

eJournal of Tax Research

Volume 11, Number 1

June 2013

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Indicators of tax morale: an exploratory study

Margaret McKerchar^{1*}, Kim Bloomquist², and Jeff Pope³

Abstract

Taxpayer compliance research has tended to focus on why people evade their taxes rather than on why the vast majority of people do willingly comply with their tax obligations. Whilst tax administrations globally seek to improve the efficiency of their revenue collections, there is growing recognition of the need to have a deeper understanding of why taxpayers comply voluntarily. A person's internal motivations to comply are commonly characterised as his/her 'tax morale', the 'key' to the puzzle of understanding taxpayer compliance behavior. Thus tax morale is often seen as a 'black box' or the error term for the difference between predicted and observed behavior, a puzzle within a puzzle. This paper initially explores the origins and likely determinants of tax morale, followed by a discussion of measurement difficulties. The key feature of this paper is our attempt to use real taxpayers whose actual compliance behavior is known (rather than self-reported) to identify factors that could be indicative of taxpayer morale from data reported in individual tax returns. Using data from the Internal Revenue Service's National Research Program from the audit of 1,101 cases with only sole proprietor income, we tested six indicators that theoretically have some correlation with tax morale. Our main findings are threefold. Firstly, IRS random audit studies suggest a possible tax morale component to taxpayer compliance based on the distribution of reporting compliance rates. Secondly, it is extremely difficult to separate this tax morale component from other factors that are at least equally significant in deterring underreporting. Thirdly, although much of the focus in the more recent tax morale literature has focused on religiosity as a causal factor, a more secular explanation may be simply one's personal integrity (or moral rules and norms) irrespective of religious beliefs if any.

JEL classification: K34 Tax Law

PsycINFO classification: 2260 (Research Methods and Experimental Design)

Keywords: compliance; taxation law

1. INTRODUCTION

Taxpayer compliance research has tended to focus on why people evade their taxes rather than on why the vast majority of people do willingly comply with their tax obligations (Slemrod, 1992). By and large this is not surprising given the threat that tax evasion poses to revenue collections and societal well-being. Yet as we observe

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* Corresponding author. Sincere thanks to Brian Erard who provided helpful feedback on earlier versions of this article and to participants at the 2012 Tax Research Network Conference, University of Roehampton. Nonetheless the usual caveats apply.

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tax administrations seeking to improve the efficiency of their revenue collections, there is growing recognition of the need to have a deeper understanding of why taxpayers do comply voluntarily (Kornhauser, 2007). Understanding taxpayer compliance is undoubtedly complex (Andreoni, Erard, & Feinstein, 1998; McKerchar, 2001), and remains an important challenge for both researchers and tax administrators.

People's willingness or internal motivations to comply is commonly characterized as their 'tax morale' (Kornhauser, 2007). Tax morale is depicted as the 'key' to the puzzle of understanding taxpayer compliance behavior (Kornhauser, 2007); the 'black box' or 'residuum' of all that is inexplicable when it comes to the influences of tax evasion (Feld & Frey, 2002). That is, tax morale is cast as the error term for the difference between predicted and observed behavior, a puzzle within a puzzle. Many have attempted to shed light on taxpayers' internal motivators to comply by various means including surveys and experiments, but hard evidence is difficult to find (Torgler & Murphy, 2004; Book, 2007). To unlock the puzzle seems almost impossible when so little is known about the key itself.

Against this background we set out to try and shed some light on tax morale, its indicators and impact on compliance. We relied on data from the Internal Revenue Service's (IRS) National Research Program (NRP) from the audit of 1,101 cases having only sole proprietor income and tested a range of indicators that we thought might have some correlation with tax morale.

The remainder of this paper is organized as follows: First we explore the compliance literature more fully to understand the origins and likely determinants of tax morale, and its measurement. Secondly, the methods and procedures of this study are described. An analysis of the results of our testing is presented in the third part of this paper, followed by discussion in the fourth and final part.

1.1 Origins and likely determinants of tax morale

The concept of tax morale is not new. Drawing on the work of Schmolders (1959) on taxpayers' attitudes towards their tax burden, Strümpel (1969) first introduced the term 'tax mentality' to describe a person's willingness to pay tax. Based on a cross-country survey, Strümpel found that tax mentality was affected by the way taxpayers were treated by tax authorities. Lewis (1979) further developed this work in his empirical assessment of tax mentality (i.e. either a positive or negative attitude towards tax evasion) using a survey method. Lewis found that tax mentality differed between countries, by exchange factors, by social orientation and by demographic characteristics. Lewis concluded that there was no simple "general factor" of tax mentality, but that the most reliable predictor of individual attitudes appeared to be how much tax the individual paid, with higher-paying individuals being less willing to pay. However a study by Cox (1984) using data from the IRS Taxpayer Compliance Measurement Program (TCMP) could not support the existence of a relationship between tax rates and compliance. This conclusion was reaffirmed recently by Phillips (2011) using the full 2001 IRS NRP dataset.⁴ He states (pg. 44) that tax rates have "little practical significance on compliance relative to the effects of information

⁴ The same dataset from which we draw our sample of 1,101 sole proprietor cases.

reporting.” Amongst these and other early studies by fiscal psychologists (for example see Schwartz & Orleans (1967); Vogel (1974)) there appeared to be a general consensus that, in theory, taxpayer attitude influenced behavior, but there was little, if any, consensus about the nature of this relationship.

