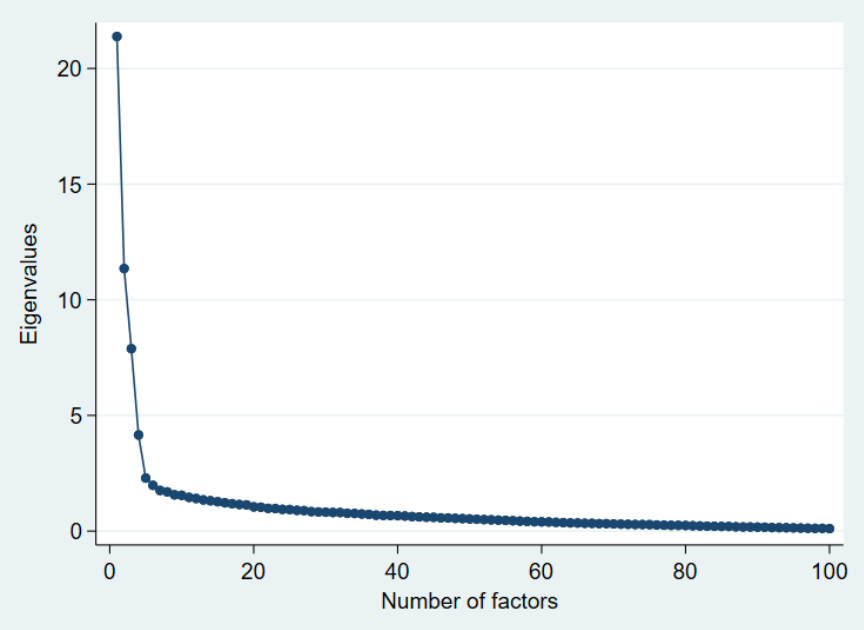



**Figure A.1:** Scree plot for the factor analysis

*Notes:* This figure shows results of the principal component factor analysis based on the second online survey ($N$ = 303). Eigenvalues are plotted against the number of factors to identify the optimal number of factors using the elbow criterion.

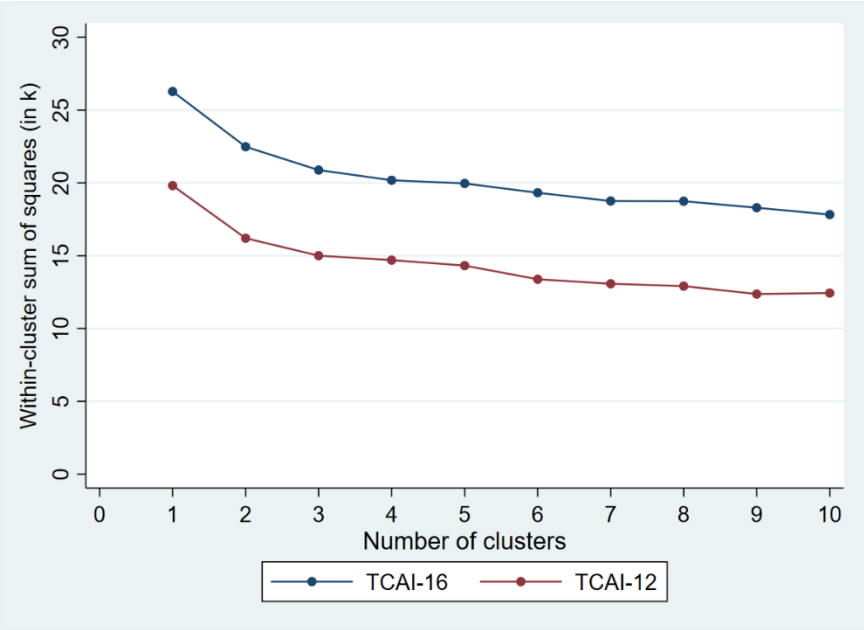



**Figure A.2:** Scree plot using k-means clustering

*Notes:* This figure shows results of the k-means clustering based on data of the third online survey ($N$ = 2,825). The within-cluster sum of squares is plotted against the number of clusters to identify the optimal number of clusters using the elbow criterion. The upper graph depicts the clustering with the four factors morale, monetary benefit, deterrence and authority while the lower graph depicts the clustering with the three factors morale, monetary benefit and deterrence.

**Online Appendix B**

Transcript: Survey ($N$ = 201)

Thank you for participating in this study.

The study is being conducted by Freie Universität Berlin and Queensland University of Technology (Brisbane, Australia) and will take approximately 10 minutes to complete.

The data collected will be analyzed anonymously. It is NOT possible to draw conclusions about your identity.

If you have any questions about this study, you can contact Prof. Dr. Peter N.C. Mohr (peter.mohr@fu-berlin.de) at any time.

How old are you (in years)?

☐

Are you female, male or non-binary?

