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The *eJournal of Tax Research* is a refereed journal that publishes original, scholarly works on all aspects of taxation. It aims to promote timely dissemination of research and public discussion of related issues, from both theoretical and practical perspectives. It provides a channel for academics, researchers, practitioners, administrators, judges and policy makers to enhance their understanding and knowledge of taxation. The journal emphasises the interdisciplinary nature of taxation.

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tax administrations seeking to improve the efficiency of their revenue collections, there is growing recognition of the need

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-

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

(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

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

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 credit[9], 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

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.

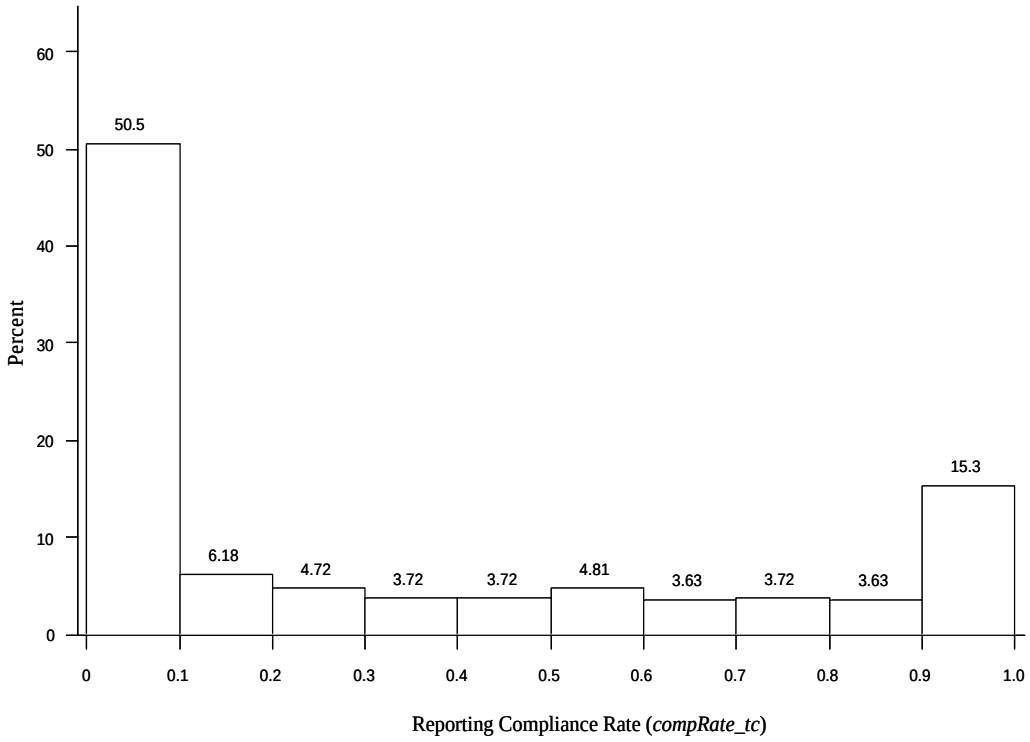

Figure 1. Histogram of Reporting Compliance Rate

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 filers[10] 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 vi

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 event[11], 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).

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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