In spite of these promising beginnings in the study of tax morale, it was to remain a fairly dormant area of research for many years as economics-of-crime models based on the seminal work of Allingham & Sandmo (1972; for a review see Kirchler, 2007) dominated the compliance literature. These models assume taxpayers to be rational beings and thus responsive to punishments or sanctions. In spite of the popularity of these models (particularly with economists), fiscal psychologists remained convinced that non-economic factors strongly influenced taxpayer compliance behavior (Slemrod, 1992). Empirical evidence in support of tax compliance motivated by non-economic factors is found in the recent study by Phillips (2011, pg. 45). In his analysis of 2001 NRP data, Phillips found that IRS auditors did not detect underreporting on 46 percent of tax returns with positive unmatchable income.⁵ This observation led the author to conclude “the economics-of-crime framework...has limited ability to explain why taxpayers with unmatchable income would not underreport. In net, it therefore appears that both a rational economics-of-crime framework as well as alternative behavioral explanations are necessary to explain the incidence of noncompliance.”

Subsequent fiscal psychology studies adopted a more conceptual approach to compliance behavior, instead emphasizing the multiplicity and complexity of tax behavior and the challenges in measuring and understanding it over time (for example see Jackson & Milliron (1986); Klepper & Nagin (1989a); Long & Swingen (1991)). Further, the reliability of empirical models based on self-reported behavior, game simulations and hypothetical case studies has been questioned (Hassledine & Bebbington, 1991; Hessing, Elffers, & Weigel, 1988). How taxpayers form attitudes and beliefs and how these then in turn impact on their decision-making processes remains a challenging area for researchers, though a vast body of literature does exist (for a review see Andreoni, Erard, & Feinstein, 1998; McKerchar, 2001). It is from this body that we focus now on the study of tax morale which has re-emerged in the last decade as an area of particular interest to researchers.

Torgler and Murphy (2004) describe tax morale as the intrinsic motivation to pay one's taxes. They acknowledged the difficulty in defining the concept in more concrete terms and conclude that it is generally understood to describe the moral principles or values individuals hold about paying their tax. Torgler (2007) argues that there are three key factors important for understanding tax morale. They are (1) moral rules and sentiments (for example, norms and guilt; may be strongly influenced by religious motivations); (2) fairness, and (3) the relationship between taxpayer and government (i.e. governance and trust).

⁵ Unmatchable income includes, among other sources, non-farm sole proprietor income. Of the 1,101 taxpayers in our selected sub-sample of NRP sole proprietor cases, IRS auditors did not detect underreporting in 133 cases (12 percent).

In considering the first of these factors, the extent to which religiosity impacts on moral principles (and in turn on tax compliance or tax evasion) is unclear given the limited studies to date in which it is considered and the mixed findings that have resulted (see for example Grasmick, Bursik, & Cochran, 1991; Stack & Kposowa, 2006; Torgler, 2006; and more generally Henrich et al, 2010). Further, Torgler (2007) tends to downplay the role of cultural differences which have been highlighted elsewhere in the literature (Ashby & Webley, 2010; Coleman & Freeman, 1997; Richardson, 2006). In terms of the second factor, fairness, it appears that taxpayers' perception of fairness of the tax system plays an important role in non-compliance behavior and more so in respect of tax evasion (Bordignon, 1993; Etzioni, 1986; Porcano & Price, 1992; Roberts & Hite, 1994; Smith, 1992; Tan, 1998). Turning to the third factor, there is support in the literature for the positive impact of trust in tax administration and government on motivating taxpayers to comply voluntarily (Feld & Frey, 2007; Frey, 2003; Torgler, 2003). The higher the level of trust held by taxpayers the higher is the predicted level of voluntary compliance (Kirchler, Hoelzl, & Wahl, 2008). Again the common theme is that whilst these three factors do appear likely to be important determinants of tax morale, the evidence is not yet compelling.

1.2 Measures of tax morale

As Torgler & Murphy (2004) note, empirical work on tax morale is almost non-existent. In their Australian research they use World Values Survey (WVS) data from 1981 and 1995 and one general question (p.308) to assess the level of tax morale:

Cheating on taxes if you have the chance is (answers to be given on a ten point scale 1="never justifiable" to 10 = "always justifiable".