☐ Female ☐ Masculine ☐ Non-binary

How many years did you spend at an educational institution (elementary school, secondary school, vocational school, university, etc.)?

☐

Are you professionally active?

☐ No ☐ Yes, full time ☐ Yes, part-time

What job do you do (multiple answers possible)?

☐ Student ☐ Civil servant ☐ Other worker ☐ Self-employed

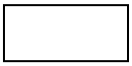
☐ Parental leave ☐ Other

What is your marital status?

☐ Divorced/widowed ☐ Married/registered partnership ☐ Single

☐ Other

How many children under 18 do you have?



**Scenario 1**

Imagine the following situation:

Your annual tax return is due and you have to declare your income in your tax return.

This could be the following income, for example:

- Income from employment (e.g. from a salaried or civil servant position)
- Income from self-employment (e.g. freelancer)
- Income from a commercial activity (e.g. tradesman)
- Income from capital (e.g. interest income or profits from the sale of shares)
- Income from letting and leasing
- Pension insurance benefits (e.g. receipt of a statutory old-age pension)

If you declare your income correctly, you are paying your taxes honestly. If you do not declare your income at all or declare less, you may enrich yourself personally and unlawfully reduce your total tax liability (tax evasion).

We would now like to know the following from you: What are your personal motives for paying taxes honestly. And what are your personal motives for evading taxes.

Please continue the following statement in bullet points. Please tell us at least your first three thoughts.

**When I am faced with the decision to declare my income on my tax return, I think about the following motives:**

**Scenario 2**

Imagine the following situation:

Your annual tax return is due and you have to declare your **expenses** in your tax return.

This could be the following expenses, for example:

- Income-related expenses (e.g. commuter allowance, expenses for study and work equipment, training costs, double housekeeping)
- Operating expenses to generate income from self-employed or commercial activities
- Donations and membership fees to non-profit organisations
- Pension expenses for health, long-term care and pension insurance (including Riester pension)
- Childcare and school costs
- Expenses for household-related employment and handyman services

If you declare your expenses correctly, you are paying your taxes honestly. If you declare higher expenses, you may enrich yourself personally and unlawfully reduce your total tax liability (tax evasion).

We would now like to know the following from you: What are your personal motives for paying taxes honestly. And what are your personal motives for evading taxes.

Please continue the following statement in bullet points. Please tell us at least your first three thoughts.

**When I am faced with the decision to declare my income on my tax return, I think about the following motives:**

Have you ever filed a tax return?

☐ Yes - once ☐ Yes - more than once ☐ No

Who prepared your last tax return?1

☐ No tax return submitted ☐ You yourself ☐ Another person in your household

☐ A tax consultant ☐ Other

Please tick whether you were confronted with any of the following issues when preparing your tax return. Multiple answers possible.

☐ No tax return submitted

☐ Travel allowance („commuter allowance“, dt. „Pendlerpauschale“)

☐ Additional expenses for double housekeeping

☐ Income-related expenses such as training costs, expenses for work equipment or expenses for a home office

☐ Household-related employment, services and handyman services

☐ Deduction of donations and membership fees

☐ Extraordinary expenses

☐ School fees and childcare costs

How would you rate your own tax knowledge?

No knowledge ☐ ☐ ☐ ☐ ☐ Above average knowledge

How complicated do you find the German tax system?

Very complicated ☐ ☐ ☐ ☐ ☐ Not complicated at all

How fair do you think the German tax system is?

Very unfair ☐ ☐ ☐ ☐ ☐ Very fair

How likely do you think it is that the tax office will carefully check whether all the information in your tax return is correct?

☐ percent

How do you rate yourself personally: Are you generally a risk-taker or do you try to avoid risks?

Not at all willing to take risks ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Very willing to take risks

How do you assess the following: Cheating on taxes if you have a chance …

… must not be done under any circumstances — … is okay in any case

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

How often do you pray on average per week?

☐ Not at all ☐ Less than 1 time ☐ 1 to 2 times ☐ 3 to 5 times ☐ Daily

☐ Several times a day

On average, how often do you go to a place of worship or prayer per month (e.g. church, mosque, synagogue, temple)?

☐

Political movements are sometimes classified on a scale from "left" to "centre" to "right". Where would you categorise your basic political convictions on such a scale?

Left — Centre — Right

☐ ☐ ☐ ☐ ☐ ☐ ☐

If you add up what you have left over from your own income and, if applicable, your spouse's income (net household income) after deducting taxes and social insurance - how much is this amount?

☐ Under 1,000 EUR ☐ 1,000 – 2,000 EUR☐ 2,000 – 3,000 EUR☐ 3,000 – 4,000 EUR

☐ 4,000 – 5,000 EUR☐ Over 5,000 EUR

How satisfied are you with the financial situation in your household?

| Completely dissatisfied | | | | | | | | | | Completely satisfied |
|---|---|---|---|---|---|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

**Thank you for your participation.**

Transcript: Survey ($N = 303$)

Thank you for participating in this study.