They acknowledge that having only one question to measure tax morale could be a criticism of the appropriateness and sufficiency of their approach. (This is in addition to the weaknesses of self-reports.) The rationale provided for the approach is that it has been used in earlier studies (see Torgler, 2007). One important contribution of this study by Torgler and Murphy (2004) is that it does allow for a comparison over time of changes in attitudes to tax evasion. Whether or not it provides an adequate indicator of tax morale is doubtful, but the reality is there is little other empirical data available to researchers, and as we know from the literature, this is not an easy puzzle to conceptualise or solve.

In our research we attempt to address the problem in reverse. We start with real taxpayers whose actual compliance behavior is known (rather than self-reported). They are all self-employed taxpayers who we contend had the same opportunity to evade. We try to work backwards to identify factors (from data reported in their tax returns) that could be indicative of their morale, or why they were willing (or unwilling) to pay their taxes. It may not unlock the puzzle, but it may help tax administrators better understand taxpayers and predict compliance outcomes and more effectively identify and treat risks to revenue collections.

2. METHOD

Our goal in this study is to try to identify or otherwise construct indicators of tax morale from tax return data and, in turn, use these indicators to investigate the role of tax morale on observed reporting compliance for individual (sole proprietor) taxpayers.

The data used for this study is derived mainly from the IRS's NRP study of individual taxpayers for tax year (TY) 2001 (Bennett 2005). The sample contains 44,768 audit cases weighted to represent 125,790,958 taxpayers who filed timely tax returns for TY 2001. For the present study, a sub-sample of this data set was selected which consists of taxpayers whose only source of income (pre and post-audit) is derived from a Schedule C sole proprietorship.⁶ This subset of 1,673 cases represents 1,101,977 taxpayers. A further restriction was made to exclude filers with no taxable income as determined by the examiner. Eliminating these cases facilitates construction of our dependent variable, *compRate*, defined as the ratio of reported income to "true" income (i.e., income per exam). The final sample has 1,101 cases representing 559,555 individual filers.

A second data source is the Data Master-1 (DM-1) file maintained by the U.S. Social Security Administration (SSA). The DM-1 has demographic data (e.g., gender, age and citizenship) for persons (living and deceased) who have registered with the SSA. An IRS relational database, the Compliance Data Warehouse (CDW), maintains an updated copy of the DM-1 file, along with an extensive collection of current and historical tax return data. Lastly, data on income per capita by postal (zip code) zone was obtained from the U.S. Bureau of the Census' decennial census.

As discussed in the introduction, tax morale has been characterized as reflecting a composite of influences stemming from (a) moral rules and norms that delineate what is acceptable behavior for individuals as part of a social collective, (b) the perceived overall fairness of the tax system and (c) trust in governmental institutions. Previous studies have associated the first element of this triumvirate, morality and norms, with a measure of religiosity. For example, Torgler (2006) and Torgler, Schaffner and Macintyre (2010) use the fraction of individuals in a population that claim membership in one of the world's major religions as a measure of the degree of religiosity.

The existing literature is often vague concerning how claimed membership in a major religion influences tax reporting behavior. Perhaps exposure to religious teaching and its lessons about caring for the less fortunate inspires a greater willingness to comply when tax time comes around. Another explanation is suggested in the work by Henrich et al. (2010) who argue that involvement in supra-kinship institutions (e.g., a market economy or major world religion) implants in a population a set of norms governing transactions among unrelated individuals. They present evidence from a series of behavioral experiments that shows claimed membership in a major religion

⁶ It is well-known that reporting compliance varies widely depending on source of income (Johns and Slemrod 2010). Therefore, by selecting taxpayers having a single source of income we are better able to control for the opportunity to evade.

(i.e., Christianity or Islam) is positively associated with exchange fairness in some (but not all) situations.

Unfortunately, for this study we do not have an indicator of religious affiliation from U.S. tax return data. However, taxpayers may itemize deductions that often include contributions to both religious institutions and civic organizations that serve the needs of the broader community.⁷ We construct the variable *reportsContributions* to indicate a taxpayer's willingness to consider the needs of others in his/her financial affairs. This indicator is equal to 1 if a taxpayer reports making charitable contributions, zero otherwise. A positive relationship is hypothesized between the presence of charitable contributions and the ratio measure of tax reporting compliance.

Another possible indicator of personal commitment to local norms of behavior is citizenship in the country of residence. Using the DM-1 data we construct a dummy variable, *isUSCitizen*, equal to 1 if the taxpayer is a U.S. citizen, zero otherwise. Again, we hypothesize a positive relationship between citizenship and tax compliance.

Fairness of the tax system is the second factor contributing to an individual's level of tax morale. We propose two variables to capture this influence, albeit indirectly. These are: (1) the log of taxable income (*logTaxableIncome*) and (2) a dummy variable equal to 1 if taxable income in TY 2001 was greater than in TY 2000 (*txblIncTY01MoreThanTY00*).

We hypothesize that taxable income is positively related to one's perception of tax unfairness and thus negatively correlated with our measure of reporting compliance. Evidence for this relationship is found in telephone surveys conducted by Gallup, Inc. in which households were asked to give their view on the fairness of the federal income tax. Combining responses collected from 2005 through 2011, the Gallup surveys show that 55 percent of households in the highest income group (\$250,000 or more) responded "No, not fair" regarding their own tax burden versus 31 percent of households in the lowest income group. The positive correlation between income and tax unfairness holds for all household income categories (Table 1 bottom row).

Table 1
Views About Own Income Taxes – by Annual Household Income

	Less than \$30,000	\$30,000- \$49,999	\$50,000- \$99,999	\$100,000- \$249,999	\$250,000 or more
	%	%	%	%	%
Too high	45	49	51	54	67
About right	43	47	47	43	26
Too low	4	2	2	3	6
Yes, fair	60	63	60	59	44
No, not fair	31	34	38	40	55

See <http://www.gallup.com/poll/147152/americans-split-whether-taxes-high.aspx>. Site last accessed on February 8, 2012. Results shown based on 2005-2011 combined survey data.

⁷ We realize this indicator is less than ideal since some taxpayers, instead of itemizing, use the standard deduction. This amount varies depending on one's filing status (e.g., single, married filing jointly, head of household, etc.).

However, Table 1 also shows that households with income between \$30,000 and \$49,999 had a slightly more favourable view of tax fairness than did households with income less than \$30,000 (the “Yes, fair” response of 63 percent for the former group versus 60 percent for the latter). The statistical significance of this result is unknown. However, because these two income groups largely occupy the lowest tax bracket, it suggests that a year over year increase in household income could translate into a more favourable perception of tax system fairness at the margin. The variable *txblIncTY01MoreThanTY00* is used to link an increase in reported taxable income in TY 2001 versus 2000 to a marginal increase in the perception of the fairness of one’s tax burden.

Trust in governmental institutions is the third element of tax morale. Again, relying on information available on the Form 1040 – the tax form used by individuals to file their U.S. federal income taxes – we identified two potential indicators of trust in government. Our first indicator is the taxpayer’s response to the question about directing a small portion of their tax liability to a public fund used to underwrite the cost of Presidential elections. A positive response to this question does not result in an increase in taxes, but merely redirects \$3 of existing tax liability to this special fund. We propose that individuals who respond affirmatively to this question are revealing a heightened sense of trust (hope?) in the political institutions that make up the federal government. Consequently, we hypothesize a positive correlation between the variable *designatesToPresElecCampaignFund*, which equals 1 if the taxpayer elects to direct \$3 in taxes to this fund zero otherwise, and the dependent variable *compRate*.

Our other indicator of trust in government, again indirectly, is the presence on the tax return of a deduction for state income tax (*reportsStateIncomeTaxDeduction*). This variable is equal to 1 if the filer claims a deduction for state income tax, zero otherwise. Although some U.S. states do not have a state income tax, we nevertheless hypothesize a positive relationship between this variable and reporting compliance since a non-zero entry indicates payment of income taxes to at least one other governmental jurisdiction.

We also include a number of variables in order to control for taxpayers’ demographic and tax filing characteristics. Demographic control variables include: age, gender, marital status, presence of children and income per capita in the taxpayer’s place of residence. The variable *age* is the age of the primary filer. The primary filer is the name of the first taxpayer shown on the return if the filing status listed on the tax return is married filing jointly. Empirical research suggests age is positively correlated with tax compliance (Roth, Scholz, and Witte 1989, pp. 133-135). The dummy variable *hasKids* indicates if the filer claims one or more child exemptions. The influence of this variable on tax reporting compliance is uncertain. The variables *isFemale* and *married* are dummy variables set equal to 1 if the primary taxpayer is female or the taxpayer is married. In tax compliance laboratory experiments females consistently exhibit higher reporting compliance than males (Alm 1999) and we expect this variable to have a positive sign here as well. The empirical evidence is mixed for the role of married filing status on compliance. On the one hand, married taxpayers may be more responsible in their approach to filing taxes. However, married taxpayers also may experience more financial stress which could provide incentive to evade. Therefore, we are uncertain about the direction of influence for *married*. Since

not all U.S. states have a state income tax, we include a dummy variable (*stateIncomeTax*) to control for this influence.⁸ The final demographic variable is the log of per capita income for residents of the zip code where the taxpayer resides (*logIncPerCapita*). We included this variable as an indicator of relative well-being. Again, we are uncertain of the sign on this variable.