The study is being conducted by Freie Universität Berlin and Queensland University of Technology (Brisbane, Australia) and will take approximately 15 to 20 minutes to complete.

The data collected will be analyzed anonymously. It is NOT possible to draw conclusions about your identity.

If you have any questions about this study, you can contact Prof. Dr. Peter N.C. Mohr (peter.mohr@fu-berlin.de) at any time.

How old are you (in years)?

☐

Are you female, male or non-binary?

☐ Female ☐ Masculine ☐ Non-binary

How many years did you spend at an educational institution (elementary school, secondary school, vocational school, university, etc.)?

☐

Are you professionally active?

☐ No ☐ Yes, full time ☐ Yes, part-time

What job do you do (multiple answers possible)?

☐ Student ☐ Civil servant ☐ Other worker ☐ Self-employed

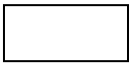
☐ Parental leave ☐ Other

What is your marital status?

☐ Divorced/widowed ☐ Married/registered partnership ☐ Single

☐ Other

How many children under 18 do you have?



Please imagine the following situation:

In real life, you are faced with the decision to pay taxes (for example, by filling in your tax return).

In doing so, you can pay your taxes honestly or you can benefit yourself by unlawfully reducing your total taxes payable through tax evasion.

Please read the statements below and decide to what extent you agree with each.

**When I fill in my tax return, it is especially important to me…**

... that I haven't forgotten anything.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I am satisfied with the social structures.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that my friends, family and neighbors contribute to society just as I do.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I do not do anything that could mean a break with my religious beliefs.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I don't pay too much tax.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that the probability of getting caught while tax evading is not too high.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... how I can legally minimize taxes.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I receive or have received transfer payments that are comparable to the tax payments I have made.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I perceive the distribution of the tax burden as fair.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I have not forgotten anything and that everything is complete.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that there are no conflicts with my personal values and standards.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I fill in everything conscientiously and correctly.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that the tax payment does not mean a substantial financial disadvantage for me.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I do not feel bad afterwards because I made false statements.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I get money/taxes back.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that my friends and family will not think anything bad of me.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I would describe the work of state institutions as efficient.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I understand everything so that I don't do anything wrong.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I save money/reduce taxes.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that my taxable income is not too high.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that my actions do not have negative consequences for my job.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I will round up information generously in order to save taxes.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I only evade enough that the probability of future tax audits does not increase for me.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I do not lie.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I do not forget to declare any income.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I agree with the intended use of my taxes.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I do not underestimate expenses/income-related costs.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I only cheat to the point where I can avoid imprisonment.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that state institutions are not wasteful with tax money.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I do not forget to declare any expenses/income-related costs.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I will not go so far as to make tax avoidance illegal.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that my sense of duty to pay taxes is not violated.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I would describe myself as an above-average honest taxpayer compared to my social environment.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I take advantage of all tax regulations in order to save taxes.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I exceed the flat rate allowance for expenses/income-related costs.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that my personal tax rate is not too high.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that my actions do not have negative consequences for my reputation in my social environment.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that everything is clear and comprehensible.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that other citizens benefit greatly from my taxes.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that there are people in my circle of acquaintances who behave in a similar way.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I achieve a great financial benefit for myself.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that I do not take any risks.

Do not agree at all — Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I have receipts for all the information I have provided.

Do not agree at all — Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that similarly high taxes are paid in other countries.

Do not agree at all — Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I save taxes in an honest way.

Do not agree at all — Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I do not invest too much effort in filling out the tax return.

Do not agree at all — Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that my taxes help to finance public services such as kindergartens and schools.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that thoughts of the tax authorities do not trigger any negative associations in me.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I go to the limit.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I receive a lot in return.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that financial penalties, should I be caught while tax evading, are not too high.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that the distribution of the tax burden is beneficial to me personally.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that my past interactions with governmental authorities, especially tax authorities, have been positive.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that my opinion on the use of tax revenue receives sufficient attention.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that the state has done something positive for me in the past.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I get a tax refund.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that my tax payable is not too high.

Do not agree at all ☐ ☐ ☐ ☐ ☐ ☐ Fully agree

... that my self-image of declaring taxes honestly is fulfilled.

Do not agree at all ☐ ☐ ☐ ☐ ☐ ☐ Fully agree

... that the process of tax collection is appropriate.

Do not agree at all ☐ ☐ ☐ ☐ ☐ ☐ Fully agree

... that people who evade taxes are also consistently prosecuted and punished.

Do not agree at all ☐ ☐ ☐ ☐ ☐ ☐ Fully agree

... that I save taxes even if I have to make dishonest statements.