Several variables are included to control for filing characteristics of taxpayers. The variable *filesSchCEZ* is a dummy variable equal to 1 if the filer uses the simple version of the form required of sole proprietors. Since use of this form indicates a reduction in filing burden we expect a positive relationship between use of the C-EZ form and reporting compliance. The dummy variable *firstTimeFiler* is equal to 1 if an individual is filing for the first time. We conjecture that first-time filers will have higher noncompliance due to lack of familiarity with tax laws and hypothesize a negative sign for this variable. The variable *usesPaidPreparer* is a dummy variable equal to 1 if the filer uses a paid tax preparer. Although one might expect, all other things equal, that professionally prepared tax returns would exhibit higher compliance than returns prepared by taxpayers themselves, preparers also can use their knowledge to exploit “gray” areas in the tax code that non-experts might not be aware of. Therefore, we are uncertain about the sign of this variable. The dummy variable *claimsEIC* is equal to 1 if the filer claims the Earned Income Credit (EIC). We hypothesize a negative relationship between this variable and relative reporting compliance due to the increase in burden complexity required to claim this credit and, because the EIC is a refundable credit⁹, some taxpayers may be tempted to claim this credit even though they received no earned income during the year. The dummy variable *schSEPresent* takes on a value of 1 if the filer files a Schedule SE used to figure the self-employment tax. Again, since all of the filers in our sample are Schedule C filers, all are required to complete this form. If the Schedule SE is missing, it may indicate the presence of misreporting. We hypothesize a positive sign for this variable.

Our remaining three control variables for taxpayer filing characteristics also are dummy variables. The variable *noTxblIncTY00* takes on a value of 1 if the filer had no taxable income in TY 2000 (either because the individual did not file a tax return or filed a tax return and reported zero taxable income) and zero if the file did report some taxable income. The variable *reportsZeroBothYears* is equal to 1 if the filer reported zero taxable income in both 2000 and 2001 (the individual had to file a tax return in both years). If the filer reported some positive taxable income in one of the two years this variable is assigned a value of zero. We hypothesize a negative relationship between both variables and reporting compliance based on the belief that reports of zero income may indicate the presence of underreporting. Finally, the variable (*auditPrior2Years*) is equal to 1 if the taxpayer was subject to an operational (non-random) audit for either TY 1999 or 2000. Although empirical research on the influence of a prior tax audit on subsequent reporting behavior is inconclusive (Erard 1992) we hypothesize a positive correlation between *compRate* and *auditPrior2Years*.

⁸ The following US states do not have an income tax: Alaska, Florida, Nevada, South Dakota, Texas, Washington and Wyoming. The state of New Hampshire taxes interest and dividends and Tennessee has a tax on certain forms of investment income.

⁹ A refundable credit means that taxpayers may receive this credit even though they owe no income tax.

Table 2 displays summary statistics for the variables used in this analysis. The variable *compRate_tc* is *compRate* top coded to a value of 1. Within the sample data there are 29 cases where taxable income reported by the taxpayer exceeded the examiner-determined amount of taxable income. These cases (representing 13,131 taxpayers) were assumed to have 100 percent reporting compliance.

Table 2
Study Variables Summary Statistics

Variable	Type*	Mean	Sum
compRate	R	0.484	533
compRate_tc	R	0.313	344
age	R	41.185	45,345
auditPrior2Years	D	0.026	29
claimsEIC	D	0.533	587
designatesToPresElecCampaignFund	D	0.170	187
filesSchCEZ	D	0.091	100
firstTimeFiler	D	0.046	51
hasKids	D	0.401	442
isFemale	D	0.241	265
isUSCitizen	D	0.482	531
logIncPerCapita	R	9.833	10,826
logTaxableIncome	R	9.234	10,167
married	D	0.305	336
noTxblIncInTY00	D	0.574	632
reportsContributions	D	0.102	112
reportsStateIncomeTaxDeduction	D	0.062	68
reportsZeroBothYears	D	0.278	306
schSEPresent	D	0.970	1,068
stateIncomeTax	D	0.748	824
txblIncTY01MoreThanTY00	D	0.276	304
usesPaidPreparer	D	0.741	816

Note: 1,101 total observations

*R=real, D=dummy

Figure 1 displays a histogram of the top-coded dependent variable *compRate_tc* (unweighted). The bi-modal shape of this distribution also is characteristic of the reporting behavior of subjects in tax compliance laboratory experiments (Alm, Bloomquist & McKee 2010). Figure 1 shows that about one-half (50.5 percent) of 1,101 sample cases report less than 10 percent of true tax liability and approximately 15 percent of cases have compliance rates of 90 percent or higher. Cases between the two extremes appear to be roughly uniform in distribution.