Do not agree at all ☐ ☐ ☐ ☐ ☐ ☐ Fully agree

... that I have declared all minor things in the income.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I do not take too much of a risk.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I can avoid paying tax or tax arrears.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I can narrow down the level of audit probability as precisely as possible.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I comply with the responsibility towards society to pay taxes in full.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I do not pay too many taxes.

Do not agree at all — Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I save a lot of taxes.

Do not agree at all — Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that other people I know (relatively speaking) do not pay less taxes than I do.

Do not agree at all — Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that the overall tax burden for citizens is not too high.

Do not agree at all — Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that lower tax revenues do not impair the functioning of the state.

Do not agree at all — Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that other taxpayers are also honest.

Do not agree at all ☐ ☐ ☐ ☐ ☐ ☐ Fully agree

... that I get the best possible out of it for me.

Do not agree at all ☐ ☐ ☐ ☐ ☐ ☐ Fully agree

... that I get as much as possible refunded by the tax authorities.

Do not agree at all ☐ ☐ ☐ ☐ ☐ ☐ Fully agree

... that filling in the tax return is worthwhile for me.

Do not agree at all ☐ ☐ ☐ ☐ ☐ ☐ Fully agree

… that the tax system is easy to understand for the average citizen.

Do not agree at all ☐ ☐ ☐ ☐ ☐ ☐ Fully agree

… that I pay all my taxes even if I know that I will not be audited.

Do not agree at all — Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I do not experience negative social consequences from other members of society should I be caught cheating.

Do not agree at all — Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I feel positively encouraged to cooperate with the tax authorities.

Do not agree at all — Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that those people who benefit from my taxes deserve it.

Do not agree at all — Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I have declared all the little things in expenses/income-related costs.

Do not agree at all — Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that, from my point of view, tax revenues are used wisely.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that the criminal consequences, should I be caught, are not too high for me.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I exhaust all legal possibilities to save taxes.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I behave as in comparable situations.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that other people are not better at avoiding high tax payments legally or illegally.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I also take a risk sometimes.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I myself have already benefited from the taxes paid by others.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I sometimes set expenses higher in order to save taxes.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I am informed as accurately as possible about the consequences of tax evasion.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I have the impression the state has earned the money I provide it with.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that filling out the tax return is not too complicated.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I fulfil the moral obligation to make my tax contribution.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I do not provide any wrong information.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I do not accidentally declare something wrong.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that no social norms are violated by evading taxes.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I only evade enough to avoid financial punishment.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I do not commit tax evasion just to save taxes.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I have already received help from state authorities, especially the tax authorities, with a request.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I do not give to the state.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I do not have to pay any taxes in arrears.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I have a personal advantage.

Do not agree at all — Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... that I save taxes, even if I have to declare some expenses fictitiously.

Do not agree at all — Fully agree

☐ ☐ ☐ ☐ ☐ ☐

... the tax amount.

Do not agree at all — Fully agree

☐ ☐ ☐ ☐ ☐ ☐

Have you ever filed a tax return?

☐ Yes - once ☐ Yes - more than once ☐ No

Do you currently pay tax on your income?

☐ Yes, I currently pay taxes on my income

☐ No, I do not currently pay tax on my income

Do you generally expect a tax arrears or a tax refund, when you complete your tax return?

☐ Tax refund

☐ Tax arrears

Who prepared your last tax return?

☐ No tax return submitted ☐ You yourself ☐ Another person in your household

☐ A tax consultant ☐ Other

Please tick whether you were confronted with any of the following issues when preparing your tax return. Multiple answers possible.

☐ No tax return submitted

☐ Travel allowance („commuter allowance“, dt. „Pendlerpauschale“)

☐ Additional expenses for double housekeeping

☐ Income-related expenses such as training costs, expenses for work equipment or expenses for a home office

☐ Household-related employment, services and handyman services

☐ Deduction of donations and membership fees

☐ Extraordinary expenses

☐ School fees and childcare costs

☐ I have not been confronted with any of the facts mentioned.

How would you rate your own tax knowledge?

No knowledge Above average knowledge

☐ ☐ ☐ ☐ ☐

How complicated do you find the German tax system?

Very complicated ☐ ☐ ☐ ☐ ☐ Not complicated at all

How fair do you think the German tax system is?

Very unfair ☐ ☐ ☐ ☐ ☐ Very fair

How likely do you think it is that the tax office will check your tax return (in %)?

☐ percent

I would engage in tax evasion in order to save taxes.

☐ No

☐ Yes

If the tax office actually checks your tax return, how likely do you think it is that incorrect information will be discovered (in %)?

☐ percent

How do you rate yourself personally: Are you generally a risk-taker or do you try to avoid risks?

Not at all willing to take risks ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Very willing to take risks

How do you assess the following: Cheating on taxes if you have a chance …

… must not be done under any circumstances ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ … is okay in any case

How often do you pray on average per week?

☐ Not at all ☐ Less than 1 time ☐ 1 to 2 times ☐ 3 to 5 times ☐ Daily

☐ Several times a day

On average, how often do you go to a place of worship or prayer per month (e.g. church, mosque, synagogue, temple)?

☐

Political movements are sometimes classified on a scale from "left" to "centre" to "right". Where would you categorise your basic political convictions on such a scale?

Left ☐ ☐ ☐ Centre ☐ ☐ ☐ Right

If you add up what you have left over from your own income and, if applicable, your spouse's income (net household income) after deducting taxes and social insurance - how much is this amount?

☐ Under 1,000 EUR ☐ 1,000 – 2,000 EUR☐ 2,000 – 3,000 EUR☐ 3,000 – 4,000 EUR

☐ 4,000 – 5,000 EUR☐ Over 5,000 EUR

How satisfied are you with the financial situation in your household?

| Completely dissatisfied | | | | | | | | | | Completely satisfied |
|---|---|---|---|---|---|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

**Thank you for your participation.**

Transcript: Survey ($N$ = 2,825)

Thank you for participating in this study.

The study is being conducted by Freie Universität Berlin and Queensland University of Technology (Brisbane, Australia) and will take approximately 10 to 15 minutes to complete.

The data collected will be analyzed anonymously. It is NOT possible to draw conclusions about your identity.

If you have any questions about this study, you can contact Prof. Dr. Peter N.C. Mohr (peter.mohr@fu-berlin.de) at any time.

How old are you (in years)?

☐

Are you female, male or non-binary?

☐ Female ☐ Masculine ☐ Non-binary

How many years did you spend at an educational institution (elementary school, secondary school, vocational school, university, etc.)?

☐

Are you professionally active?

☐ No ☐ Yes, full time ☐ Yes, part-time

What job do you do (multiple answers possible)?

☐ Student ☐ Civil servant ☐ Other worker ☐ Self-employed

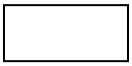
☐ Parental leave ☐ Other

What is your marital status?

☐ Divorced/widowed ☐ Married/registered partnership ☐ Single

☐ Other

How many children under 18 do you have?



Please imagine the following situation:

In real life, you are faced with the decision to pay taxes (for example, by filling in your tax return).

In doing so, you can pay your taxes honestly or you can benefit yourself by unlawfully reducing your total taxes payable through tax evasion.

Please read the statements below and decide to what extent you agree with each.

**When I fill in my tax return, it is especially important to me…**

… that the probability of getting caught while tax evading is not too high.

Do not agree at all ☐ ☐ ☐ ☐ ☐ ☐ Fully agree

… that I save money/reduce taxes.

Do not agree at all ☐ ☐ ☐ ☐ ☐ ☐ Fully agree

… that I have the impression the state has earned the money I provide it with.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that I fulfil the moral obligation to make my tax contribution.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that I get the best possible out of it for me.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that I comply with the responsibility towards society to pay taxes in full.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that I perceive the distribution of the tax burden as fair.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that financial penalties, should I be caught while tax evading, are not too high.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that I do not provide any wrong information.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that I receive a lot in return.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that I agree with the intended use of my taxes.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that I only cheat to the point where I can avoid imprisonment.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that the tax system is easy to understand for the average citizen.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that I pay all my taxes even if I know that I will not be audited.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that I get a tax refund.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that I do not experience negative social consequences from other members of society should I be caught cheating.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

Have you ever filed a tax return?

☐ Yes - once ☐ Yes - more than once ☐ No

Do you currently pay tax on your income?

☐ Yes, I currently pay taxes on my income

☐ No, I do not currently pay tax on my income

Do you generally expect a tax arrears or a tax refund, when you complete your tax return?

☐ Tax refund

☐ Tax arrears

Who prepared your last tax return?

☐ No tax return submitted ☐ You yourself ☐ Another person in your household

☐ A tax consultant ☐ Other

Please tick whether you were confronted with any of the following issues when preparing your tax return. Multiple answers possible.

☐ No tax return submitted

☐ Travel allowance („commuter allowance“, dt. „Pendlerpauschale“)

☐ Additional expenses for double housekeeping

☐ Income-related expenses such as training costs, expenses for work equipment or expenses for a home office

☐ Household-related employment, services and handyman services

☐ Deduction of donations and membership fees

☐ Extraordinary expenses

☐ School fees and childcare costs

☐ I have not been confronted with any of the facts mentioned.

How would you rate your own tax knowledge?

No knowledge Above average knowledge

☐ ☐ ☐ ☐ ☐

How complicated do you find the German tax system?

Very complicated ☐ ☐ ☐ ☐ ☐ Not complicated at all

How fair do you think the German tax system is?

Very unfair ☐ ☐ ☐ ☐ ☐ Very fair

Now imagine the situation again, that you are faced with the decision to pay taxes to pay taxes honestly or to evade them.

Please read the statements below and decide to what extent you agree with each.