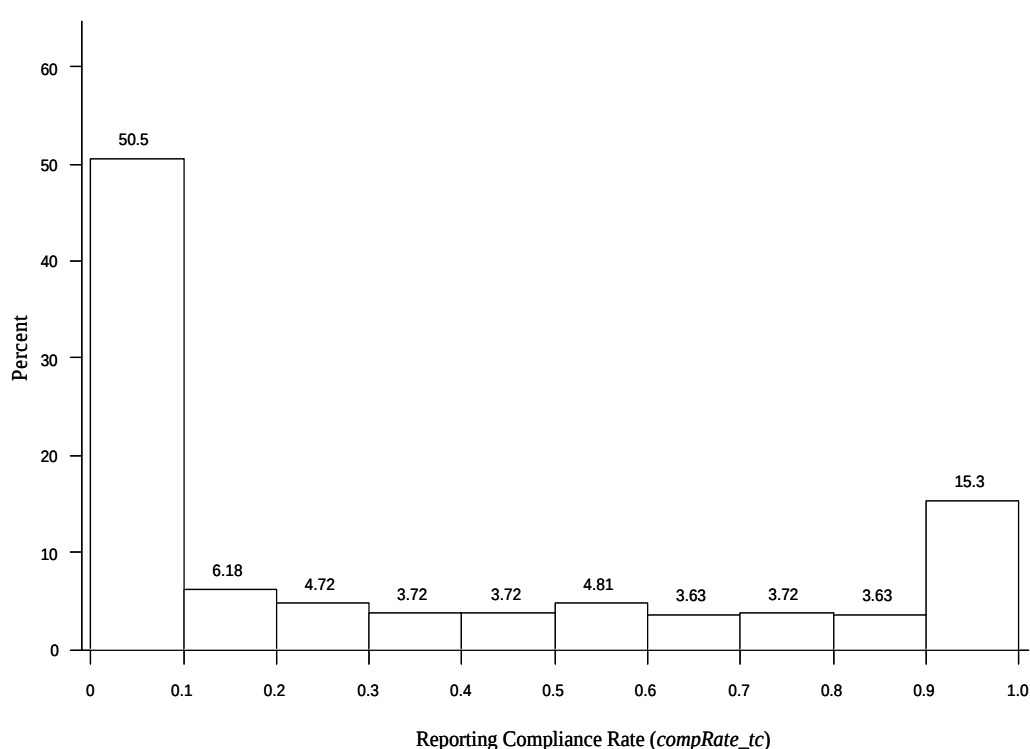


Figure 1. Histogram of Reporting Compliance Rate

3. ANALYSIS

We estimate the relationship between the dependent variable (*compRate*), our six proposed indicators of tax morale, and control variables using ordinary least squares (OLS) regression, ordered probit and tobit models with the results shown in Table 3. The OLS model uses the top-coded version of our reporting compliance rate measure (*compRate_tc*). Results reported for the ordered probit model recode *compRate* into the values 1, 2 or 3 depending on whether the value of *compRate* is equal to zero, between zero and 1, or a value of 1 or higher. The tobit model uses *compRate* as the dependent variable but censors values to an upper bound of 1. Recall there are 29 cases where the value of *compRate* exceeds unity.

Focusing first on the tax morale variables, *designatesToPresElecCampaignFund* has the wrong sign and is only statistically significant using tobit estimation. The negative sign on this variable could indicate that some filers¹⁰ designating \$3 to the Presidential election campaign fund do so as a way to signal their trust in governmental institutions when, in fact, they are underreporting their tax liability elsewhere on the return. The variable *isUSCitizen* has the predicted sign but is statistically insignificant in all models. Reported taxable income (*logTaxableIncome*) is statistically significant in the OLS and tobit models and has the predicted negative sign. This result supports the view that a perception of tax unfairness is associated with higher levels of income and has a negative impact on reporting compliance. The variable *txblIncTY01MoreThanTY00* also has the predicted sign and is statistically significant in all models. This finding supports the idea that taxpayers experiencing an improvement in their economic circumstances have a more favourable attitude concerning fairness of the tax system and are willing to comply more. The variable *reportsContributions* is statistically significant in all models but with the opposite sign. This could indicate that taxpayers view claiming charitable contributions as an opportunity to underreport tax liability more than an opportunity to contribute toward the welfare of the wider community. Finally, the variable *reportsStateIncomeTaxDeduction* has the predicted sign and is significant in OLS and tobit models.

Table 3 also shows the impact of the demographic and tax filing control variables on reporting compliance. Turning first to the demographic control variables, *age* has the predicted positive sign and is statistically significant (at the 5% level) across all models. The presence of children (*hasKids*) is strongly significant and is positively correlated with *compRate*. This could mean that the taxpayers are willing to report their tax liability more accurately if some of this can be offset using the exemption for child dependents. The variable *isFemale* has the predicted sign but is not statistically significant in any of the three models. Marital status (*married*) also is not statistically significant. However, income per capita in the filer's postal zone of residence (*logIncPerCapita*) is positive and statistically significant. This result might indicate that filers residing in wealthier areas tend to be more compliant because they either have less financial stress or these taxpayers have a more favourable attitude toward government (*ceteris paribus*). In other words, even though we find evidence that income is positively related to the notion that income taxes are unfair, residing in an

¹⁰ Recall that our sample, by design, is not representative of all US taxpayers.

area with other relatively well-to-do households may diminish this sentiment somewhat. Finally, the variable *stateIncomeTax* is not statistically significant in any of our models.