**When I fill in my tax return, it is especially important to me…**

… that I consider the distribution of the tax burden to be fair or that I agree with the use of the taxes.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that the financial, criminal and social consequences should I be caught evading taxes are not too high for me.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that I fulfil my responsibility to society and my moral obligation to pay taxes fully and honestly.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that I save money/taxes and get the best possible best possible out of it for me.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

How likely do you think it is that the tax office will check your tax return (in %)?

☐ percent

If the tax office actually checks your tax return, how likely do you think it is that incorrect information will be discovered (in %)?

☐ percent

I would engage in tax evasion in order to save taxes.

☐ Yes

☐ No

How do you rate yourself personally: Are you generally a risk-taker or do you try to avoid risks?

Not at all willing to take risks ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Very willing to take risks

How do you assess the following: Cheating on taxes if you have a chance …

… must not be done under any circumstances ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ … is okay in any case

How often do you pray on average per week?

☐ Not at all ☐ Less than 1 time ☐ 1 to 2 times ☐ 3 to 5 times ☐ Daily

☐ Several times a day

On average, how often do you go to a place of worship or prayer per month (e.g. church, mosque, synagogue, temple)?

☐

Political movements are sometimes classified on a scale from "left" to "centre" to "right". Where would you categorise your basic political convictions on such a scale?

| Left | | | Centre | | | Right |
|---|---|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

If you add up what you have left over from your own income and, if applicable, your spouse's income (net household income) after deducting taxes and social insurance - how much is this amount?

☐ Under 1,000 EUR ☐ 1,000 – 2,000 EUR☐ 2,000 – 3,000 EUR☐ 3,000 – 4,000 EUR

☐ 4,000 – 5,000 EUR☐ Over 5,000 EUR

How satisfied are you with the financial situation in your household?

| Completely dissatisfied | | | | | | | | | | Completely satisfied |
|---|---|---|---|---|---|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

**Scenario 1**

Your annual tax return is due.

Imagine that your annual basic income is 60,000 EUR.

Furthermore, this year you were able to earn an additional income of 500 EUR from another activity - namely from freelance work. Since this is a freelance job, the information about the income has not been automatically forwarded to the tax office yet.

**How would you assess your willingness to report the entire additional income of 500 EUR on your tax return?**

Very low ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Very high

**Scenario 2**

As part of your annual tax return, the tax office asks you for several pieces of information. Among other things, they ask how much money you personally spent on job expenses in the relevant year. These expenses are called income-related expenses and are tax deductible. Basically, the higher the income-related expenses, the lower the tax to be paid.

A component of the income-related expenses are the expenses for work equipment. This includes specialist literature, office supplies and technical equipment such as a computer.

Since 2018, receipts no longer have to be submitted with the tax re-turn for income-related expenses. However, the tax office can request these and occasionally does so.

Please imagine that last year you spent a total of 274 EUR on specialist literature, office supplies and technical equipment that are clearly related to your job. In addition, you had expenses of 43 EUR, which are also considered as office supplies, but actually have no connection to your professional activity.

**How would you assess your willingness to state more than the 274 EUR in your tax return?**

Very low ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Very high

**Thank you for your participation.**

Transcript: Experiment ($N$ = 334)

**Experimental instructions:**

You now receive a fictitious income of 5 euros.

As part of this experiment, you must make a fictitious tax return on this income, on the basis of which a fictitious tax (tax rate: 50%) is calculated. The total (fictitious) tax revenue collected as part of this study will be used to fund future research projects, among other things.

In this tax return, you have the choice of either declaring the entire income (5 euros) or no income at all (0 euros).

You declare 5 euros: A tax of 2.50 euros will be withheld (50% of 5 euros). You will then certainly receive 2.50 euros as additional compensation for the experiment (5 euros income minus 2.50 euros tax).

You enter 0 euros: No tax is withheld. But: There is a 30% probability that a check will be carried out and you will have to pay a penalty of 5 euros due to your false declaration, so in this case you will not receive any additional remuneration for the experiment (5 euros income minus 5 euros penalty). There is a 70% probability that no verification will take place and in this case you will receive an additional payment of 5 euros.

After the experiment and after completing the further questionnaire, you will be informed whether you have been checked.

Please make your decision. Please bear in mind that your additional remuneration for the experiment depends on this decision.

o I indicate an income of 5 euros.

o I indicate an income of 0 euros.

Experiment decision on tax evasion

☐ I enter an income of 5 euros.

☐ I enter an income of 0 euros.

Are you female, male or non-binary?

☐ Female ☐ Masculine ☐ Non-binary

How old are you (in years)?

☐

How many years did you spend at an educational institution (elementary school, secondary school, vocational school, university, etc.)?

☐

Are you professionally active?

☐ No ☐ Yes, full time ☐ Yes, part-time

What job do you do (multiple answers possible)?

☐ Student ☐ Civil servant ☐ Other worker ☐ Self-employed

☐ Parental leave ☐ Other

What is your marital status?

☐ Divorced/widowed ☐ Married/registered partnership ☐ Single

☐ Other

How many children under 18 do you have?

**When I fill in my tax return, it is especially important to me…**

… that I do not provide any wrong information.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that I comply with the responsibility towards society to pay taxes in full.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that I fulfil the moral obligation to make my tax contribution.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that I pay all my taxes even if I know that I will not be audited.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that I receive a lot in return.

Do not agree at all — Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that I get the best possible out of it for me.

Do not agree at all — Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that I save money/reduce taxes.

Do not agree at all — Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that I get a tax refund.

Do not agree at all — Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that I only cheat to the point where I can avoid imprisonment.

Do not agree at all — Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that financial penalties, should I be caught while tax evading, are not too high.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that the probability of getting caught while tax evading is not too high.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that I do not experience negative social consequences from other members of society should I be caught cheating.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that I perceive the distribution of the tax burden as fair.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that I agree with the intended use of my taxes.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that the tax system is easy to understand for the average citizen.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

… that I have the impression the state has earned the money I provide it with.

Do not agree at all Fully agree

☐ ☐ ☐ ☐ ☐ ☐

Have you ever filed a tax return?

☐ Yes - once ☐ Yes - more than once ☐ No

Do you currently pay tax on your income?

☐ Yes, I currently pay taxes on my income

☐ No, I do not currently pay tax on my income

Do you generally expect a tax arrears or a tax refund, when you complete your tax return?

☐ Tax refund

☐ Tax arrears

Who prepared your last tax return?

☐ No tax return submitted ☐ You yourself ☐ Another person in your household

☐ A tax consultant ☐ Other

Please tick whether you were confronted with any of the following issues when preparing your tax return. Multiple answers possible.

☐ No tax return submitted

☐ Travel allowance („commuter allowance“, dt. „Pendlerpauschale“)

☐ Additional expenses for double housekeeping

☐ Income-related expenses such as training costs, expenses for work equipment or expenses for a home office

☐ Household-related employment, services and handyman services

☐ Deduction of donations and membership fees

☐ Extraordinary expenses

☐ School fees and childcare costs

☐ I have not been confronted with any of the facts mentioned.

How would you rate your own tax knowledge?

No knowledge Above average knowledge

☐ ☐ ☐ ☐ ☐

How complicated do you find the German tax system?

Very complicated ☐ ☐ ☐ ☐ ☐ Not complicated at all

How fair do you think the German tax system is?

Very unfair ☐ ☐ ☐ ☐ ☐ Very fair

**When I fill in my tax return, it is especially important to me…**

… that I consider the distribution of the tax burden to be fair or that I agree with the use of the taxes.

Do not agree at all ☐ ☐ ☐ ☐ ☐ ☐ Fully agree

… that the financial, criminal and social consequences should I be caught evading taxes are not too high for me.

Do not agree at all ☐ ☐ ☐ ☐ ☐ ☐ Fully agree

… that I fulfil my responsibility to society and my moral obligation to pay taxes fully and honestly.

Do not agree at all ☐ ☐ ☐ ☐ ☐ ☐ Fully agree

… that I save money/taxes and get the best possible best possible out of it for me.

Do not agree at all ☐ ☐ ☐ ☐ ☐ ☐ Fully agree

How likely do you think it is that the tax office will check your tax return (in %)?

☐ percent

If the tax office actually checks your tax return, how likely do you think it is that incorrect information will be discovered (in %)?

☐ percent

I would engage in tax evasion in order to save taxes.

☐ No

☐ Yes

I think the distribution of the tax burden in Germany is fair.

Do not agree at all ☐ ☐ ☐ ☐ ☐ ☐ Fully agree

In general, I agree with the use of taxes in Germany.

Do not agree at all ☐ ☐ ☐ ☐ ☐ ☐ Fully agree

The majority of society pays its taxes fully and honestly.

Do not agree at all ☐ ☐ ☐ ☐ ☐ ☐ Fully agree

If tax evasion is uncovered in Germany, the financial consequences for the tax evader are high.

Do not agree at all ☐ ☐ ☐ ☐ ☐ ☐ Fully agree

If tax evasion is uncovered in Germany, the criminal consequences for the tax evader are high.

Do not agree at all ☐ ☐ ☐ ☐ ☐ ☐ Fully agree

If tax evasion is uncovered in Germany, the social consequences for the tax evader are high.

Do not agree at all ☐ ☐ ☐ ☐ ☐ ☐ Fully agree

How do you rate yourself personally: Are you generally a risk-taker or do you try to avoid risks?

Not at all willing to take risks ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Very willing to take risks

How do you assess the following: Cheating on taxes if you have a chance …

… must not be done under any circumstances ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ … is okay in any case

How often do you pray on average per week?