Among the variables controlling for filing characteristics of taxpayers, the variables *auditPrior2Years*, *firstTimeFiler*, *usesPaidPreparer*, and *reportsZeroBothYears* are not statistically significant. The variables *claimsEIC* and *noTxblIncInTY00* have the predicted negative sign and are significant in all models. Similarly, *schSEPresent* and *filesSchCEZ* also are significant and have the predicted positive sign.

Table 3

Estimation Results

Variable	Coefficient (standard error)				
	OLS	Ordered Probit	Model 1	Model 2	Model 3
age	0.00217*(0.00092)	0.00778*(0.00353)	0.00251*(0.00104)	0.00268*(0.00103)	0.00229*(0.00101)
auditPrior2Years	0.03119 (0.05958)	0.10824 (0.23159)	0.04548 (0.06718)		
claimsEIC	-0.34116**(0.02301)	-1.09316**(0.09238)	-0.36560**(0.02572)	-0.36404**(0.02563)	-0.36190**(0.02563)
designatesToPresElecCampaignFund	-0.04756 (0.02577)	-0.08304 (0.10019)	-0.05627*(0.02869)	-0.05790*(0.02854)	-0.05931*(0.02858)
filesSchCEZ	0.12506**(0.03464)	0.50696**(0.13260)	0.15771**(0.03941)	0.16260**(0.03908)	0.16691**(0.03896)
firstTimeFiler	-0.04676 (0.04647)	-0.11146 (0.18636)	-0.03890 (0.05201)		
hasKids	0.08351**(0.02463)	0.39342**(0.09608)	0.08942**(0.02748)	0.09456**(0.02724)	0.07688**(0.02440)
isFemale	0.01904 (0.02470)	0.03343 (0.09504)	0.02139 (0.02773)		
isUSCitizen	0.01922 (0.01993)	0.09501 (0.07653)	0.02158 (0.02228)	0.02564 (0.02184)	
logIncPerCapita	0.08172**(0.02617)	0.19773 (0.09956)	0.08689**(0.02930)	0.08749**(0.02921)	0.09172**(0.02918)
logTaxableIncome	-0.04761**(0.00800)	-0.04267 (0.03110)	-0.05708**(0.00900)	-0.05744**(0.00894)	-0.06019**(0.00884)
married	-0.02868 (0.02558)	-0.14589 (0.09760)	-0.02763 (0.02858)	-0.03536 (0.02726)	
noTxblIncInTY00	-0.09331*(0.03708)	-0.28026*(0.13576)	-0.10407*(0.04178)	-0.13163**(0.02283)	-0.13294**(0.02284)
reportsContributions	-0.10529**(0.03761)	-0.34508**(0.14701)	-0.12246**(0.04197)	-0.11952**(0.04191)	-0.12135**(0.04179)
reportsStateIncomeTaxDeduction	0.12409*(0.04841)	0.22139 (0.17933)	0.14298**(0.05458)	0.13961**(0.05394)	0.13695*(0.05394)
reportsZeroBothYears	0.04010 (0.04349)	0.30354 (0.16138)	0.04115 (0.04889)		
schSEPresent	0.30498**(0.05708)	1.61392**(0.30664)	0.32184**(0.06345)	0.32800**(0.06311)	0.32381**(0.00821)
stateIncomeTax	-0.00119 (0.02226)	-0.03646 (0.08599)	-0.00327 (0.02486)		
txblIncTY01MoreThanTY00	0.15104**(0.03083)	0.68508**(0.11639)	0.16770**(0.03456)	0.14976**(0.02464)	0.15228**(0.02465)
usesPaidPreparer	0.00403 (0.02211)	0.03828 (0.08533)	0.00505 (0.02475)		
constant	-0.29328 (0.27198)	-2.98570**(1.05987)	-0.25769 (0.30404)	-0.23820 (0.30274)	-0.22645 (0.30308)
Number of observations	1,101	1,101	1,101	1,101	1,101
Adj R-Sq	0.3226				
F Value	27.19**				
Log Likelihood		-885.45589	-508.21371	-509.42300	-511.18254
AIC		1815	1060	1051	1050

*p < .05. **p < .01.

Table 4 displays the average of the individual marginal effects of the variables in our final model (Tobit Model 3). The variables accounting for the largest influence on reporting compliance are *claimsEIC* and *schSEPresent*. Although the absence of a Schedule SE is a relatively rare event¹¹, when it does occur it suggests a significant understatement of tax. Similarly, for filers like those in our sample whose only source of income is from a sole proprietorship, tax underreporting is often found on returns that claim the EIC.

Among our proposed indicators of tax morale appearing in Model 3 the variables *txblIncTY01MoreThanTY00* and *reportsStateIncomeTaxDeduction* have the greatest influence on reporting compliance. *logTaxableIncome* contributes only modestly and the variables *reportsContributions* and *designatesToPresElecCampaignFund* have the wrong signs.