☐ Not at all ☐ Less than 1 time ☐ 1 to 2 times ☐ 3 to 5 times ☐ Daily

☐ Several times a day

On average, how often do you go to a place of worship or prayer per month (e.g. church, mosque, synagogue, temple)?

☐

Political movements are sometimes classified on a scale from "left" to "centre" to "right". Where would you categorise your basic political convictions on such a scale?

| Left | | | Centre | | | Right |
|---|---|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

If you add up what you have left over from your own income and, if applicable, your spouse's income (net household income) after deducting taxes and social insurance - how much is this amount?

☐ Under 1,000 EUR ☐ 1,000 – 2,000 EUR☐ 2,000 – 3,000 EUR☐ 3,000 – 4,000 EUR

☐ 4,000 – 5,000 EUR☐ Over 5,000 EUR

How satisfied are you with the financial situation in your household?

| Completely dissatisfied | | | | | | | | | | Completely satisfied |
|---|---|---|---|---|---|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

**Online Appendix C**

One-factor (TCAI-4) classification

We examine whether we can reduce questions in the classification (not in the cluster analysis as in the reduction from TCAI-16 to TCAI-12) up to a single factor (*TCAI-4*). The goal is to receive a classification that is as similar as possible to the TCAI-12 classification. The applicability of our results would increase with fewer questions to be asked.

To identify the factor that splits up the sample best we look at the mean factor values per cluster of the TCAI-12 from Figure 1 and Table 7. Factors with a higher difference in the mean value between the two clusters seem more appropriate to be used as a single separator. It can be seen that the difference between the morale values with 3.4 (= 20.5 – 17.1) and between the monetary benefit values with 3.8 is lower than between the deterrence values with 9.3. Hence, we continue with the deterrence factor as the single separator. We additionally check for distinctiveness on a question level. However, the four most distinctive single questions are the ones allocated to the deterrence factor.

To examine how suitable the deterrence factor is we split the sample into moralists and rationalists applying data from the third online survey ($N$ = 2,825) and the online experiment ($N$ = 334). In each dataset, we employ the classification algorithm relying solely on the deterrence factor, calibrated against the established mean values: 6.9 for moralists and 16.2 for rationalists. Relative to the respective clustering, there is an alteration of 8.3% in the expansive dataset and an 8.7% shift in the experimental dataset. Subsequently, by juxtaposing the outcomes of regression analyses with the insights from prior sections, we aim to ascertain the robustness and validity of the TCAI-4's single-factor classification.

We use linear regression analyses including the dependent variables TC1, TC2, TC3, and TC1Exp, respectively. Moreover, we apply a logistic regression model using the incentivized variable TCExp. *Rationalist* and the control variables serve as independent variables. The results are displayed in Table C.1. The coefficients for *Rationalist* in all regression models consistently yield negative values and maintain a significance level at $p < 0.001$. As previously observed, individuals within the 'moralist' cluster evade less taxes than individuals within the 'rationalist' cluster. If compared to the corresponding coefficients in Table 4, coefficients here show to have a less negative value. Concurrently, the R-squared as well as pseudo R-squared are slightly lower. Thus, using the TCAI-4 (based only on the deterrence questions) in the classification of new data leads to a less precise prediction of tax compliance behavior than

using the TCAI-12. Nonetheless, the optimal methodology hinges on the specific use case, as the TCAI-4 offers the intrinsic benefit of necessitating a reduced number of queries.

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| VARIABLES | TC1 | TC2 | TC3 | TC1Exp | TCExp |
| Rationalist | -1.73*** | -1.64*** | -1.31*** | -1.62*** | -1.29*** |
| | (0.09) | (0.11) | (0.12) | (0.24) | (0.34) |
| Constant | 9.61*** | 5.90*** | 6.12*** | 9.59*** | 1.01 |
| | (0.25) | (0.32) | (0.33) | (0.83) | (1.13) |
| Observations | 2,825 | 2,825 | 2,825 | 334 | 334 |
| R-squared | 0.24 | 0.12 | 0.08 | 0.27 | |
| Pseudo R-squared | | | | | 0.14 |
| Controls | YES | YES | YES | YES | YES |

**Table C.1:** One-factor classification – influence of cluster on tax compliance

*Notes:* In this table, based on the third online survey ($N$ = 2,825) results of three linear regression models are presented with TC1, TC2, and TC3 as dependent variables. Based on the online experiment data ($N$ = 334), the results of a linear regression model using TC1Exp as the dependent variable and a logistic regression model using TCExp as the dependent variable are presented. Rationalist is included as an independent variable turning one for individuals in the rationalist cluster, and zero otherwise. The moralist cluster is used as the reference group. The allocation towards a cluster is made by the one-factor classification. Included controls are gender, age, education, employment status, family status, risk preference, religiousness, and income. The independent variable "other family status" is excluded in the logistic regression as it predicts success perfectly. All values are rounded to the second decimal place. Standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05