Table 4
Average of the Individual Marginal Effects (Tobit Model 3)

Predictor	Average Marginal Effect
age	0.00216
claimsEIC	-0.34086
designatesToPresElecCampaignFund	-0.05586
filesSchCEZ	0.15721
hasKids	0.07241
logTaxableIncome	-0.05669
logIncPerCapita	0.08639
noTxblIncInTY00	-0.12521
reportsContributions	-0.11430
reportsStateIncomeTaxDeduction	0.12899
txblIncTY01MoreThanTY00	0.14343
schSEPresent	0.30498

4. DISCUSSION

Relying mainly on data from individual tax returns this paper has tried to shed light on the question: “Does tax morale help to explain the unexpectedly high levels of tax compliance observed in IRS random audit studies and, if so, to what extent?” Our experience shows that answering this question is made difficult by the absence of direct measures of the constituent components of tax morale. Of our six proposed measures of tax morale only three appear to have a material influence on reporting compliance rates of individual filers whose only source of income is from a small business (sole proprietorship). However, even with these variables it is possible to

¹¹ For example 1,068 out of 1,101 filers (97 percent) in our sample filed a Schedule SE with their tax return (see Table 2).

interpret these findings in a different light. For example, *logTaxableIncome* may be correlated with increasing tax unfairness but higher income is also taxed at higher marginal tax rates that could induce more underreporting. The variable *reportsStateIncomeTaxDeduction* may be positively related to trust in government institutions, but reporting this deduction also lowers tax liability and may offset, in part, a sense of tax unfairness. Finally, *txblIncTY01MoreThanTY00* may be associated with a growing sense of fairness, but also may reflect reduced financial stress and a greater ability to pay tax.

There is little doubt that a positive attitude toward governmental institutions contributes to a greater willingness to pay one's taxes. However, it is extremely difficult to separate this influence from other factors that are at least equally significant in deterring underreporting. An obvious example is the presence of third-party information reporting that allows the tax authority to perform automated checks of income reported on tax returns (IRS 2007, Johns & Slemrod 2010; Phillips 2011).¹²

Although much of the tax morale literature has focused on religiosity as a causal factor, influences of a more secular origin may also play a role.¹³ For example, in a recent telephone survey conducted by the IRS Oversight Board¹⁴ 79 percent of respondents said that their "personal integrity" had a "great deal of influence" on whether they report and pay their taxes honestly and another ten percent say it is "somewhat of an influence" for a combined total of 89 percent. In comparison, 65 percent of survey respondents cited "third-party reporting to the IRS" as having either a great deal or somewhat of an influence on compliance. Other factors that promote tax compliance at least somewhat in the IRS Oversight Board (2012) survey include "fear of an audit" (59 percent of respondents) and "belief that your neighbors are reporting and paying honestly" (42 percent).

Although this study has many weaknesses it is mainly a reflection of the difficulty of finding good measures of tax morale and compliance given the lack of extensive demographic information on tax returns (Johns & Slemrod, 2010). Further, it is acknowledged that audit outcomes may not always be accurate or in accordance with the taxpayer's own assessment of compliance behavior. There is the possibility of systemic differences in the ability of auditors to detect misreporting (Hessing, Elffers, & Weigel, 1988; Johns & Slemrod, 2010). Nevertheless, this study is an advance in that it does clearly provide a well-established measure of noncompliance via actual random taxpayer audits. By selecting a unique sample of taxpayers whose only source of income is from a sole proprietorship, we have attempted to control for the opportunity to evade.

Additional improvements could be made by subsequently surveying individual taxpayers selected for random audit to provide supplemental demographic

¹² For example, IRS (2007) reports net underreporting on wage and salary income subject to extensive third-party information reporting and tax withholding is only one percent versus 57 percent for non-farm proprietor income not subject to third-party information reporting.

¹³ Whilst we found no strong support for the role of religiosity, the great difficulties of measuring religiosity and/or personal integrity should be re-iterated and emphasized. This suggests that qualitative research in this specific area may prove to be more fruitful than quantitative analysis.

¹⁴ See <http://www.treasury.gov/irsob/reports/2012/IRSOB~Taxpayer%20Attitude%20Survey%202012.pdf>.

characteristics that could provide better measures of ethical views toward tax compliance. To what extent this information would prove useful for tax administration we leave to future work. Given the difficulties in understanding tax morale and compliance behavior more generally, it could be that tax administrators have to look to more concrete strategies to maximize revenue collections such as reducing opportunities to evade (Kagan (1989); Klepper & Nagin, 1989; Pope & McKerchar, 2012); and greater focus on the enforcer role of tax practitioners given their significant influence on taxpayers (Klepper, Mazur, & Nagin, 1991; Tan, 2011).

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